GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY SECOND YEAR

VOCATIONAL EDUCATION

TEXTILES AND DRESS DESIGNING

Theory & Practical

A Publication Under Free Textbook Programme of Government of Tamil Nadu

DEPARTMENT OF SCHOOL EDUCATION

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

First Edition – 2019

Revised Edition – 2020, 2022, 2023

Reprint – 2021, 2024

(Published under New Syllabus)

NOT FOR SALE

Content Creation

State Council of Educational
Research and Training

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Printing & Publishing

Tamil NaduTextbook and
Educational Services Corporation

www.textbooksonline.tn.nic.in

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PREFACE

One of the most creative courses, Textiles and Dress Designing is considered to be a very prosperous vocational education stream not only in India but abroad as well. Fashion designing is a blooming sought- after career and a stream where one's creativity is recognized . This is because of the fact that the textile and fashion industry has grown by leaps and bounds and that too within a decade. People with a creative mind and students who are interested in gaining more knowledge in apparel designing and making, choose textiles and dress designing subject, to increase understanding in building skills and focus in terms of conceptualization, design sense and individual artistic expression in fashion designing.

This textbook is technically designed with suitable objectives to cater many people who strive to reach the top of textile and fashion industry. Fashion students can analyze recent fashion trends and learn about basic business and merchandising principles. The hands-on practice allows students to apply skills in interpreting and developing projects in the different areas of fashion, and add more value to their creativity.

The major concepts of textiles and designing encompassing of textile finishes, dyeing and printing, creation of fashion portfolio, preparation of tech pack and proto samples, computer applications in fashion, pattern making, sewing, surface embellishments, accessories, clothing and wardrobe care, entrepreneurship development, textile organization structures, compliances, marketing and advertisement are given special focus in this textbook.

Readers of the subject are sure to find the book extremely useful, convenient and interesting as well. Further, simple language is used for easy reading and understanding. It has been presented in such a way that the reader can grasp easily. Another important feature of the book is that all the patterns are illustrated with diagrams and examples. In a nutshell the book will help the reader to expand acquaintance and enhance oneself to become an entrepreneur or find a suitable job.

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Assessment

CHAPTER
01

TEXTILE WET PROCESSING

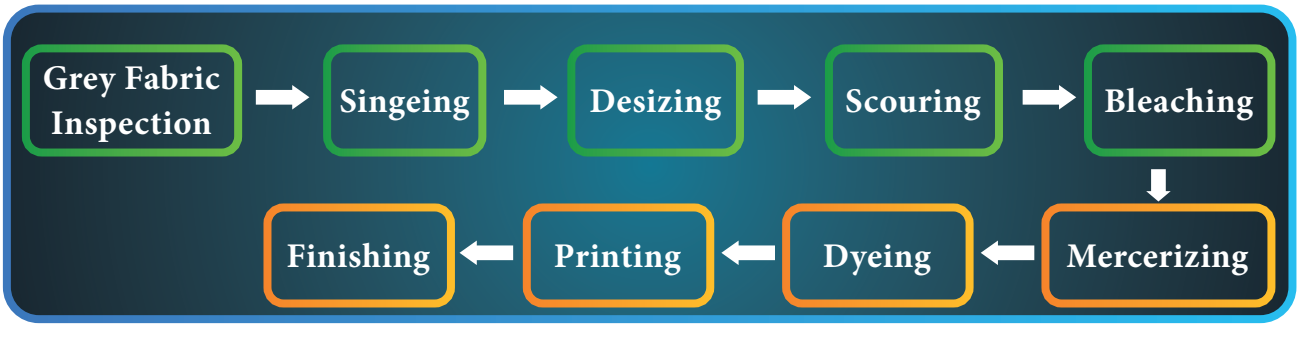
LEARNING OBJECTIVES

- To gain knowledge about the preparatory processes of fabric
- To understand the dye classification, dyeing techniques and printing styles
- To comprehend the different textile finishes

1.1 Introduction

Textile wet processing is the collective term for the processes which improve performance and serviceability of textile materials. Textile materials include fibre, yarn and fabrics. Wet processing includes pretreatment, coloration (dyeing or printing) and finishing. Textile pretreatment processes eliminate sizing agents, oils, waxes, dirt and other impurities. Cotton pretreatment process includes desizing, scouring, bleaching and mercerization. It improve whiteness and feel of the fabric. Dyeing is imparting color to fibre, yarn or fabric and printing is localized dyeing. Finishing is the final step in the fabric manufacturing process and it gives special functionalities to textiles.

1.2 Process sequence of Textile wet processing



1.3 Singeing

Singeing is the process of removal of protruding fibre ends on the yarn or fabric surface. Yarn singeing is called as gassing. Singeing is carried out on cotton, wool yarn and fabric to obtain smooth surface. During singeing, the fabric is opened in full width and brushed lightly to raise the fibre ends. The fabric is moved rapidly over a direct flame or over heated copper plates to burn the fibre ends. The fabric is immersed in water to extinguish smoldering fibres. Singed fabrics have reduced risk of pilling and they allow printing with high clarity.

Figure 1.1 Gas Singeing Machine

1.4 Desizing

During the process of weaving, the warp yarn undergoes significant mechanical stress. To prevent the warp yarn from breaking during weaving process, it is coated with sizing agents such as starch or polyvinyl alcohol. Due to sizing, the fabrics are not able to absorb water or any finishing agent. Hence the sizing agent must be removed after weaving process in order to make the fabric absorbent. The process of removal of starch or any other sizing agent is called as desizing. Sizing agents can be removed by soaking the fabric in boiling water or in mild acid solution for a certain period of time. Polyvinyl alcohol can be removed by hot alkaline wash.

1.5 Scouring

Grey fabric (untreated) contains natural and acquired impurities like oil, wax, fat and dust. These impurities decrease the absorbency property of the fabric and prevent evenness in dyeing and printing. Hence these impurities have to be removed. The process of removal of natural and acquired impurities is called as scouring. Scouring process uses strong alkalies like sodium hydroxide at high temperatures (90-100°C). It is one of the vital processes of wet processing.

1.6 Bleaching

Bleaching is the process of removal of natural colourants from the fabric and make the fabric white in appearance. Bleaching is done after desizing and scouring, but before dyeing. It increases the ability of the textile materials for dyeing and printing by removing any traces of colour present in it. Calcium hypochlorite, Sodium hypochlorite and Hydrogen peroxide are the most frequently used bleaching agents.Hydrogen peroxide is called as the universal bleaching agent as it is suitable for all sorts of textiles. Bleaching with hydrogen peroxide is carried out at 90-100°C.

1.7 Mercerization

Mercerization is the process of treatment of cotton with concentrated sodium hydroxide. Cotton yarns or fabrics are treated with 18-30% sodium hydroxide solution at room temperature for 30 minutes.The strong caustic soda causes the cotton fibres to swell. During the process of mercerization, the bean-shaped cotton fibre cells become round in shape which reflects the light evenly, giving the cotton fabric a silk-like luster and a softer feel. It also improves absorbency, dye uptake and strength.

1.8 Dyeing

Primitive man coloured the caves and smeared his body with pigments that he discovered from roots, stems, leaves, fruits, berries, flowers, nuts, vegetables, minerals, animals and insects. Colour plays a vital role in human life. The colourful wall paintings of Ajanta during the first century AD (CE) and description of natural dyes in *Atharvaveda* provides evidence for the use of dyes in ancient period. The quest for new colours led to the discovery of synthetic dyes which later on became a full-fledged industry.

1.8.1 Classification of Dyes

Dyes are organic compounds with two components namely Chromophore, which imparts colour and Auxochrome that help in fixation of dyes. They are classified into natural dyes and synthetic dyes.

A) Natural Dyes

Natural dyes are colour substances obtained from natural sources. Natural dyes are used for all types of textile dyeing and printing until the middle of nineteenth century. The use of natural dyes was reduced due to the advent of synthetic dyes. The growing consumer awareness on the harmful impact of synthetic dyes, concern for environment worldwide and stringent environmental laws lead to the revival of natural dyes.

Advantages of Natural Dyes

- Natural dyes are eco-friendly
- Produces soft and soothing colours.
- Provide excellent protection from UV rays and microbes

Disadvantages of Natural Dyes

- Natural dyes are difficult to store
- Reproducibility of the same colour shade is difficult
- Availability of these dyes depends on the seasons

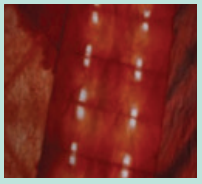
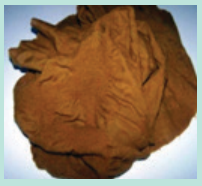
Classification of Natural Dyes

Natural dyes are classified into three types based on the source of origin namely vegetable dyes, animal dyes and mineral dyes.

1. Vegetable Dyes

Vegetable dyes are obtained from different parts of plants such as leaves, flowers, fruits, pods, bark etc. These vegetable dyes can be applied directly or with different mordants. **Example:** Turmeric, Indigo, Marigold, Henna, Tea, Onion.

Table 1.1 Vegetable Dyes

Name of the Plant	Parts used	Dyed fabric
Indigo		
Indian madder		
Turmeric		
Marigold		
Henna		
Tea		
Onion		

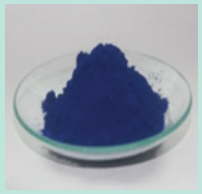
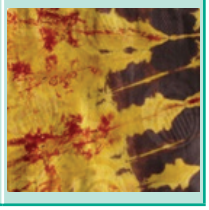
2. Animal Dyes: Dyes extracted from certain insects and invertebrates are called as animal dyes. Various shades of red and purple are obtained from animal origin. **Example:** Cochineal, Tyrian purple and Lac are the commonly used animal dyes.

Table 1.2 Animal Dyes

Source Name	Insect	Dyed fabric
Cochineal		
Tyrian purple		
Lac dye		

Mineral Dyes: Dyes extracted from mineral sources are called as mineral dyes. Most widely used mineral dyes are Iron, which produces yellowish brown shades, chrome yellow, prussian blue and manganese brown. The dyes obtained from mineral sources may be poisonous and hence are not being used commercially. **Example:** Iron, Prussian blue, Chrome yellow, Manganese brown.

Table 2.3 Mineral Dyes

Source name	Dye	Dyed fabric
Iron		
Prussian blue		
Chrome yellow		
Manganese brown		

B) Synthetic Dyes

Dyes that are produced chemically are called as synthetic dyes. These are classified based on the chemical composition of the dye.

1. Direct Dyes: Dyes that colour the fabric directly without the help of any fixing agent, are called as direct dyes. They are water soluble, simple to apply and cheap in cost of production and application. They produce a wide range of colours and commonly used for dyeing cellulose fibers. Some direct dyes are used to dye wool, silk and nylon.

2. Reactive Dyes: Dyes that react with the fibers and form permanent bonds are called as reactive dyes. They are water soluble and are used to dye cellulose, protein and polyamide fibres. They produce bright shades.

3. Basic Dyes: Basic dyes have cationic or basic groups (positively charged) and hence they are also known as cationic dyes. They are soluble in alcohol but not easily soluble in water. Basic dyes exhibit brilliant shades of colour which is not shown by other dye classes. These dyes are suitable for dyeing wool, silk and acrylic.

4. Acid Dyes: Dyes that require acid for dyeing (sulphuric, acetic, formic acid etc.,) are called as acid dyes. They are water soluble, Acid dyes are suitable for silk and wool fibers.

5. Mordant or Chrome Dyes: Natural dyes and some synthetic dyes do not have affinity towards fibers. With the help of some chemicals, they can be used to dye fibers. These chemicals are called as mordant or chrome dyes.

6. Disperse Dyes: Disperse dyes are insoluble in water. Their solubility is increased by adding dispersing agents. They are suitable for dyeing nylon, polyester, acrylic and other synthetic fibres.

7. Vat Dyes: These dyes were initially fermented in a large wooden vessel known as vats and hence named as "vat dyes". They are insoluble in water but soluble in alkali. They are suitable for cellulosic fibres.

8. Sulphur Dyes: Sulphur dyes are water insoluble and made soluble by the addition of reducing agents and alkali. Sulphur dyes

do not produce brighter shades. They are cheap and produce colours like navy blue, black, khaki and olive green.

9. Azoic Dyes or Napthol Dyes: Azoic dyes are produced directly on the fibre by the combination of their constituents. Since the dye is formed inside the fibre, it is called ingrain dye. Azo dyes are also called as ice colours since their application involves the use of ice. They are widely used on cellulosic fibres. Azo dyes exhibit bright colours.

1.8.2 Dyeing Methods

Dyeing is the process of imparting colour to the fibre/yarn or fabric by the application of dyes or pigments. Colour is produced between the dye molecule and the fibre or fabric. The bond between dye molecule and fibre may be strong or weak depending on the dye used. Dyeing enhances the aesthetic look of the fabric. It is one of the surface ornamentation methods.

Stages of Dyeing

Dyeing can be done at any stage of textile production process such as at fibre stage, yarn stage, fabric or finished product.

Table 1.4 Stages of Textile Dyeing

Stage	Method of dyeing
Fibre	Stock dyeing
Wool sliver	Top dyeing
Manmade Fibre	Dope dyeing
Yarn	Skein dyeing, Package dyeing, Warp-beam dyeing
Fabric	Beam dyeing, Beck/Winch dyeing, Jig dyeing
Finished product	Product dyeing

I) Dyeing at Fibre Stage: The process of dyeing at fibre stage is called as fibre dyeing. It includes stock dyeing, top dyeing and dope dyeing.

a) Stock Dyeing: Fibres are dyed by the process of stock dyeing. In this method, dyeing is carried out in a large enclosed vessel called kiers. Fibres are placed loosely in perforated containers and kept inside the kiers. The dye liquor is circulated through the fibres at high temperature until the desired colour is obtained. The dyed fibres are washed and dried.

Figure 1.2 Stock Dyeing

b) Top Dyeing: Wool that has been combed to remove short fibres is called as top. Top is wound on perforated spools and dye solution is passed through it. Top dyeing method results in even dyeing.

Figure 1.3 Coloured Wool Top

c) Dope dyeing: Manmade fibres such as polyester and polypropylene are dyed by this method. In this method, dye is mixed with the spinning solution before the filament is extruded through the spinneret.

Figure 1.4 Dope Dyeing

Advantages

- Large quantities of fibres can be dyed at one time
- Produces uniform colour

Disadvantages

- Expensive and time consuming
- Fibre flexibility is reduced

II) Dyeing at Yarn Stage: The process of dyeing at yarn stage is called as yarn dyeing. This includes techniques like skein dyeing, package dyeing and warp-beam dyeing.

Figure 1.5 Yarn Dyeing

a) Skein Dyeing: In this method, the yarns are loosely wound in hanks or skein form. The hanks or skeins are hung on perforated rods and immersed in a dye bath. The dye solution is circulated in and out of the yarn to achieve an even shade. This method is commonly used for dyeing acrylic and wool yarns.

b) Package Dyeing: In package dyeing, yarns are wound on cones, spools or similar units and dyed.

c) Warp-Beam Dyeing: In warp-beam dyeing, the yarn is wound onto a perforated warp beam and placed in a tank containing dye solution. Dyeing is carried out under pressure for deeper and uniform penetration of dye. This method is used for the manufacturing of denims, in which warp yarns are dyed with indigo and weft yarns are left undyed.

Advantages

- Yarns retain softer feel
- Uniform dyeing

Disadvantages

- Costly and time consuming
- Not suitable for high twist yarns

III) Dyeing at Fabric Stage: The process of dyeing woven or knitted fabric is called as piece dyeing. Piece dyeing methods include beam dyeing, beck or winch dyeing and jig dyeing.

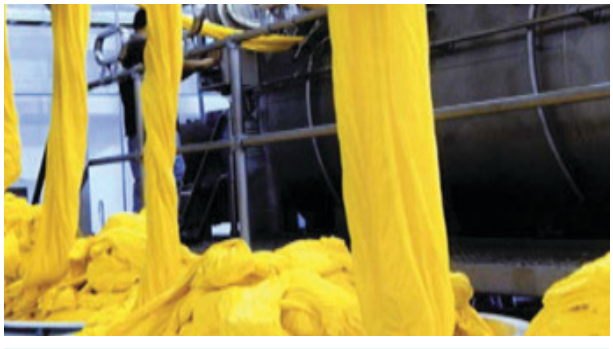


Figure 1.6 Piece Dyeing

a) Beam Dyeing: This process is similar to warp-beam dyeing of yarns. In this method, the woven or knitted fabrics are wound on perforated beams and immersed in dye solution. Dye is circulated through the fabric

b) Beck / Winch Dyeing: This method is followed to dye the fabrics of longer length. The fabric is circulated through the dye bath in rope form. The ends of the fabric are tied together to form a loop.

c) Jig Dyeing: In this method, the fabric is held on rollers at full width and passed through the dye bath. The fabric is let off from one roller into the dye bath and wound on to the other roller. After one cycle, the process is reversed and the fabric is let off from the second roller to the first.

Advantages

- Uniform dyeing
- Inexpensive than fibre or yarn dyeing
- Faster and easier

Disadvantages

- The ends of the fabric does not have same colour as the remaining fabric

IV) Dyeing at Product Stage: This is the last stage of dyeing. When the finished product such as garment is dyed, it is called as product dyeing or garment dyeing. The fabric undergoes pre-treatments such as desizing, bleaching and mercerization before dyeing. Garments are packed loosely in net bags and dyed. Garment dyeing is suitable for products such as sweaters, T-shirts, casual clothing and hosiery.

Advantages

- Economical
- No shade variations

Disadvantages

- Colour bleeding and fading.
- Not suitable for products with zippers, sewing, threads, lining etc.

1.9 Printing

Textile printing is defined as the **'localized dyeing'** or restricted form of dyeing a particular area of cloth or design. Printing is quicker and cheaper method of colouring fabrics. Generally a pigment or paste is needed to print textiles.

1.9.1 Printing Paste

In printing, dyes or pigments are applied in the gel form to prevent the flowing of print design. Dyes are thickened by mixing with thickening agents such as gums or starches. This thickened dye solution is called as print paste. Additional chemicals may be added depending on the fibres and dyes. Thickness and freshness of the printing paste are two important aspects to be considered for the quality and durability of printing.

1.9.2 Styles of Printing

Fabrics can be printed in three different styles namely direct, discharge and resist styles.

Direct Style of Printing: The most common style of printing textile fabric is direct printing. In this method the dye is directly applied onto the fabric. It is the simplest and oldest style of printing. The dye is imprinted on the fabric in paste form

Difference between Dyeing and Printing

Dyeing	Printing
The process of imparting colour to the fabric is called dyeing.	Pigments or dyes applied locally or discontinuously to produce different designs on the fabric is known as printing.
It is performed on fabric, yarn or fibre in wet condition.	It is performed on fabric in dry condition.
Half bleaching is enough for fabric preparation.	Full-bleaching is essential.
Dyeing can be done on fibre, yarn and fabric.	Printing is done on fabrics only.
Colour is applied in the form of solution.	Colour is applied in form of thick paste.
For dyeing there is no design.	For printing there is a specific design.
Dyes are applied on both the sides of the fabric.	Print paste is applied on single side of the fabric.
Only one colour is generally used for dyeing	One or more colours are used in printing process.
In dyeing process, colour penetrates through the fibre or fabric.	Colour is applied only on the surface.
A particular temperature is maintained in the dyeing process.	Carried out at room temperature.
Thickener is not used.	Thickener must be used.
The density of dye solution is low.	The density of dye solution is high.
Water consumption is high.	Water consumption is low.
Huge time is required for dye application.	Less time is required for printing process.
Liquor ratio is high.	Liquor ratio is less.

and any desired pattern may be produced. Dark colour prints in lighter background is the characteristic feature of direct style of printing. In this style of printing, the printing paste is transferred to the selected areas of the fabric and the pigments adhere to the fabric surface. **Example:** block printing, screen printing, roller printing methods, etc. This style is easy, economical and suitable for printing both simple and complicated designs.

Discharge Style of Printing: In this method, the fabric is printed on a dyed fabric. The printing paste used in this method contains a discharging agent, which will bleach or destroy the colour from the dyed fabric in the printed areas. The resulting white area brightens the overall design. Sometimes the base colour is removed and another colour is printed in its place. Potassium chlorate or sodium chlorate and stannous chloride are commonly used as discharging agents. This style of printing is used to print intricate and fine designs. It produces light, bright colour on a dark background. Strength of the fabric may be affected due to the use of discharging agents.

Resist Style of printing: In this method, the bleached fabric is first printed with a substance like wax, rice paste, china clay or chemicals such as acids, alkalis and salts that resist dye penetration and fixation. The printed fabric is then dipped in cold dye bath, so that the resisting agent remains unaffected and only the areas free of the resist agent are coloured. After dyeing process, the resist paste is removed, leaving white or light coloured patterns on a dark background. Batik, tie and dye are examples of resist printing.

1.9.3 Methods of Printing

Block Printing: It is the simplest of the hand printing methods. In this method, the desired design is carved on a wooden or metal block. The fabric is pinned on a table which is firm, strong and withstands the pressure of printing. The wooden block is stamped in the print paste and pressed firmly on the selected part of the fabric. This process is repeated to print the required length of fabric. Multicoloured designs require separate blocks for each colour. Block printing is done mainly in decorative pieces, dress materials, sarees and upholstery fabrics.

Figure 1.7 Block Blocks

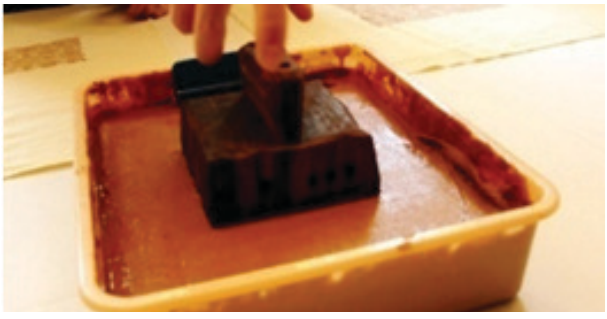


Figure 1.8 Application of Colour to the Block

Figure 1.9 Block Printed Fabric

Roller Printing: It is a machine printing method, in which designs are printed on textile fabric by engraved rollers. The cylinder is made up of cast iron which acts as a printing table. The cylinder is covered with many layers of special fabric. The last layer is the fabric which is to be printed.

The design is transferred onto the cloth by engraved copper rollers. The paste is applied on the roller and then transferred to the cloth. There are series of rollers each imprinting a different colour on the fabric. The sizes of the engraved cylinders depend on the pattern to be printed. The design roller rotates against the cloth and the design is imprinted. The fabric moves on to the second roller where the second colour is printed. The doctor blade placed in contact with design roller scrapes the excess dye from the surface of the design roller. The printed cloth is dried and then steamed to set the dye.

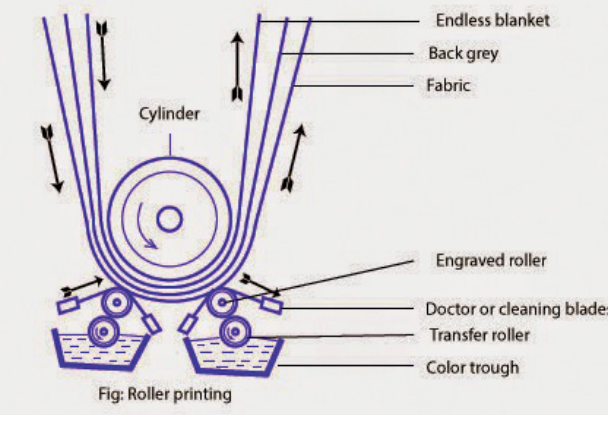


Figure 1.10 Roller Printing

Stencil Printing: In stencil printing, the design is first traced on the cardboard, wood, metal or plastic sheets with marker pens or pencils. Using scissors, knife or sharp blade the design is cut out. The uncut portion represents the part that is to be left uncoloured. Stencil is placed on the fabric to be printed and the printing paste is applied with stencil brush. Other colours can be applied on the design when the first colour dries. This method is suitable for both fine delicate design and large space design.

Figure 1.11. Preparing Stencil

Figure 1.12. Stencil Printing

Screen Printing: In this printing method, fabric is spread on large table and design screen is placed on the fabric. The screen consists of wooden frame covered with nylon or silk cloth. Lacquer is applied on the screen to make the areas opaque except design area so that printing paste is transferred through the design only.The screen is placed in

Figure 1.13. Screen Printing

contact with the fabric to be printed and the print paste is forced through the screen by a squeegee.The squeegee is used to spread the dye evenly through the screen. It is moved across the screen, forcing the print paste through the mesh openings. Based on the number of colours, many numbers of screens are prepared to complete the design. The printed portion should be allowed to dry before placing the second screen.

Transfer Printing: Transfer printing means shifting of a design from one surface to another. In this method, designs are transferred to the fabric surface by heat and pressure. The fabric to be printed is passed through a heat transfer printing machine at about 204°C. Under high temperature, the dye on the printed paper sublimates and is transferred onto the fabric.Disperse dyes are the only dyes which are used for transfer printing. Transfer printing is suitable for polyester, nylon and acrylics.

Figure 1.14 Transfer Printing

Batik Printing : Batik printing is a hand printing method which give an artistic effect to the fabric. This method is an example of resist style of printing. In this method, designs are made using wax and the fabric is immersed in the dye bath to colour the unwaxed portions. After the dye has been fixed, the fabric is dried, then boiled and rinsed to remove the wax. It is a laborious and time consuming process.

Figure 1.15 Batik Printed Fabric

Photo Printing: In this method, the fabric is coated with a chemical that is sensitive to light and photographs are printed on the fabric. The results are similar to the photograph printed on the paper. This is a direct style of printing.

Figure 1.16 Photo Printing

Digital Printing: Digital printing on fabric is a new and innovative process that involves printing a design, a pattern or an image directly from the computer onto the desired material. In digital textile printing, once the design is created, it can be directly printed on the fabric from the computer.

Sublimation Printing: It is a method of printing that transfers a design into a material or fabric using ink and heat. The inks that are used turn into gas when brought under heat, then combine with the fabric and permanently print onto the fabric. The effects are permanent and less prone to

fading, as the ink is embedded in the fabric or substrate rather than simply laying on top like a normal print.

1.9.4 After Treatment Processes of Printed Fabrics

After treatment process is done to avoid staining of unprinted areas and to prevent bleeding of print paste from the design areas. After printing, the fabrics are dried to retain the printed design. Drying is followed by steaming which transfer the pigment from print paste to the fabric.

Steaming: Steaming process helps in transferring the dyes and chemicals present on the surface of the fabric into the fabric. Steaming enhances the absorption of dyes or pigments on the fabric. When the printed fabric enters the steam chamber, steam condenses to form water molecules which are absorbed by the thickener present in the printed fabric. The water absorbed by the thickener dissolves the dyes or pigments and hence increases the rate of absorption of pigment from thickeners to the fabric. As soon as steaming is done the fabric has to be dried.

Washing Off: Even after the steaming process, most of the printed fabric contains exhausted thickeners and some printing auxiliaries. Hence washing off processes is carried. Fabrics are washed with neutral soaps and rinsing removes the print paste, chemicals and unfixed dye molecules.

1.10 Finishing

The term finish is used refer to the treatments that change the appearance, handle and performance of the fibre, yarn or fabric. It is a process of converting woven or knitted fabric into a more useable material.

1.10.1 Classification of Finishes

Textile finishes can be classified into basic or routine finishes and special finishes.

a) Basic or Routine Finishes

Basic or routine finishes are commonly given to fabrics before dyeing or final processing. They impart basic properties to the fabrics and make them suitable for further processing such as dyeing and printing. Examples of basic finishes: Singeing, desizing, scouring, bleaching.

b) Special Finishes

Special finishes are the finishes that are not given in routine processing but are given depending on the end use.This type of finish changes the performance of the fabric. Special finishes are further classified into aesthetic finish and functional finish.

Aesthetic Finish: It is given to enhance the fabric appearance and feel of the fabric. Some of the important aesthetic finishes are: Calendaring, embossing, stiffening, etc

Functional Finish: It is given to enhance the performance of the fabric. Some of the important functional finishes are: Water repellent, water proof, antimicrobial finish, wrinkle or crease resistant

c) Aesthetic Finish

(i) Calendaring: The fabric surface is flattened to improve the luster, texture and appearance by a process known as calendaring. The moist fabric is passed between set of metal rollers under controlled heat and pressure. The metal rollers have

smooth surface and when heated they smoothen the fabric. The calendaring machine has 2 to 7 rollers with most common being the 3 bowl rollers.

Figure 1.17 Three Roll Calendaring Machine

(ii) Embossing: Three dimensional or raised effects on the fabrics are carried out by embossing finish. During the process of embossing a pattern, design is impressed on smooth surfaces of the fabric under high pressure and temperature. The embossing machine consists of two or three rollers. Two roll systems consists of a soft roller made up of paper or cotton and a heated embossed metal roller, whereas the three roll machine consists of a metal roller in between two soft rollers. The engraved metal roller first presses the design on the surface of the soft roller. When the fabric is fed, the soft rollers mould the design on the surface of the fabrics.

Figure 1.18 Fabric Embossing Machine

d) Functional Finish

(i) Water repellent: Water repellent finishes are finishes which resist the penetration of water into the fabric but permits the passage of moisture and air. Uniform Coating of substances such as wax, silicones, fluorocarbons, paraffin's etc, permits the passage of air and vapour between the interlacing in the fabric whereas water and the other liquid remain on the surface rather than spreading out and getting absorbed. Water repellency is achieved by a combination of fabric structure and finish.

(ii) Water proof: Water proof finish gives resistance to the fabric for water. A water-proof fabric is completely moisture proofed. The fabric is coated or laminated with a film of natural or synthetic rubber or plastic, such as vinyl or polyurethane to give proofing effect. Water proof finishes adversely affect the comfort property of the fabric as they limit the passage of air and possesses a rather firm and a bad hand feel. Water proof fabrics are used as umbrella cloth, raincoat fabric, tarpaulin, etc.

Figure 1.19 Water proof

(iii) Antimicrobial Finish: Natural fibres are easily attacked by microbes because they retain water readily. Fibres such as cotton, jute, wool and flax are

Figure 1.20 Antimicrobial Finished Products

most susceptible to microbial attack. The microbial growth is slower in synthetic fibres, as compared to natural fibre because they do not retain much water. The presence of microorganisms in textile substrate causes health problems, odours and finally fabric deterioration. Commonly used natural antimicrobial agents are neem, eucalyptus, turmeric, Aloe vera etc. These finishes are mainly used for clothing that comes in close contact with the skin like shoe linings, hospital linings, facial tissues etc.

(iv) Wrinkle or Crease Resistance Finish: The ability of the fabric to resist the formation of crease or wrinkle when slightly squeezed is known as 'crease resistance' of the fabric. The ability of a fabric to recover from a definite degree from creasing is called crease recovery. Finishes to reduce the undue wrinkles on fabric or garments is called as wrinkle resistance finish. These finishes maintain the dimensional stability of cellulose fabrics and its blends. It also improves the sheen of the fabrics.

SUMMARY

Pretreatment is a very important processes to enhance the marketability of all fabrics. For dyeing and printing it is essential to remove the impurities present in grey fabric. Dyeing is the process of imparting colour to fibres, yarns or fabrics using dyes. It can be done at different stages of textile manufacturing process such as fibre, yarn, fabric or finished product stages. Printing is an aesthetic enhancement on fabric. There are various styles of printing namely direct, discharge and resist.The printed fabrics undergo after treatment processes such as drying, steaming and washing to enhance dye fixation and remove the unfixed dyes and chemicals. Every fabric needs to look appealing to the eyes and feel good when touched. This can be achieved through fabric finishing. The main modification done by finishing is improving the look, performance or hand feel. It not only changes the fabric appearance but also provides aesthetic value, improves its softness, adds comfort and durability, provides safety and improves the performance of the fabric.

POINTS TO REMEMBER

- Singeing, Desizing, Scouring, Bleaching are done prior to other finishes, as they improve the property of raw fabric for further processing.
- Dyes are organic compounds that are used to impart colour to fibre / yarn or fabric
- Dyeing can be carried out at different stages of textile manufacturing processes such as fibre, yarn, fabric or finished product
- Textile printing is called as localized dyeing. Different styles of printing are direct, discharge and resist printing.
- Aesthetic finishes are enhancing the fabric appearance and feel of the fabric.
- Functional finishes improve the performance of the fabric.

ACTIVITIES FOR TEACHER

- To arrange for factory visit to dyeing/ finishing units.
- To demonstrate different printing methods.

ACTIVITIES FOR STUDENTS

- Collect and dye a fabric using any one synthetic dye / natural dye
- Print a fabric using any one of the printing method.
- Prepare an assignment regarding various types of finishes

INTERNET RESOURCES

https://youtu.be/spbyJdq0lZw	Methods of printing
https://www.youtube.com/watch?v=ILoZophnHfs	Natural dyeing
https://www.youtube.com/watch?v=X07XXMllnhc	Textiles: Industrial Finishing Processes

GLOSSARY

Singeing	Removal of surface fibres by an intensive flame or by reflected heat
Mercerization	A finishing process to increase lustre of Cotton fibres
Mordants	Compounds that link dye molecule and the fibre by reacting with both of them.
Stock dyeing	Dyeing at the fibre stage
Dope dyeing	Dyeing of man-made fibres by adding the dye to the spinning solution
Piece dyeing	Dyeing at the fabric stage.
Thickeners	Thickeners are substances that improve the viscosity and consistency of the printing paste.
Steaming	It is a process done after printing to enhance dye penetration and fixation
Water proof finishes	A finish which gives the resistance of water to the fabric
Antimicrobial finishes	A finish to prevent the growth of microbes
Exhaustion Agents	Compounds that enhances the absorption of dye molecule by the textile substrate.

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. Which process burns any fibre end projecting from the surface of the fabrics?
   (a) Flame Retardant
   (b) Anti Static
   (c) Singeing
   (d) Mercerizing

2. The removal of sized matter from the fabric is known as _____ process.
   (a) Desizing (b) Mercerizing
   (c) Scouring (d) Bleaching

3. Skein dyeing is done at
   a) Yarn stage b) Fibre stage
   c) Fabric stage d) Garment stage

4. Which of the following dye is used to produce black colour?
   a) Direct dye b) Acid dye
   c) Basic dye d) Sulphur dye
5. Dye that is not easily soluble in water
   a) Basic dye b) Reactive dye
   c) Direct dye d) Acid dye
6. The design is printed on a dyed fabric in _____ Style.
   a) Tie and dye b) Resist
   c) Discharge d) Batik
7. Shifting of design from one surface of the fabric to another surface is possible in _____ printing.
   a) Batik
   b) Screen
   c) Rotary
   d) Transfer
8. A finish which gives resistance to both water and air into the fabric is called as _____.
   a) Water proof finish
   b) Water repellent finish
   c) Wrinkle resistance finish
   d) Crease resistance finish
9. Identify the process that provide a three dimensional or raised effects on the fabric surface.
   a) Calendaring
   b) Raising
   c) Embossing
   d) Flocking

PART – II
Answer in Three (Or) Four Points

1. Define calendaring.
2. What is the need for singeing?
3. What are the advantages of natural dyes?
4. Write a note on direct dyes.
5. Differentiate discharge and resist style of printing.
6. What are the uses of crease resistance finish?
7. Define aesthetic finish.

PART – III
Answer in a Paragraph

1. Briefly explain the bleaching process.
2. Explain any two types of synthetic dyes.
3. State and explain the different styles of printing.
4. Write a note on Embossing.
5. Define water proof finish.

PART – IV
Answer in One Page

1. Classify dyes and Elaborate each class.
2. Describe the different methods of fabric dyeing.
3. Give a detailed note on screen printing and batik printing.

Answers for Objective Questions

1. (C) 2. (a) 3. (a) 4. (d) 5. (a)
6. (c) 7. (d) 8. (a) 9. (c)

CHAPTER
02

DESIGNING OF CLOTHING

PVN65

LEARNING OBJECTIVES

- **To understand the basic concepts of designing and classifying designs**
- **To gain knowledge about the basic elements of design and apply them on specific garments**
- **To arrange and apply various elements of design according to the principles of design**

2.1 Introduction

A design is called as the blue print or model or plan of the final end product. It is also a representation of the final object. Designing is a creative process which combines the physical qualities of a product with aesthetic considerations. It varies according to the designer, stylist and artist.

2.2 Design

Design is the arrangement of elements namely line, shape, form, colour and texture according to the principles of design namely harmony, rhythm, emphasis, balance and proportion for obtaining good designs.

2.3 Classification of Design

The design is classified into two as structural design and decorative design.

Structural Design

The structure of an object is an integral part of a design. As far as the textiles are concerned, the woven pattern itself is the structural design. The garment details such as yokes, collars, pockets, sleeves as well as the seam lines are the structural designs. It is classified into two types as good structural design and bad structural design.

Decorative Design

Decorative design is the surface enrichment on any fabric or a garment. A good decorative design should be moderate and simple, placed at structural

points, suitable for the material and garment style and uniform in distribution of pattern. It is brought through applique, patch work, embroidery, painting or any trimmings or decoration.

Structural design

Decorative Design

Figure 2.1 Design Classification

How does the design on the fabric show an effect in your body shape?

Small designs on the fabric or outfit are more suitable for stout figures as it makes you look lean

2.3.1 Types Of Decorative Design

There are 5 types of decorative design. They are Naturalistic, Conventional, Abstract, Historic and Geometric.

- **Naturalistic Design**

When objects from nature are used as such, it is known as naturalistic design. The designs of flowers, leaves, animals and landscape are reproduced exactly. The inspired designs from nature such as sunrise, trees and forest are applied on textiles and garments in the form of silhouettes, print patterns, textures and colours. It varies depending on factors such as age, sex, body structure, occasions, and purpose.

Figure 2.2 Naturalistic Design

- **Conventional Design**

When an object from nature such as Fruits – Mango, Flowers - Hibiscus and Animals-Tiger, Birds – Peacock are adopted to suit the purpose of the object and be decorative, the motif ceases to be naturalistic.

Figure 2.3 Conventional Design

- **Abstract Design**

The motif for abstract design such as Wavy designs, ripples, designs with lines do not have nature as a source but is the combination of lines producing irregular form. These designs are not easily recognized.

Figure 2.4 Abstract Design

- **Historic Design**

It refers to the designs like temple and Taj Mahal depicting famous monuments or building of historic importance.

Figure 2.5 Historic Design

- **Geometric Design**

It is derived from geometric patterns such as circles, rectangle, triangle, parallel lines and so on.

Figure 2.6 Geometric Design

2.4 Elements of Design

The elements are the fundamentals of a design. It finds its application in various fields of designing such as interior decoration, fashion designing, architecture, vegetable carving and visual

arts. The basic elements of design are line, shape, form, colour and texture.

2.4.1 Line

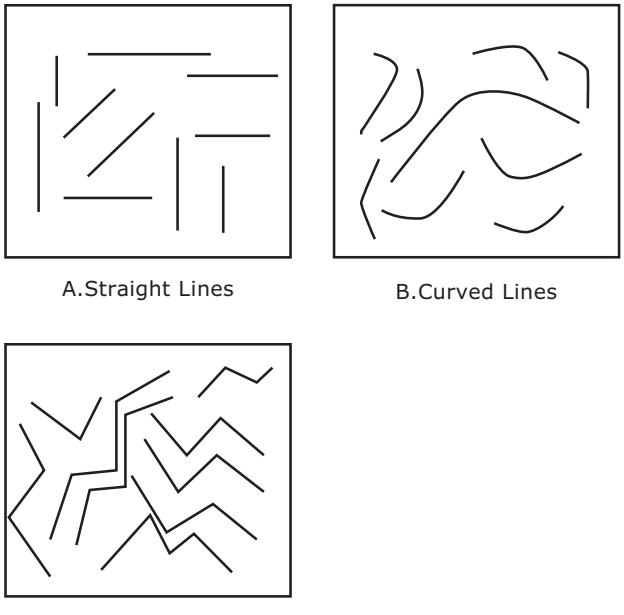
Line is defined as an indication that gives a distance between two points. Lines are found everywhere as these are used in forming words, numbers and symbols. Line exists in nature as a structural feature. **Example :** lines on zebra, branch of a tree, mountain peaks, waves and thunder.

- **Types of Lines**

The lines may be classified based on the curves introduced or continuity.

Based on Curves

- **Straight Lines** - These lines are very rigid, structural and formal in nature. They depict masculinity in designs. These are more suitable for male garments. Example: coconut trees.
- **Curved Lines** -These are soft, pleasing to eyes and depict femininity in designs. Curved lines are informal, relaxed in nature and are more suitable for female garments. Example: Waves.
- **Zigzag Lines** - A zigzag line is an angular shape characterized by sharp turns in alternating directions. It is said to be a tracing a path between two parallel lines. Example: Staircase.



A.Straight Lines B.Curved Lines

C. Zig Zag Lines

Figure 2.7 Types of Lines

DO YOU KNOW?

What types of designs are suitable for tall figures?

As the horizontal lines on garments bring an optimal illusion that the figure is shorter, a tall person can go for these lines.

Based on Continuity

Lines are divided into two based on its continuity as continuous and discontinuous lines. Continuous lines are drawn continuously and discontinuous lines are broken and drawn without continuity.

Line Type	Continuous Lines	Discontinuous Lines
Straight		
Curved		
Zig Zag		

Figure 2.8 Lines - Based on Continuity

Based on the Measure

They are thick, thin, short, long, tapering and uneven. The lines are drawn with various depths as required to complete a figure. Few examples for the measure variations are given below on a garment.

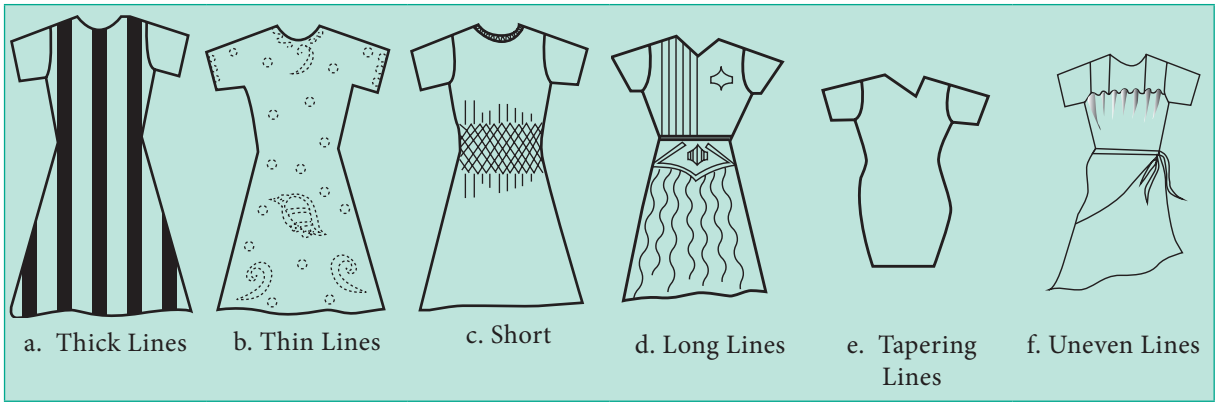


Figure 2.9 Based on the Measure

Based on the Character

Sharp, blurry, fuzzy, choppy, graceful and smooth. Sharp lines are pointed, blurry lines are blurred and unclear, fuzzy lines are hairy and blurry and graceful lines are elegant and stylish.

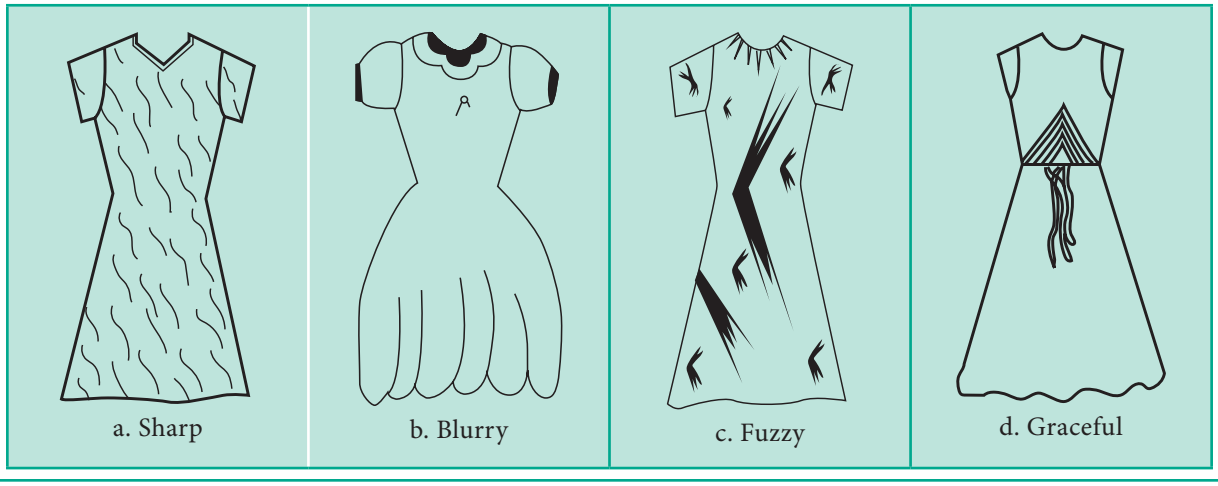


Figure 2.10 Based on the Character

Based on Direction

The lines may be either in the silhouette or in the decoration of a garment. The lines are applied on the garments. Based on direction it is divided into Horizontal Lines, Vertical Lines, Diagonal Lines, Parallel Lines, Perpendicular Lines, Oblique Lines, Radial Lines and Jagged lines.

Figure 2.11 Lines Based on Direction

2.4.2 Shape and Form

Shape

A specific configuration of the line or plane in 2-dimension is defined as shape, that separates from the background space. Shapes of clothing determine the outer shape of a person, as shape describes the outer dimensions of an object. The shapes are introduced in garment through features such as bodice, skirt, sleeve, collar and yoke. When lines are joined to enclose space, they result in an outline joined to enclose a contour or shape.

Geometric Shapes

The 3 distinct types of geometric shapes are

- **Rectilinear** – square or rectangle
- **Angular** – triangle or pyramid
- **Curvilinear** – circle, sphere cone and cylinder.

Geometric shapes are structured and often symmetrical. Rectangle, trapezoids and parallelograms are modified squares. An oval shape is an elongated circle and pentagons, octagons and hexagons are created with a combination of rectangles and triangles.

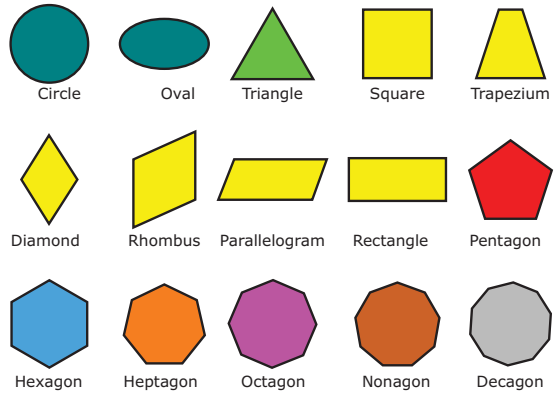


Figure 2.12 Geometric Shapes

Natural Shapes

Natural shapes are shapes that are found in nature, and some shapes are created by man also. Some examples of natural shapes are leaves and puddles.

Abstract Shapes

Abstract shapes are those which are identifiable and are not real in the same way that natural shapes are, Example; A stick – figure drawing of an animal, alphabet graphs, icons and symbols can express an abstract shape.

Form

Form is three dimensional. Examples are sphere, cube and cone.

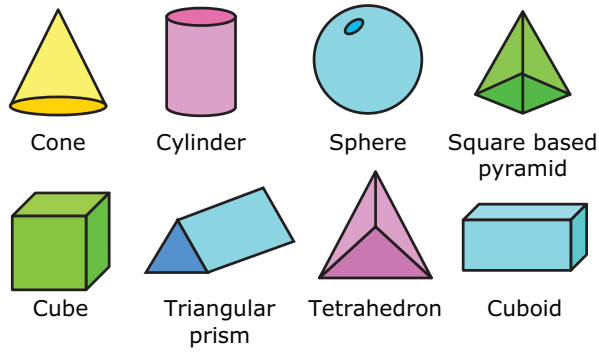


Figure 2.13 Form

2.4.3 Colour

Colour is produced when light strikes on an object and reflects back in your eyes. It stirs enthusiasm. Colours can be warm or cool. There are three properties of colour. They are:

Hue

Hue is the name of a colour. Examples – red, yellow and blue. Colours that on the red side are termed as warm hues. Warm hues are red, yellow and orange. Red and Orange are the warmest of the colours. Warm colours are cheerful, exciting if in large proportions. Colours that the near the blues are termed as cool colours. Cool hues are found in water and sky which are green, blue and violet. Blue and blue violet are the coldest hues. Cool colours are restful.

Some of the common colour theories were devised by Munsell, Ostwal, Rood and Prang. And the widely used theories are Munsell colour systems and the Prang colour systems.

DO YOU KNOW?

How does the selection of the colour alter the appearance of the wearer?

The colour more suitable for thin figures– Lighter tones than darker tones. So a thin figure can select lighter tones and stout figure can choose a darker tone.

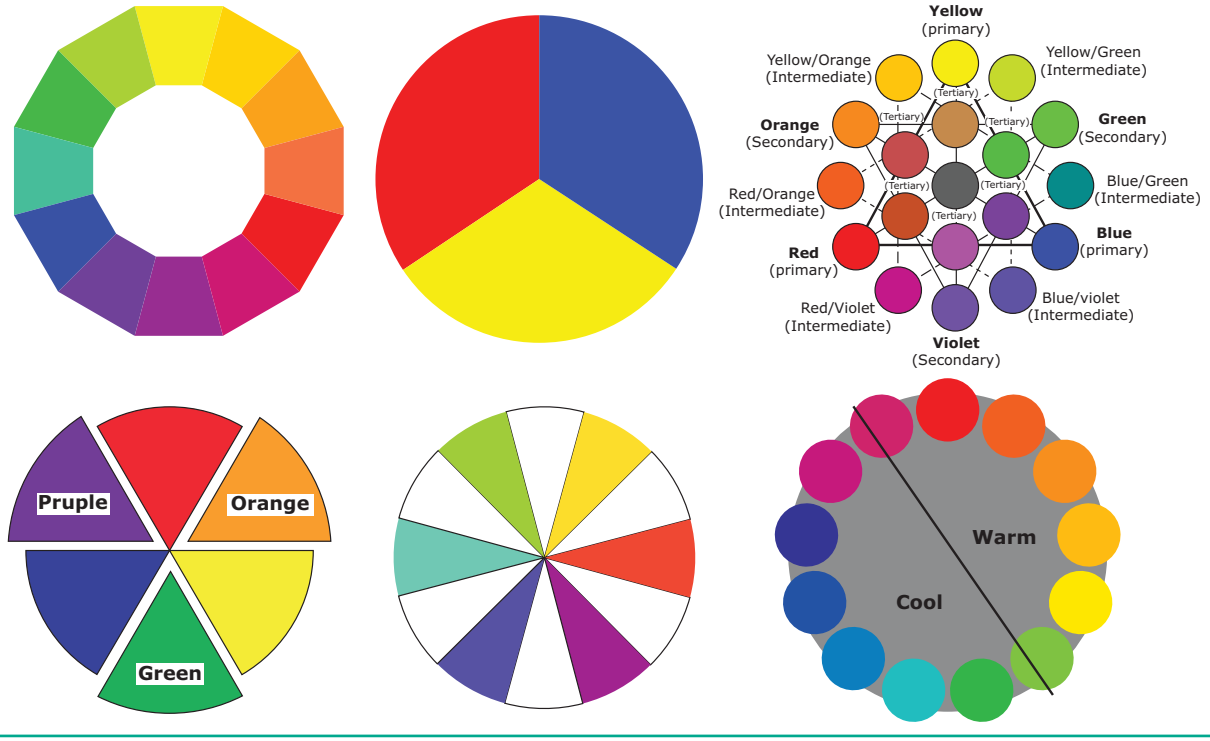


Figure 2.14 Colours and its Types

Prang Colour System

This was developed by David Breweser based on three primary colours.

Primary Colours

The colours such as red (R) yellow (Y) and blue (B) are the fundamental colours as they cannot be obtained by mixing any other colours. All other colours are obtained by mixing these three colours.

Secondary / Binary Colours

When two primary colours are mixed in equal amounts a different hue is obtained. This new hue is called binary/secondary colour. They are purple (P) (R+B), Green (G) (Y+B) and Orange (O) (R+Y)

Table 2.1 Secondary / Binary Colours

Primary colours	Secondary Colours
Yellow + Red	Orange
Red + Blue	Purple/Violet
Blue + Yellow	Green

Intermediate Colours

Intermediate colours are made by mixing a primary with one adjoining secondary colour. These are called standard colours.

Table 2.2 Intermediate Colours

Primary colours	Secondary Colours	Intermediate colours
Yellow +	Green	Yellow Green
Red +	Purple	Red Purple
Green +	Blue	Green Blue
Red +	Orange	Red Orange
Blue +	Purple	Blue Purple
Yellow +	Orange	Yellow Orange

Tertiary Colours

It is a combination of two binary colours. The resulting colour in a tertiary colour.

Table 2.3 Tertiary Colours

Secondary colours	Tertiary colour
Orange + Green	Tertiary yellow (TY)
Purple + Orange	Tertiary red (TR)
Green + Purple	Tertiary blue (TB)

Quaternary Colour

It is obtained by mixing two tertiary colours.

Table 2.4 Quaternary colour

Tertiary colours	
Tertiary yellow + Tertiary red	Quaternary orange (QO)
Tertiary red + Tertiary blue	Quaternary Purple (QP)
Tertiary blue + Tertiary yellow	Quaternary Green (QG)

Value

Value gives the lightness or darkness of a colour. To change the value of colour, white or black must be added. A value that is lighter than the normal colour is called a tint and the one that is darker than the normal in called a shade. Values are changed by adding white or water to lighten them and by adding more pigment or black to darken them.

Example: Tint: Red + White = Pink

Shade: Red + Black = Dark Red

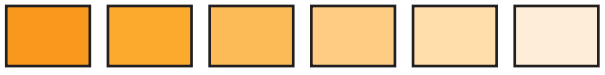


Figure 2.15 Tints

Figure 2.16 Shades

Intensity or Chroma

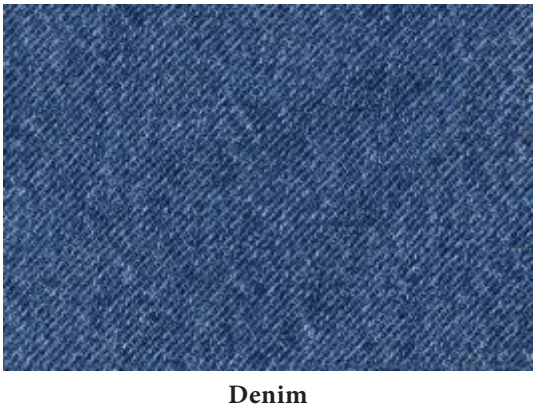
It shows purity and strength of colour. The brightness or dullness of a colour denotes the strength and weakness of a colour. Example – bright red or dull red. Intensity or chroma describe the degree of saturation of a colour, chroma and intensity are interchangeable. High chroma are pure, strong, brilliant saturated colours while low chroma colours are muted, weak grayed and dull. Bright, strong, high– chroma colours are conspicuous and make the body of the wearer appear larger.

Figure 2.17 Intensity

2.4.4 Texture

It is tactile which refers to the surface quality and is assessed through feel of a fabric. The fabric is said to be smooth, rough, soft or hard to touch. The denim fabric gives a rough texture where as a satin gives a soft and smooth texture. The rough texture absorbs more light and smooth surface reflects light.

Satin



Denim

Figure 2.18 Texture

2.5 Principles of Design in Clothing

The principles of design refer to the organization of a work of art. These assist a designer which textile or garment to create and enhance in a very pleasing, attractive and effective manner. The principles of design are Harmony, Balance, Emphasis, Proportion and Rhythm

2.5.1 Harmony

Harmony means unity. It is very much essential and fundamental while creating a design. It results from a combination of related elements in art. Using related and repeated elements of art this is obtained. Harmony is an art principle that expresses unity through selected and arranged consistent objects.

Harmony of Line

When a set of lines are drawn within a corner following the lines of the corner, **repetition** occurs. When a horizontal and vertical line comes together in a right angle or a corner, these lines are in opposition to each other and form **contrast**. Any line that cuts across a corner from one opposition line to another is a **transitional** line, but when a straight line drawn across a corner is so sudden and sharp that it cuts off corner harshly is called **contradiction**

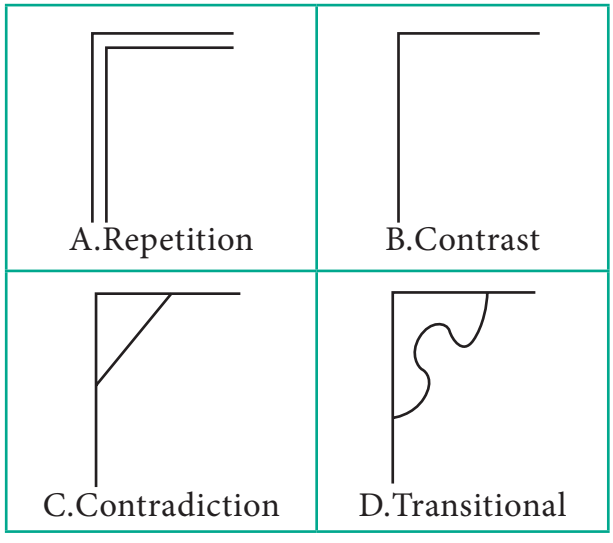


Figure 2.19 Harmony of Line

Harmony of Shape

A combination of lines results in shapes. Lines which join each other have a graceful, softening effect and have the power to bring together sharp shapes as harmonious ones.

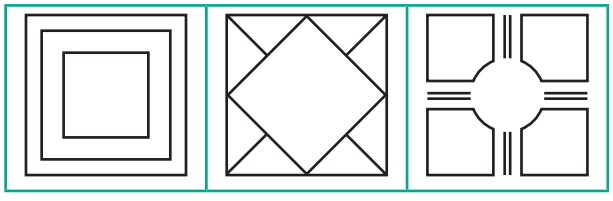


Figure 2.20 Harmony of Shape

Harmony of Texture

Textural surface ranges from smooth to rough. Harmony in texture is brought in a garment by combining satin with lace or netted materials.

Harmony of Ideas

It is not enough that sizes, shapes, colours and textures should have something in common, but there must be harmony in the ideas presented together. For example, an apron and hood may have motifs of a cup and saucer.

Harmony in Colour

Colour schemes are like musical chords, structuring colour groups according to certain visual relationships among their attributes of hue, value and intensity. The guidelines for creating colour harmonies are warm colours should be combined with warm colour and cool colour with cool ones.

Colour harmonies are divided are given in the figure.

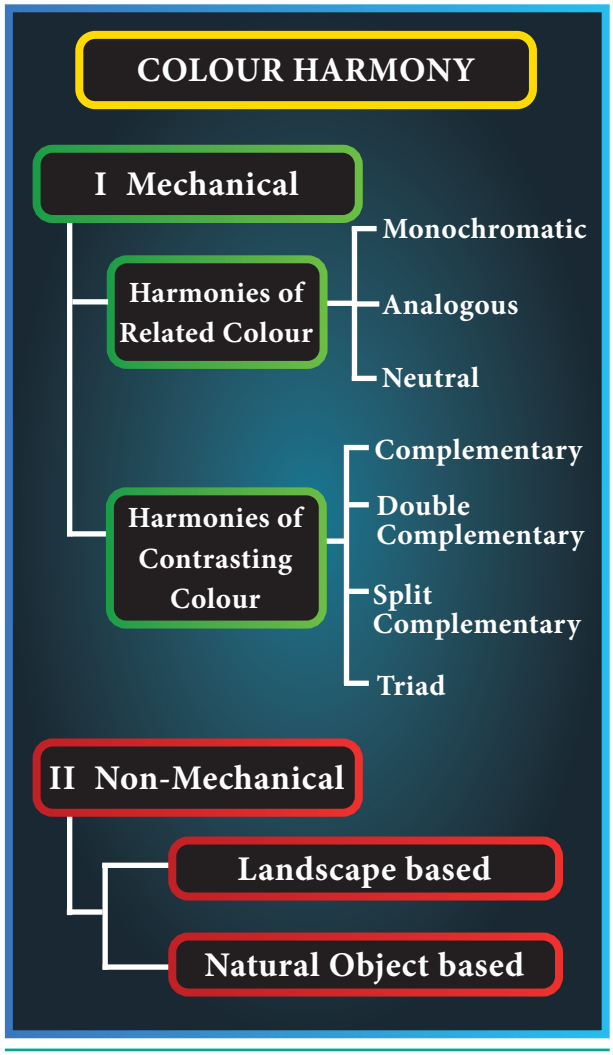


Figure 2.21 Divisions of Colour Harmonies

Colour harmonies can be created in two ways, namely, mechanical and nonmechanical. The colour harmonies under the first category are further divided as related and contrasting colour harmonies. The related colour harmonies include mono-chromatic, analogous and neutral, and these types of colour harmonies give a lot of freedom to its creator. Non-mechanical are nature-based and ready-made object based. Landscape and other natural object based colour harmonies are included in this category.

Under Mono-chromatic scheme only one hue is used with different values and intensities. Contrasting colour schemes are based on opposing hues and tend to be stimulating and balanced because they include both warm and cool hues. They are grouped as Complementary, Double Complementary and Triad. Two adjacent colours and their complements when used together form double complementary harmonies. Four in a double complementary is called a tetrad. In Split Complementary Harmony colour scheme, one colour is combined with the two colours on each side of its complement. An equilateral triangle placed on the Prang colour wheel will point to three equi-distant colours that form the triad.

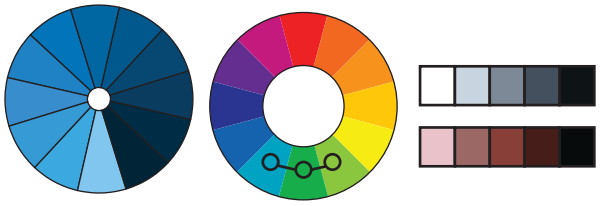


Figure 2.22 Related Colour Harmony

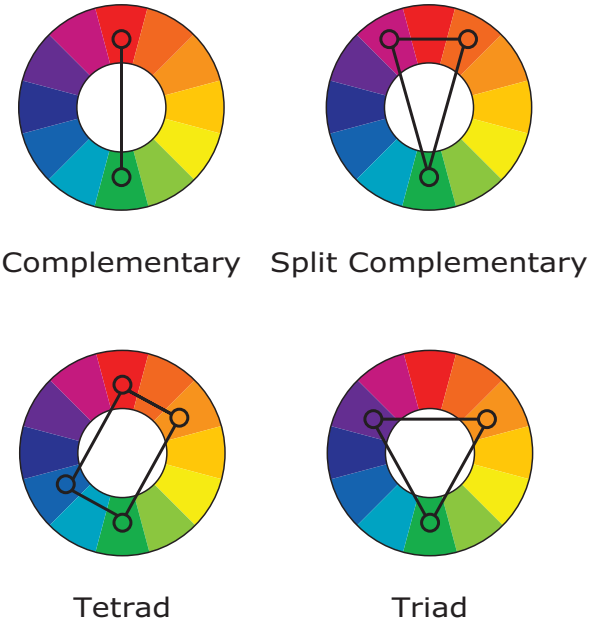


Figure 2.23 Contrast Colour Harmony

2.5.2 Proportion

The word "proportion" means one part in relation to another. The principle of proportion is sometimes called the **"Law of Relationship".** It deals with relationship in size, shape, colour, texture and pattern. Greeks, after centuries of striving for beauty, arrived at a point where nearly everything they made exhibited good spacing. The oblong which they used as a basis of their space divisions is called the "**Golden Oblong**" and is a recognized standard for space relationships. This Greek oblong measured approximately two units on the short side and three on the long. While the ratio of about 2:3 or 3:5 is the relationships used by the Greeks for their flat surfaces, their standard for solids is a ratio of about 5:7:11.

Division of Space

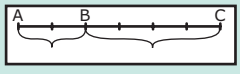
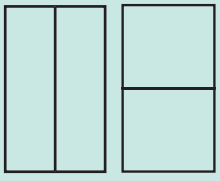
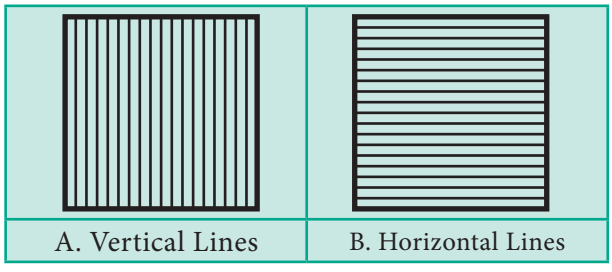
	**Division of Space**
	Space and Lines A – Lines or spaces between them are not repeated. B – All lines and spaces are alike. C- Spaces differ from lines. D – Spaces are different from the lines and from each other.
	The Greek oblong is a standard of good proportion. The sides are in the relation of two parts to three. It is called Golden Mean of Golden Rectangle.
	These two squares of same size show increased height when eye travels up and down. When eye travels side to side the square tends to show a decrease in height.

Figure 2.24 Division of Space

One of the most important problems faced by the designer is that of organizing the total areas into five space relations.

Creating Optical Illusions

A change in appearance of an area by means of proportion might involve the lengthening or broadening effects of vertical and horizontal lines. Lines running in a vertical direction tend to slenderize and make an object appear taller, whereas lines running in a horizontal direction would make an object appear shorter and broader.



A. Vertical Lines	B. Horizontal Lines

Figure 2.25 Optical illusions

Scale

The third aspect of proportions is called scale. It is the capacity to select designs and arrange them so that they look well together. Proportion pertains to the relationship between the parts of a composition and scale refers specially to the size of something, relative to some known standard or recognized constant. Scale, in this sense means, that the size of all the elements making up the structure have a consistent, pleasing relationship to the structure and to each other, and that the size of the structure is in good proportion to the different objects combined with it.

2.5.3 Rhythm

Rhythm is a very important art principle and is defined as a form of movement. According to Beitler and Lockhart,'a sense

of order, a quality of gracefulness, a feeling of easy movement' – all lead to a principle of design; which is called as "rhythm".

Rhythm through Repetition

It is a type of design which is expressed by repetition of lines, colours and shapes. The eye is taken from one unit to the next.

Figure 2.26 Rhythm through Repetition

Rhythm through Progression of Sizes and Gradation

Rhythm is brought through a progression of sizes. Progressing sizes create a rapid movement of the eye.

Figure 2.27 Rhythm through Progression

Rhythm through Continuous Line Movement

Rhythm is the arrangement of the spiral in the sequence of its line movement and in the rhythmical gradations of its spaces.

Figure 2.28 Rhythm through Continuous Line Movement

Rhythm through Radiation

Radiation is a method of obtaining organized movement. It is a type of movement that grows out of a central point or axis.

Figure 2.29 Rhythm through Radiation.

Rhythm through Alternation

It is brought through alternation of shape, line, form or texture. The eye is taken in a direction through alternation of the motifs in a design. Rhythm in colour implies an arrangement of colours along which the eye can move easily from one colour to another.

Figure 2.30 Rhythm through Alternation

2.5.4 Emphasis

The dictionary meaning of the word "Emphasis" is to stress, to give importance or significance. Emphasis is the art principle by which the eye is carried first to the most important thing in any arrangement and from that point to every other detail in order of its importance. While doing emphasis in a dress the questions of what, how, where and how much to emphasize are considered. While emphasizing, the backgrounds should be less conspicuous than the objects to be seen against them.The ways by which emphasis is created are by grouping or placing of objects, using contrast colour, using decoration, having sufficient plain background space around objects and by using unusual lines, shapes or sizes. Emphasizing should be done for the whole garment and it should not spoil the effects through its domination. Emphasis should be done at the required points in the garment. Emphasis in colour is achieved by contrast of hue, light and dark and brightness, the effect of every other colour used.

Emphasis through Lines and Shapes | Emphasis through Colour

Figure 2.31 Emphasis

2.5.5 Balance

Balance in design is so natural that one is not even aware of it when it is present, but when it is violated there is a sense of discomfort or annoyance. It is divided into formal and informal balance. In formal balance the objects on either side are alike and equally forceful. They are at equidistant from the centre an attract the same amount of attention of the viewer. Informal balance is also known as occult or asymmetric balance. It can be achieved by selecting the varied amounts of bright and dull colours on either side of the centre. Here the attraction is towards one side.

Formal Balance

Informal Balance

Figure 2.32 Balance

2.6 SUMMARY

The elements of design are arranged as per the principles of design to obtain a perfect and pleasing design output in garments. Understanding these basic aspects help a designer or decorator to beautify the garment or furnishing items. The psychology and optical illusions may also be brought well for the wearer. Colour is beautiful if it is used in the right place and in right amount. It may be a floor covering upholstery material, wall painting or any decorative art piece. By understanding the concepts of elements and principles of design the best clothing design may be done.

POINTS TO REMEMBER

- Design is the arrangement of elements such as line, shape, colour and texture according to the principles of design namely harmony, rhythm, emphasis, balance and proportion.
- Value gives the lightness or darkness of a colour.
- Harmony means unity.

ACTIVITIES FOR TEACHER

- Show the fashion pictures depicting the elements and principles of designs.
- Discuss about inspirations taken up by various Indian Designers.

ACTIVITIES FOR STUDENTS

- Can read and collect some data about successful designers and prepare an assignment.
- Can collect the pictures pertinent to various elements and principles of designs

INTERNET RESOURCES

https://www.youtube.com/watch?v=QLva6QMb_3o	Introduction to Fashion and Textile Design - Oxford Royale Academy
https://www.youtube.com/watch?v=FPc4Xr93z5o	How to design your own fabric. Step-by-step fabric design tutorial with final fabric example.

GLOSSARY

Naturalistic Design	When objects from nature are used as such, it is known as naturalistic design. The designs can be selected and reproduced exactly with photographic correction
Abstract Design	Motif which does not have the nature as the source but the combination of lines producing irregular
Geometric Design	It is not derived from nature. It is derived from circles, rectangle, triangle, parallel lines and so on.
Zigzag lines	A zigzag is an angular shape characterized by sharp turns in alternating directions.
Primary colours	These are the fundamental colours

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. The design feature that is used more than once is
   a. Rhythm
   b. Rhythm through repetition
   c. Design
   d. Harmony
2. Pink is a tint of
   a. Blue b. Green
   c. Red d. Yellow
3. Feeling of easy movement
   a. Rhythm b. Harmony
   c. Emphasis d. Balance
4. A darkened colour made by adding black
   a. Warm
   b. Cool
   c. Shade
   d. Tint
5. Split complementary colour scheme uses
   a. 3 colour
   b. 4 colour
   c. 2 colour
   d. 1 colour

PART – II

Answer in Three (Or) Four Points

1. Define Design.
2. Differentiate structural design and decorative design.
3. What is a harmony?
4. Describe emphasis
5. What is Colour harmony?
6. Give the types of balance.
7. What are primary colours?
8. List the types of lines

PART – III

Answer in a Paragraph

1. What are the types of design? Explain.
2. Give the types of lines and their characteristics.
3. Write a detail note on form used in garments.
4. Give a note on rhythm on apparels.
5. Elaborate on related colour harmony.

PART – IV

Answer in One Page

1. List and explain various elements of design.
2. Enumerate on principles of design for garment designing.
3. Give a detail note on emphasis with suitable diagrams.
4. Brief on contrasting different types of shapes used in garment designing.

Answers for Objective Questions

1. (b) 2. (c) 3. (a) 4. (c) 5. (a)

CHAPTER
03

FASHION PORTFOLIO

LEARNING OBJECTIVES

- To understand the method of developing fashion portfolio
- To study the different boards used for presenting design development in a portfolio
- To develop a final garment based on a specific theme

3.1 Introduction

Creative and well developed fashion design portfolio is an essential tool or guide to a fashion designer. It is very important for career and getting jobs. A fashion designer use fashion portfolio to share his or her original ideas. A portfolio is an important visual self-promotion for designers. All of these important component will influence and inspire the designer's final collection, which will be illustrated on a fashion figure in the portfolio. Nearly all fashion design students will be familiar with the term fashion portfolio. The designer can customize the portfolio based on their needs. On portfolios are found in varied sizes and formats.

3.2 Fashion Research and Inspiration

Fashion inspiration is an outcome of creative design search, which in turn is an essential part of the design process. It is the way of collecting ideas prior to design. It is an essential tool to create the design process. It will provide information, inspiration and creative direction to introduce new styles.

There are two forms of research adopted for every fashion collection. One is on the latest trends like materials, trims and other elements needed to make the collection. The other research is on the understanding of the concept deeper and the client profile. The fashion portfolio is the preparation

of the boards after thorough research on the source of the inspiration made by the fashion designers.

3.3 Portfolio

A fashion design portfolio is a collection of samples put together by fashion designers to show their skills. A fashion designer is a type of artist who designs clothing, shoes, or accessories for manufacturers to produce and sell. Every aspiring fashion designer will have to make a design portfolio at some point. A typical fashion design portfolio should include fashion illustrations, an inspiration, mood board with fabric swatches, flat sketches, "floats" and computer aided designing (CAD).

The major purposes of a portfolio are as stated below

- A portfolio gives a very quick and accurate idea of a designer.
- It shows the strengths and interests of a designer.
- It explains the technical skills of a designer.
- It exhibits the creativity and fashion sense of a designer
- It highlights the work experience, skills and ideas of a designer
- It demonstrates the collections of the designer to clients

3.4 Layout of a Portfolio

Fashion portfolio layout comprises of

Inspiration: Mood boards shows the origin of ideas. It is created using collage of images, drawings, cut-outs or swatches. Trims and product samples are used to prepare collage work.

Design: Fashion flats shows the understanding of construction. It is usually drawn in black and white. Coloured sketching is optional. It can be done manually or digitally.

Presentation: Fashion illustrations enhance visual appeal of the garment. This includes different views of the garment and can be drawn manually or digitally.

Production: Photos of finished garments to show how designs translated from inspiration and sketching. Professional looking photos of the entire garment is included.

3.5 Steps in Developing a Portfolio

A fashion portfolio should feature the best drawings, sketches, photos of finished work, collages of distinct sample materials, written notes organising the designs and presentation sheets. Portfolio development includes the following processes:

- Find source of inspiration
- Theme selection
- Creating presentation boards

3.5.1 Find source of Inspiration

- Everything in fashion creation begins with the inspiration
- Fashion collection inspiration is an ongoing process that designers need to train their mind to collect ideas.
- Fashion inspiration is the process of sourcing ideas and collection of ideas prior to design the outcome
- Inspiration comes from diverse sources, through constant observational research by the designer. Some of the most common sources of inspiration

are magazines, street fashion, exhibitions, research about traditional clothing, movies, consumer life, style, environment, art, music and fabrics.

- The designers get inspired, from one or more than one source of inspiration. It is the ideas, thoughts and interest of the designer that brings out the final garment.
- Only through this process, the designer will be able to choose a theme for preparing their collection, which would aid in bringing the final product in an effective manner.

3.5.2 Theme Selection

Based on the inspiration, a theme is selected. It is defined as the recurrent, underlying objective that ensures consistency in the design of wide range of products that belong to a single family.

A designer selects a theme that represents their collection. Some examples for theme selection are Indian tradition, summer, flowers, black and white, animal prints, ocean, nature, go green and so on.

3.5.3 Creating Presentation Boards

Presentation boards are excellent vehicles for displaying theme and designing concepts in a portfolio. The fashion presentation is the presentation of a variety of fashion sketches, colour palettes, fabric patterns, flats and illustrations. The presentation boards includes:

- Inspiration board,
- Mood board,
- Client board or Customer board,
- Colour board,
- Fabrics and Trims board,
- Flat sketches,
- Accessories board,
- Final presentation board,
- Prototyping and Final garments.

Inspiration Board: Inspiration boards are not just collections of images and things. They are curated with a specific purpose in mind and they come in every imaginable shape, size, and medium. Inspiration boards have more specific elements that will show up in the resulting product or event.

Figure 3.1 Inspiration Board
Theme: Butterfly

Figure 3.2 Inspiration Board
Theme: Lotus

The purpose of inspiration boards:

- Depiction the source of inspirations,
- Creation of the mood board for the collection of garments
- Explanation of theme chosen for the collection.
- This board includes photographs, words, objects, magazine cut-outs and drawings.

Mood Board: A mood board is a great way to set the visual direction. It is an effective way to communicate the ideas of a designer. It is designed on the basis of an idea or theme. The designer prepares his or her collection based on the elements of the mood board. Mood boards are prepared by designer to establish a theme for their line of fashions, defining elements of colour, colour harmony, texture, and pattern.

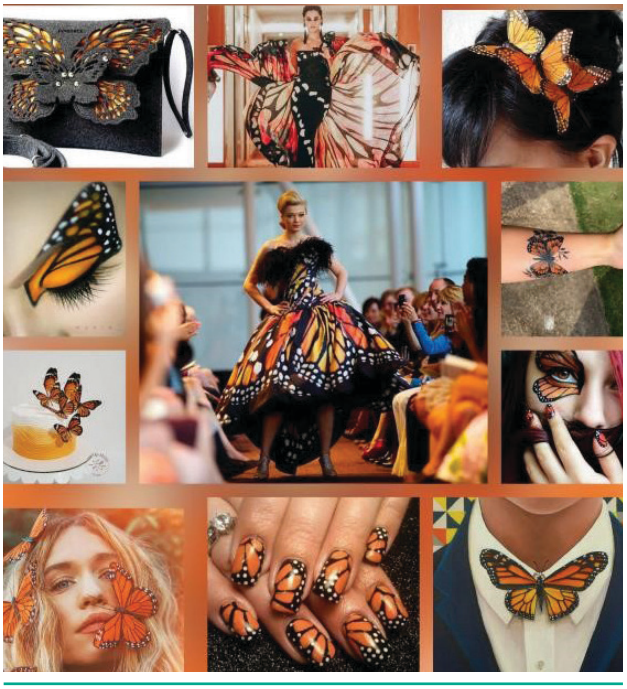


Figure 3.3 Mood Board
Theme: Butterfly

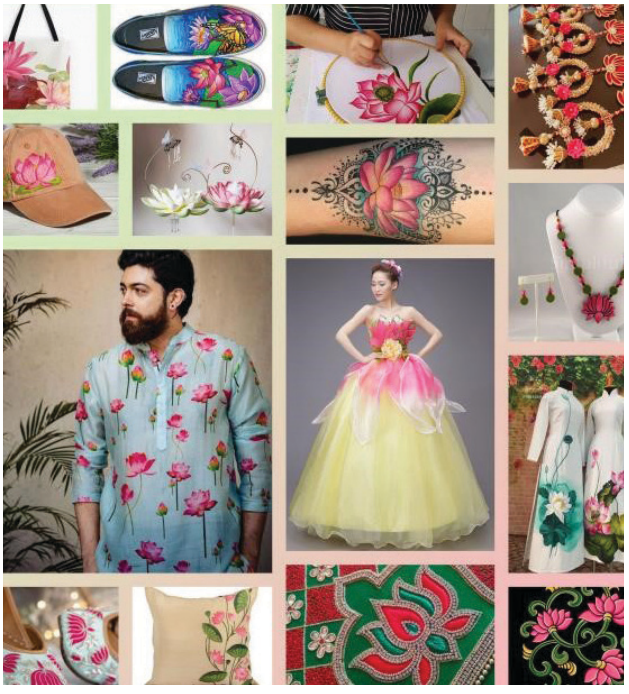


Figure 3.4 Mood Board
Theme: Lotus

- The mood board should include images that inspire the designer, colours, textures, fabric swatches, writings and accessories depicting the theme of inspiration.

The purpose of a mood board:

- Creation of idea,
- Collections of pictures related to the inspired design/ideas

Client Board or Customer Board: Client board gives the details of the client based on their demographics, backgrounds, hobbies, interests, geographical aspects and occasion for which the garment has to be designed.

The purpose of a client board:

- Get a better understanding of the client,
- Know the clients, likes and dislikes
- Reframe the ideas and designs of the collection to suit the client's prerequisites.

Figure 3.5 Client Board/ Customer Board

Colour Board: Colour board is a visual arrangement of colours in the form of swatches, write up or pantone shades. Pantone contains standard colours that are numbered. Colour board is used as a visual clue for viewers to look for the connections between the pictures.

Figure 3.6 Colour Board
Theme: Butterfly

Figure 3.7 Colour Board
Theme: Lotus

The purpose of colour board:

- Expression of appropriate colour
- Selection for application and improved communication to the client about the brand or product.
- Clarity about the shades and tints being used in the collection.
- Plan for the aspects such as occasion, age, sex and based on the inspired theme selected.

Fabric and Trims Board: The fabric board contains fabric swatches along with the trims that are to be used in the collection. Fabrics are placed together to create a design. Trims include braid, ribbon, buttons, and any decorative elements to be organized and grouped with the swatches.

The purpose of fabric and trims board is

- Create a visual representation and coordinate the fabrics and trims used in the collection based on the theme.
- Give opportunity for the client to visualize and feel the fabrics being used and portrays clarity to the design development process.

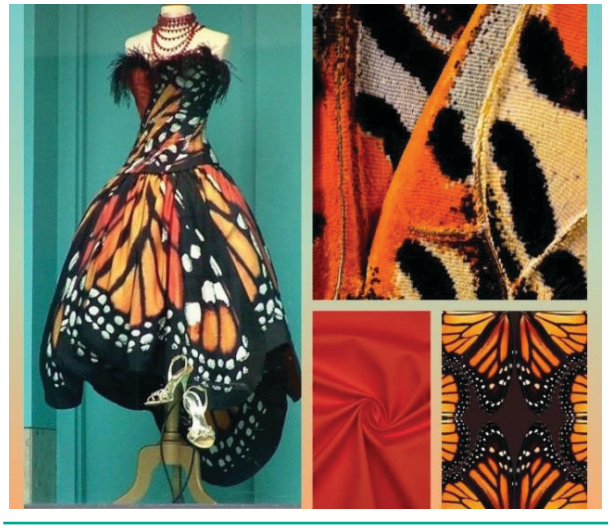


Figure 3.8 Fabric and Trims Board
Theme: Butterfly

Figure 3.9 Fabric and Trims Board
Theme: Lotus

Flat Sketches: Fashion flat sketches, also called Fashion Flats or flat drawings in fashion industry. It is a black and white drawing that shows a garment as laid flat to display. A flat sketch is a two-dimensional technical drawing which illustrates a garment with basic solid lines. It helps to do the final presentation board.

The purpose of a Flat Sketches:

- Shows the outline of the garment
- Features of the final garments are included.

Figure 3.10 Flat Sketches
Theme: Butterfly

Figure 3.11 Flat Sketches
Theme: Lotus

Accessories Board: Based on the the theme selection, suitable accessories for the designed garment are highlighted in this board. Often it is used to complete an outfit and chosen to specifically complement the wearers look. There are two types of accessories, namely worn accessories and carried accessories. This literally means accessories that we wear and accessories that

Figure 3.12 Accessories Board
Theme: Butterfly

Figure 3.13 Accessories Board
Theme: Lotus

we carry. Examples - we wear shoes, boots, hats, belts, scarves, shawls, stockings, tights, ties, gloves, jewellery and watch, where as we can carry bags, sunglasses, briefcase, pens, wallet and an umbrella. Irrespective of the type of accessory, they are brought effectively on the board through sketching.

The purpose of a Accessories Board:

- Understand the suitability of the accessories that can be worn or carried with garment

Illustration Board: The final presentation board called as illustration. This is a complete board and comprises fashion drawings of human forms (men, women or kids) with garments rendered on them. Accessories used with the garment is illustrated in these drawings. Fashion illustration forms the initial face of every design. It can be defined as the basic transmission of an idea into a creative design through diagrams.

The purpose of illustration board:

- Helps a designer to put down his/her ideas practically and visualize the ideas and concepts surrounding the design.
- Great attention and importance is given to every small detail and it is kept in focused.
- They form the foundation for entire style planning for a particular garment with suitable accessories.

Figure 3.14 Illustration Board
Theme: Butterfly

Figure 3.15 Illustration Board
Theme: Lotus

Prototyping: This includes pattern development and garment construction. Patterns for the collections is developed and a sample product is made as per design details.

The purpose of Prototyping:

- Develop a model to visualize the final garment style

Figure 3.16 Prototyping

Photo-Shoot of Final Garment: The garments, once completed will be worn by models for the final photoshoot. Photographs are taken in a suitable location with proper lightings. This is the best way of presenting the garments and the collection. The photos should be included in the portfolio.

Figure 3.17 Photo-Shoot
Theme: Lotus

The purpose of Photo-Shoot of Final Garment:

- Promotion of the garment style created.

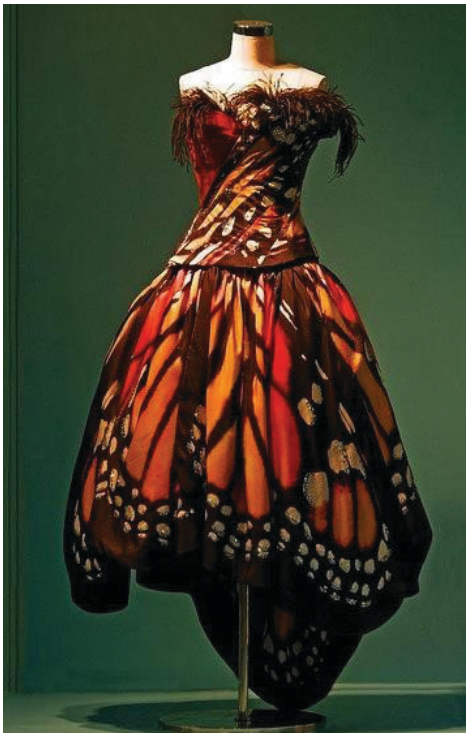


Figure 3.18 Photo-Shoot
Theme: Butterfly

3.6 Summary

Portfolio is the step of understanding the skill to do great things in the field of designing. It helps to widen the skills and strengthen the weakness. It assists with career development by providing real work experience. Portfolio provides the opportunities to explore designer's interest and develop professional skills. The portfolio design is a collection of samples, illustrations and fabric swatches. It can also be used while applying for job in apparel industry. It is an expression for a fashion designer from paper to reality about the presentation of theme based garment.

POINTS TO REMEMBER

- A Fashion portfolio is a collection of samples to show designing skills.
- Fashion design portfolio should include fashion illustration board, inspiration board, and mood board with fabric swatches, flat sketches and CAD.
- Mood board tells the designers story and designed on the basis of idea or theme.
- Flat sketch is a 2-Dimensional technical drawing which illustrate a garment with basic solid line.
- Prototyping includes pattern development and garment construction.

TEACHERS ACTIVITIES

- Discuss about different types of theme selection and suggest various themes to the students.

STUDENTS ACTIVITIES

- Choose any one of your friends as your client. Prepare a Client board by collecting information required for preparing a client board.

INTERNET RESOURCES

https://youtu.be/fJ-fFl81rlM	How to make Fashion Portfolio

GLOSSARY

Inspiration	Feeling of interest from someone or something which gives new and creative ideas.
Mood board	An arrangement of images, text and materials.
Pantone	Industry standard matching system used for matching exact ink colour.
Swatches	A small pieces of fabric intended to demonstrate the look of large pieces
Sketch	A simple, quick, rough drawing done without lot of details.

QUESTION AND ANSWERS

PART – I
Objective Questions

1. Portfolio is a collection of samples put together to show ----------.
   a) Arts b) Skills
   c) Knowledge d) Strengths
2. Finding inspiration is the collection of ideas ------- to design.
   a) Later b) After
   c) Following d) Prior
3. Who selects a theme that represents his or her collection?
   a) Designer
   b) Photographer
   c) Pattern master
   d) Merchandiser

4. A mood board is a great way to set the ---------- direction.
   a) Invisible b) Dull
   c) Visual d) Prominent
5. A flat sketch is a ---------- technical drawing which illustrate garment with basic solid lines.
   a) 2- Dimensional
   b) 3- Dimensional
   c) Creative
   d) Visual

PART II
Answer in Three or Four points

1. What is portfolio?
2. Write the various sources for finding inspiration.
3. List out the types of presentation boards.
4. Define Client board.
5. Indicate the uses of accessories board.

PART III
Answer in a paragraph

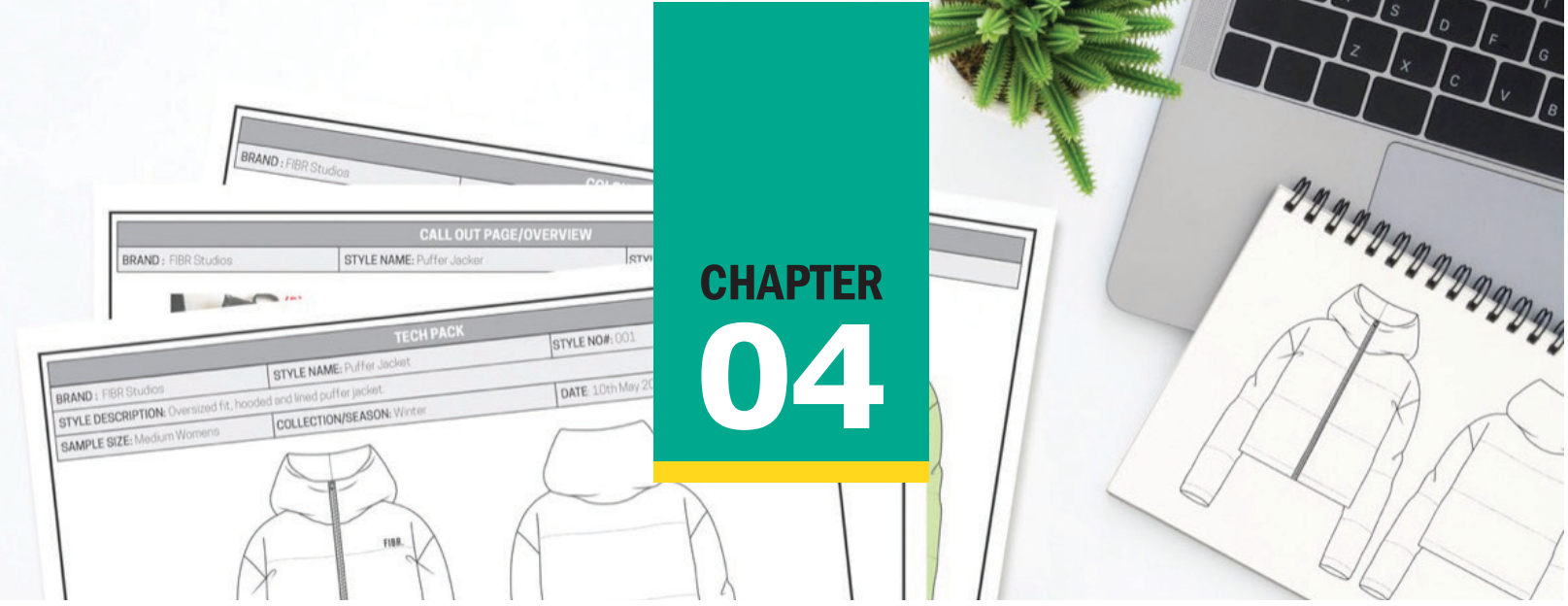
1. What is the purpose of using portfolio?
2. Give a brief note on theme selection.
3. What are all the details included in client board?

PART IV
Answer in one page

1. Write the steps that are involved in developing portfolio.
2. Define flat sketch. Draw any one flat sketch of a garment and explain it

Answer for Objective Questions:

1. (b) 2. (d) 3. (a) 4. (c) 5. (a)



CHAPTER 04

TECH PACK AND PROTO SAMPLE

LEARNING OBJECTIVES

- To understand the components, terminologies importance of tech pack.
- To gain knowledge about types of sample making.

4.1 Introduction

A script that contains information about a garment design or fashion product, its parts, steps in construction, assembling, prepared by technical experts, designers or product developers is called as Tech pack. It includes components like design sketches, measurements and specifications, colour ways, bill of materials, material images, packing instructions, care instructions and construction details.

4.2 Tech Pack

Tech pack is a package of information with necessary details that should be provided to the production unit to make the sample. With a well detailed and self-explained tech pack, a product is developed based on design, size specifications and product details. The company can reduce the number of remakes to be worked in a sample, decrease the cost of production and the production will be more efficient and faster. Tech pack also becomes the document of the master document to track the comments and revisions given to the sample developments at various stages of production using tech pack is a system of communication in the production unit.

4.3 Components of Tech Pack

Tech packs includes different stages of production which includes components like cover page, tech sketches, BOM (Bill of Materials), POM (Point of Measurement), Graded Spec, Colour way Specs, Artwork Specs, Spot for proto / sample / fit comments, Pricing and Review.

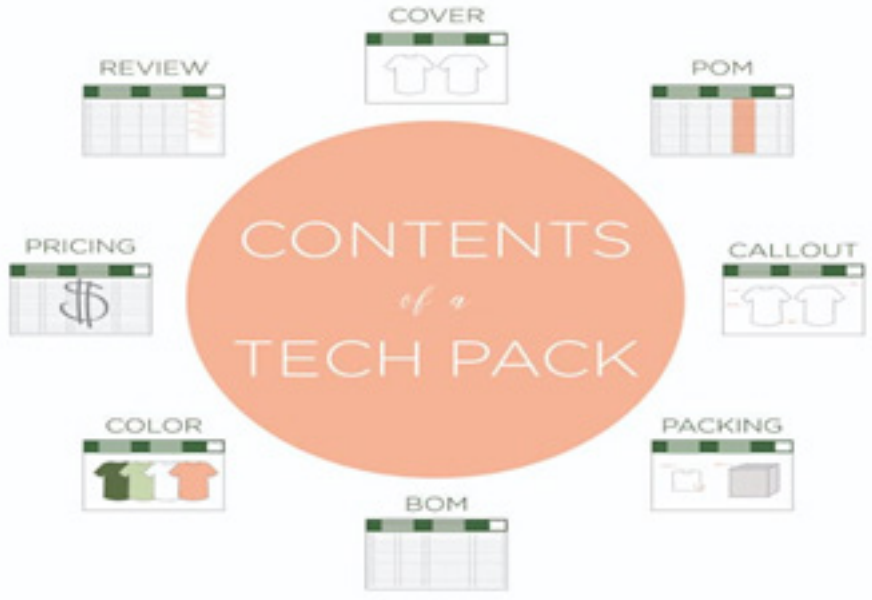


Figure 4.1 Components of Tech Pack

4.3.1 Cover Page

The cover page provides a "clean" version of technical sketches and sets the stage for the format of the tech pack with a header. Cover page can be created in excel or spreadsheet. The main information includes name of the garment/ fashion product, size, style, name and address of the company/ vendor, country, date of manufacturing and colourful sketches of the product, laundry details with barcodes for pricing.

Which is the most commonly used software for tech park preparation.

The most commonly used software for the preparation of Tech Park is Adobe Illustrator.

4.3.2 Tech Sketches

Tech sketch is a black and white flat sketch of the garment designed with details like pockets, seams, placement of trim or embellishment in a proportional manner. This gives the appearance of a garment when laid flat on the table. The accuracy and clarity of details in the flat sketches will decide the quality of sample produced. The hidden details like placket or a side seam and labels are mentioned.

4.3.3 BOM (Bill of Materials)

Bill of Materials is a list of parameters required to produce a finished and sellable garment which includes the details of fabric, buttons, thread, labels, print and embroidery.

4.3.4 POM (Point of Measurement)

The measurement chart is very essential for a tech pack. Depending on the use, it will be added to the tech pack. Proto sample is the measurements of the sampling size (Size 'M' or 'L') is listed in the POM. If the size set sample is produced, then the graded measurement chart of all sizes in the order is listed. If it is for the production purpose

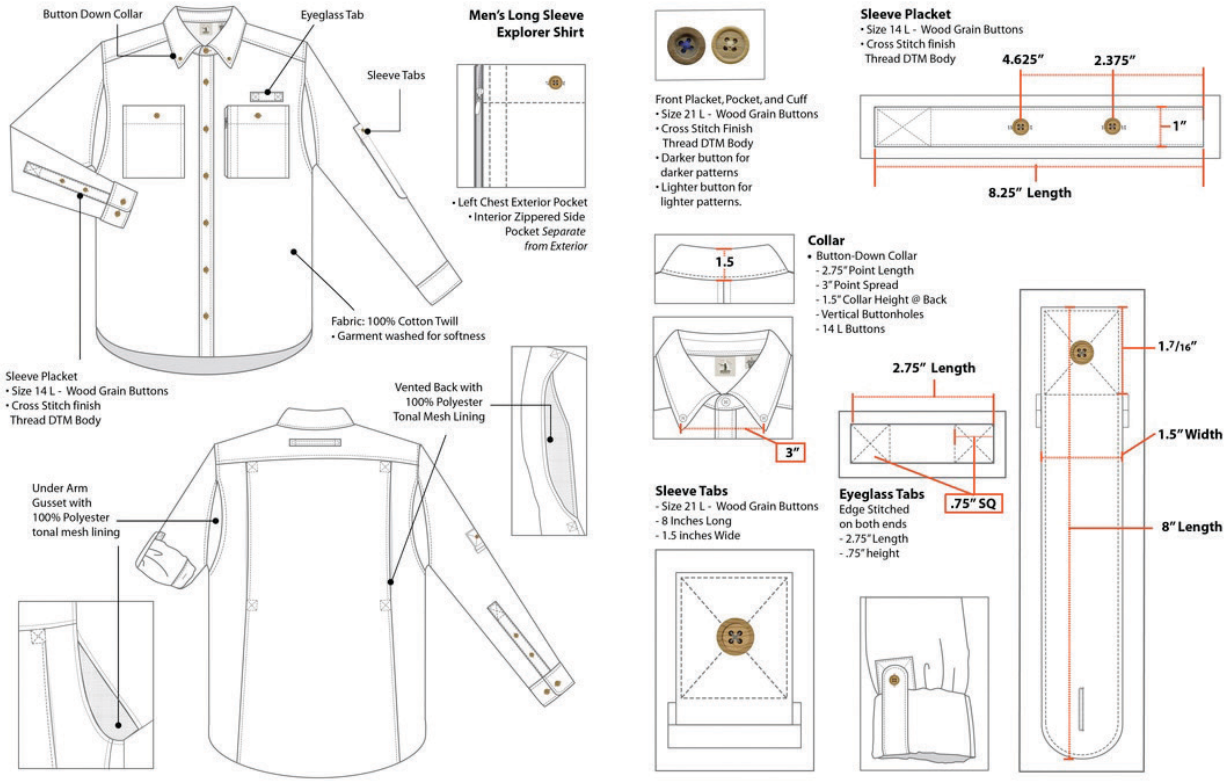


Figure 4.2 Tech Sketches

Bill of Materials - Boyfriend Blazer

Date:	18-Aug-2010	Revised Date:	
Style #	FA11-209	Season:	Fall 2011
Size Range:	XS-XL	Classification:	Women's
Label:	Urban Outfitters	Group Name:	
Description:	Velour "boyfriend" blazer with gold button metal closure		
Sample Size:	Small		

Description	Color	Material	Size	Unit	Qty
Fabric:					
Velour	Slate/Ink/Raspberry	80% Cotton/20% Polyester	60"	YD	1.31
Lining	Black	100% Polyester	48"/60"	YD	1
Fusible Interfacing	Black	100% Cotton	112 cm	YD	1
Trims:					
Gold Metal Button	Gold	100% Brass	20mm	PC	1
Thread (Inside)	White	100% Cotton	1	Spool	1
Thread (Outside)	White	100% Cotton	1	Spool	1
Brand Label	Grey	100% Polyester Satin	1/2" x 1 1/2"	PC	1
Size Label	Grey	100% Polyester Satin	5/8" x 3/4"	PC	1
Theft Label	White	100% Polyester GrossGrain	2 3/8" x 2"	PC	1
Care/Content Label	White	100% Polyester Satin	7/8" x 1 3/4"	PC	1
Large Hang Tag	Tan/Brown	Cardboard	5 x 2" 1/4"	PC	1
Small Hang Tag	Tan/Brown	Cardboard	2 1/2" x 1"	PC	1
Stretch Hang Tag	Tan	Cardboard	1 1/4" x 3/4"	PC	1
Price Hang Tag	White	Cardboard	2 1/2" x 1 1/4"	PC	1
Sendouts:					

Figure 4.3 BOM (Bill of Materials)

TECHPACKS.CO — MEASUREMENT SPECIFICATION

BRAND: BRAND NAME	**DESIGNER:** DESIGNER NAME	**DESCRIPTION:** MENS JACKET	
SEASON: S/S 2020	**DATE:** DATE CREATED	**MAIN FABRIC:** WAXED COTTON	
STYLE NAME: HUNTING JACKET	**STYLE #:** AB012345	**SIZE RANGE & [SAMPLE SIZE]:** XS S [M] L XL	

POM	MEASUREMENT	XS	S	M	L	XL	TOL +/-
A	BODY LENGTH FROM HPS	29	29 1/2	30	30 1/2	31	1/2
B	CB LENGTH	29	29 1/2	30	30 1/2	31	1/2
C	ACROSS FRONT (AT ARMHOLE SEAM)	5 5/8	5 7/8	6 1/8	6 3/8	6 5/8	1/4
E	ACROSS CHEST (1" BELOW ARMHOLE) ***	37	41	45	49	53	1
F	ACROSS WAIST (15 BLW HPS) ***	34 1/2	38 1/2	42 1/2	46 1/2	50 1/2	1
G	BOTTOM SWEEP ***	38	42	46	50	54	1
H	SLEEVE LENGTH FROM HPS	30	31	32	33	34	3/8
I	STRAIGHT ACROSS ARMHOLE CIRC ***	16	17	18	19 1/4	20 3/4	3/8
J	BICEP (1" BELOW ARMHOLE) ***	14 3/4	15 3/4	16 3/4	17 3/4	18 3/4	1/4
K	ELBOW WIDTH (1/2 WAY DOWN UNDERARM) ***	13 1/2	14 1/4	15	15 3/4	16 1/2	1/4
L	SLEEVE OPENING ***	10	10 1/2	11	11 1/2	12	1/4
M	SLEEVE FACING CUFF WIDTH	2 3/8	2 3/8	2 3/8	2 3/8	2 3/8	1/8
N	FRONT NECK DROP FROM HPS	2 1/2	2 3/4	3	3 1/4	3 1/2	1/8
O	BACK NECK DROP	1/2	5/8	3/4	7/8	1	1/8
P	COLLAR STAND HEIGHT	3	3	3	3	3	1/8
Q	ZIP BACK LENGTH	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	1/8
R	ZIP BACK WIDTH	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1/8
S	BACK HEM VENT LENGTH	5	5	5	5	5	1/8
T	BACK HEM VENT FACING WIDTH	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1/8
U	BACK HEM VENT GUSSET WIDTH	9	9	9	9	9	1/4
V	NECK WIDTH	6 1/4	6 3/4	7 1/4	7 3/4	8 1/4	1/8
W	ACROSS BACK (AT TOP OF ARMHOLE)	6	6 1/4	6 1/2	6 3/4	7	1/4
X	INTERNAL POCKET PLACEMENT FROM HPS	9 1/2	9 3/4	10	10 1/4	10 1/2	1/4
Y	INTERNAL POCKET PLACEMENT FROM CF	2 1/4	2 3/4	3 1/4	3 3/4	4 1/4	1/4
Z	INTERNAL POCKET HEIGHT	7 1/4	7 1/4	7 1/4	7 1/4	7 1/4	1/4
AA	INTERNAL POCKET WIDTH	4	4	4	4	4	1/4

ALL ABOVE MEASUREMENTS ARE IN INCHES AND TAKEN FLAT (EXCEPT FOR ***) ~ IT IS RECOMMENDED THAT ALL SIZES ARE SAMPLED BEFORE PRODUCTION

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Figure 4.4 POM (Point of Measurement)

then it will have measurements of all the sizes in the order including acceptable measurement tolerance. Tolerance is the acceptable measurement that is + or – from the given measurement for every size. POM is always taken from the pattern department. Apart from the Measurement sheet, there will also be few measurements like placement of the embroidery or print logo, which will be mentioned along with the flat sketches.

4.3.5 Graded Spec

A graded spec indicates the size change by enlarging or reducing. In recent years computerized grading is done.

4.3.6 Grade Rule

A grade rule is a technical set of numbers that patternmaker or pattern grader uses to create other sizes from base or sample size. Grade rule followed based on age range, clothing style and garment usage.

Grade Rule												
	center front neck		high point shoulder		shoulder tip		underarm		sweep @ side seam		center front hem	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
XS	0	-1/8	0	-1/4	-1/4	-1/4	-1/2	0	-1/2	-1/4	0	-1/4
S	0	-1/8	0	-1/4	-1/4	-1/4	-1/2	0	-1/2	-1/4	0	-1/4
base - M	0	0	0	0	0	0	0	0	0	0	0	0
L	0	1/8	1/8	1/4	1/4	1/4	1/2	0	1/2	1/4	0	1/4
XL	0	1/4	1/8	3/8	1/4	3/8	3/4	0	3/4	1/8	0	1/8

Figure 4.5 Grade Rule

If there is no grade rule for brand, patternmaker or grader will develop one based on size chart or spec chart.

4.3.7 Colourway Specs

Color spec or Color specification will give information on different color combinations that are to be produced for the given order. According to the design plan, thread, trim and contrast details to be used will also be listed. This will be added as a list in the BOM and also few buyers will prefer to add the Colorway Flat sketches in the teach pack for more clarity. To refer the color name in tech pack, always the pantone number is used, Pantone is commonly referred as Global color coding.

Figure 4.6 Colourway Specs

4.3.8 Artwork Spec

Artwork Spec or Artwork Specification gives the information on the technical details of any embellishment like embroidery, print, surface development like tie and dye effects used on the garment. The technical details that need to be specified for any embellishment is the size ratio, print or embroidery motif size, placement position in measurements, repeat size, repeat pattern, colour combination with colorway details. These details should be specified on the black and white sketch of the artwork and colour combination details will be mentioned in the colourway.

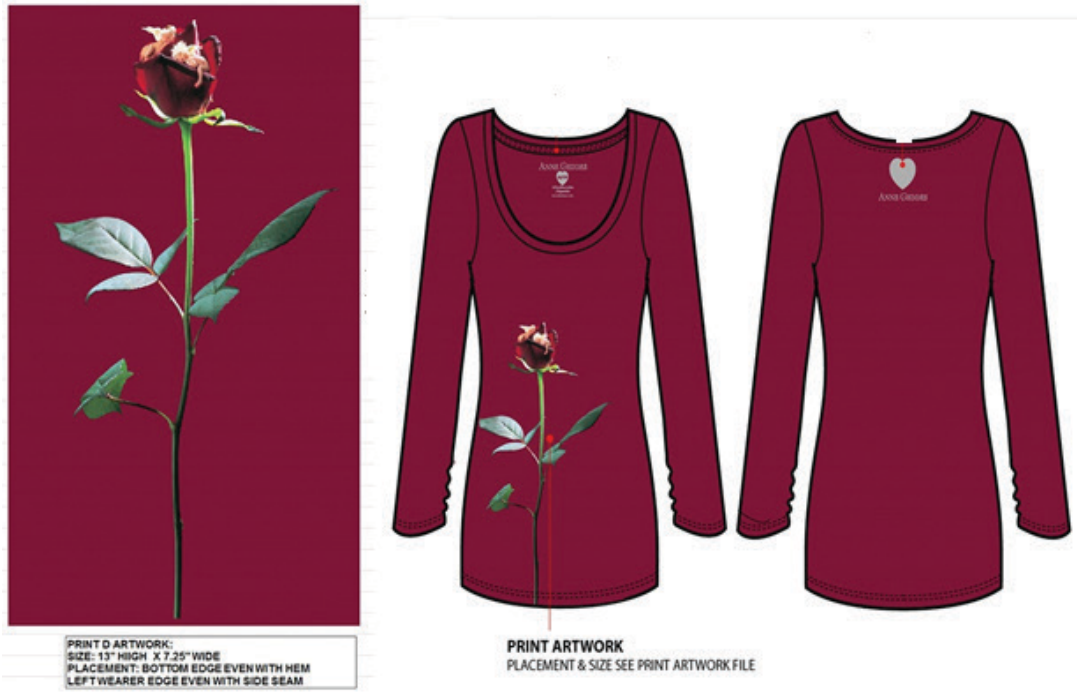


Figure 4.7 Artwork Spec

4.3.9 Pricing

Manufacturer can easily get a clear idea what man, materials and machines are required. If he knows each and every accurate detail about manufacturing of the particular product, a detailed tech pack can be prepared with accurate the price estimation.

What is the amount spent towards the preparation of a Tech Park?

Depending upon the terminology, languages, drawing used to the cost of a branded Tech Park Rangers from Amount Rs. 4000 to Rs. 32,000.

4.3.10 Review

Review includes organized and consistent comments with language and cultural barriers that will convey the message. If Points of Measure are numbered, reference numbers should be given with comments. If comments are with the prototype, then addressing these comments is mandatory. Format for comments need to be consistent so that the factory follows the comments easily.

4.4 Tech Pack Terminologies

Technical Pack is a blueprint of final garment which contains all the technical specifications and design details that makes the product unique. It is a tool used by the designers and manufacturers to communicate.

4.5 Types and Role of Sample Making

Role of sample making - In any garment industry, the first stage for garment production is sampling. From sampling, information related to cost, timing, labour and production of garment is understood.

Types of Sample

4.5.1 Proto Sample

The time given to make a proto sample is only 7 to 10days. Proto sample is the first sample developed from the flat sketches

Figure 4.8 Display of a proto samples in a garment unit

into a 3-dimensional garment. To develop the proto sample, the actual materials and trims are not used. For making the proto sample mostly the alternate fabrics and trims will be used. Alternate fabric should at least match the fabric quality like 60's count fabric, cambric, smaller floral print with dark colour combo. This may ensure the overall appearance; fall and fit of the garment sketched can be achieved.

4.5.2 Salesmen Sample

Sales Man Samples (SMS) are samples which use the final design before sizing sampling occurs. SMS samples are sent out to sales reps for taking pre-orders or intent orders from trade shows and wholesale accounts.

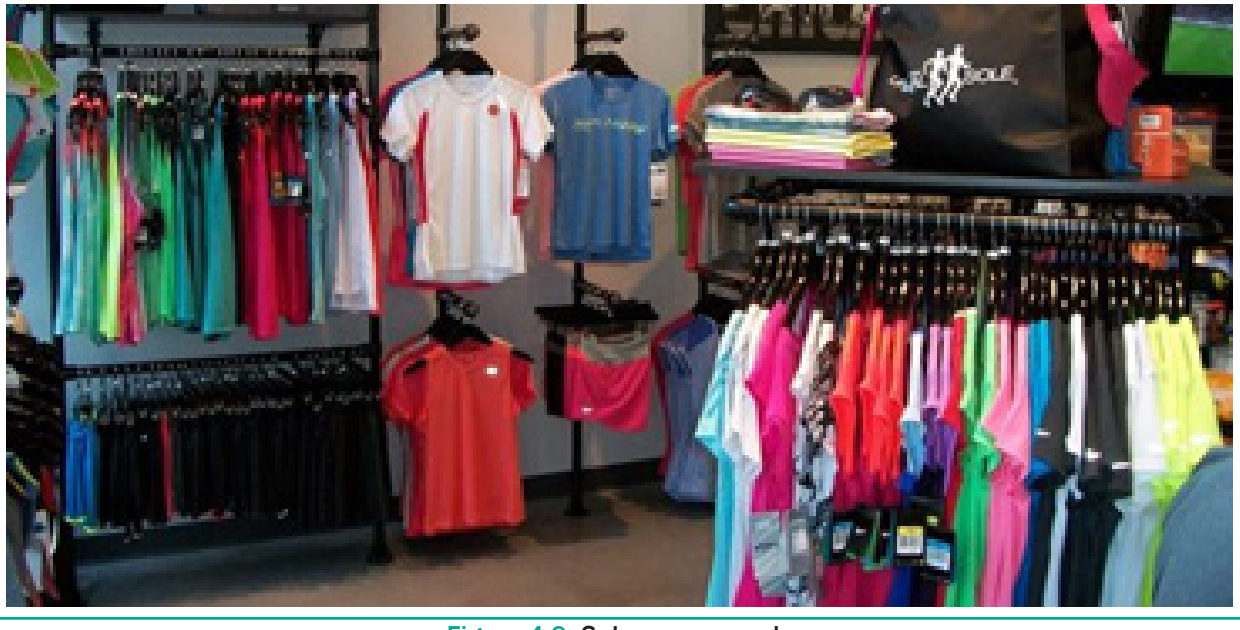


Figure 4.9 Salesmen sample

4.5.3 Fit Sample

Fit sample helps to check the fit and fall of the garment. If there are any drag lines, unwanted pulling, puckering, and tightness, too much volume they will be observed and noted in the comments. The unwanted puckering will be pinned up to suggest the amount of measurement to be removed from the pattern. With all the corrections fixed the fit is checked for final look and fit. Once the corrections, the comments to be made are finalized, the comments will be documented with photographic visuals. In categories like Active sportswear, the samples are tested by the wearer in action. The model is allowed to perform the activity for which the garment is designed and accordingly the fitting is evaluated.

Figure 4.10 Fit sample

4.5.4 Pre-Production Sample (PP)

Pre-production process is a planning which is done prior to the bulk garment production. It is the first sample to be made in the actual production line sample is constructed with the actual fabrics intended for the design and trims with all the order specification. This includes sample developments and approvals, sourcing and testing raw materials, garment costing, pattern making, and process plan.

Figure 4.11 Pre-production sample

4.5.5 Sealer Sample

Sealer sample means approved garment construction and trims attached to the garment. Receiving a Red tag sample from buyer is the approval for production. They are also known as gold-seal samples or red-seal samples, depending on the approval, or disapproval of the brand.

Figure 4.12 Sealer sample

4.5.6 Size Set Sample

The main purpose of Size set sample is to check the factory's capability to make the samples in all sizes with actual fabrics and trims. The buyer specifies the number of quantity to be sent for each size. If sizes are more in number then buyer may ask to skip some sizes, this is then called "Jump Size set sample". This sample can be made along with GPT (Garment Performance Test) samples.

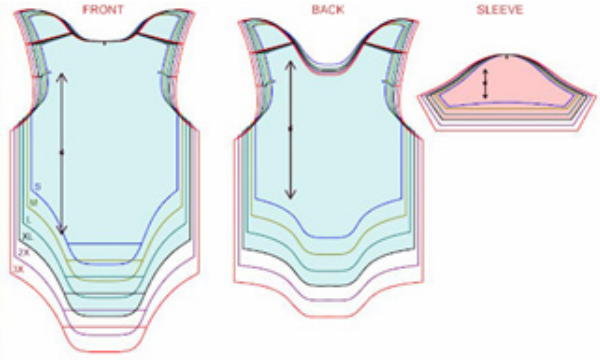


Figure 4.13 Size set sample

4.5.7 TOP of Production Sample

TOP is abbreviated as Top Of Productions; Factory starts bulk production after the Pre-Production (PP) sample approval. After the bulk production start. Few garments are picked randomly from the production output of the first production run for quality checking by the buyer's Quality Assurance. These samples are known as **Top of Production (TOP)** sample.

Figure 4.14 Top Of Production sample

4.5.8 Shipment Sample

Buyers should pick and keep a random garment piece from the final shipment packing. This sample is referred for the details such as styles, trims, final tags and packaging. The Producers also keeps three shipment samples for his future reference. If there are complaints from the customer regarding design and detailing in the product, shipment sample is referred.

Figure 4.15 Shipment sample

4.5.9 E-COM (Electronic Commerce) Sample

E-commerce (Electronic Commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet where the business transactions occur either as Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Consumer or Consumer-to-Business.

4.5.10 Garment Performance Test (GPT) Sample

The sample that is collected from the bulk production and send to a testing lab for Garment Performance Test is known as GPT sample. In GPT sample, tests like seam strength, seam slippage, button pulling strength, print quality, chemical tests of metals and dyed and printed colours are done. List of tests to be performed by the lab are defined in buyer's protocol. Generally, buyers do not ask for GPT sample submission. They need the GPT test report on the desired test parameters for their product. The factory needs to send at least two pieces of GPT samples for testing.

Figure 4.16 Gasrment Performance Test (GPT) sample

4.5.11 Counter Sample

When a factory makes different sample approvals from the buyer, the factory makes 2-3 additional samples for their internal reference. These samples are called as the counter sample or reference sample. This reference sample can be made for size set sample, fit sample, SMS and PPS. These samples can be referred whenever needed.

Figure 4.17 Counter sample

4.5.12 Fit Comments

Buyer request changes and order a new sample to be made by the manufacturer. To keep track of each round of approval and requested changes, a fit sheet is usually added in a tech pack. The Fit Sheet is an additional table in a tech pack which documents each point of measurement of a physical sample. In Tech packer, cards for each Point of Measurement (POM) can be created. For example: Sleeves, Neckline, Back etc.

4.6 Importance of Sample Making

Sampling process in industry is an important activity for the order acceptance. The main purposes of the sampling process is

- Allowing the buyer to judge the production capabilities of the manufacturer.
- Providing a means for making revisions in the bulk production process.
- Letting the manufacturer estimate the thread and fabric consumption, and develop cost quotations.

The buyer generally places the order after getting satisfaction with the quality of the samples. This process is considered to be a vital one. The sampling process generally performed in the apparel industry by a separate department with skilled labour. This process decides the order acceptance factor. The merchandiser is the person who coordinates with buyer and sampling department

Designer/Submitted by:	[redacted]	Date Created:	1.5.2021
Style Number:	[redacted]	Style Name:	Big Sleeves Top
Client:	[redacted]	Target Ex-Factory Date:	5.1.2020

1. Remove shirring on sleeve cap-make a set in sleeve

2. There should be darts in the bodice, from the armhole toward neck opening, on shoulder- See Tech Sketch

3. From sleeve cap to 9" down the sleeve: please narrow arm by 2", then flare out like a jodhpur pant leg

4. Sleeve opening too wide, reduce by 2" circumference

5. P1 sample too long in sleeve. Over the shoulder length should be 30", Under arm seam should be 21"

6. Bust darts are too short, and too high. Shift down by 1/2" and lengthen to 4"

7. Bicep too wide on P1, should be 7 1/2", please return to spec

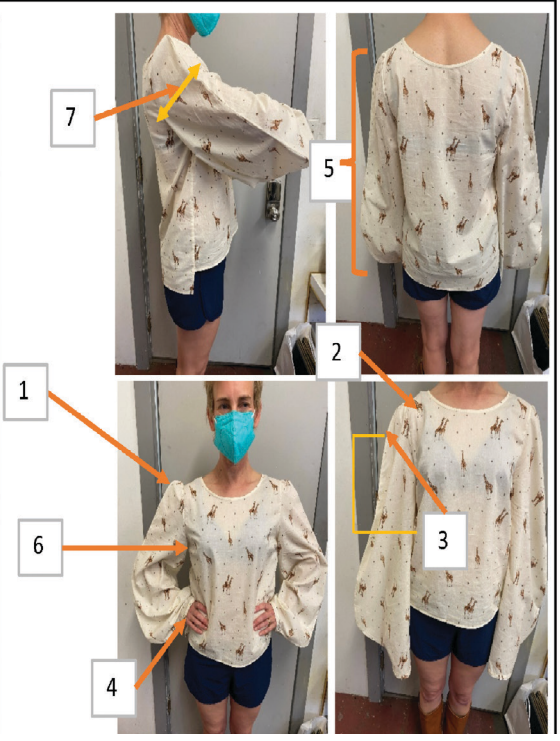


Figure 4.18 Fit comments

Why is Tech Park important?

Tech Park is important because it quotes accurate price, improves quality, collaborates terms and serves time and money.

Summary

Tech pack is playing the major role in the garment production unit has also becomes the master document to track the comments and revisions given to the sample development at various stages of production.

The various components of Tech Pack helps the producer to confirm the order and check the product at all stages of production. It also ensures the quality of the product. In garment industry, sample preparation places a important role. The different types of sample prepared namely proto sample, salesman sample, fit sample, pre-production sample, seller sample, size set sample, production sample, shipment sample, E-com sample, garment performance test sample, counter sample and fit comments. The samples maintain the quality and just in time production of the product that guarantees the assumptions of the product.

POINTS TO REMEMBER

- A tech pack is a document provided to factories by brands or designers in the garment industry.
- Bill of materials includes the details of fabric, buttons, thread, labels, print and embroidery.
- The set of numbers that the patternmaker or pattern grader uses to create different sizes from basic sample size is known as the grade rule.
- Sample preparation is the most important task in the garment industry, because it lays the foundation for approval of a garment and to start production
- Counter samples are the extra pattern samples made for internal reference.

ACTIVITIES FOR TEACHER

- To show a branded Tech pack
- To prepare a PPT for the steps followed in sample making of a garment

ACTIVITIES FOR STUDENTS

- Prepare an assignment for the topic "**Components of Tech Pack**"
- Collect model tech pack for different style of garment and compare.

INTERNET RESOURCES

https://www.youtube.com/watch?v=PMNX87d9ykI	Step by step guide to make a Fashion tech pack
https://www.youtube.com/watch?v=dJjfxO4C8Ao	Clothing Production: What is a Tech Pack and How to Make it?

GLOSSARY

Tech Pack	Tech pack is the master document with all the details used for finalizing and production for garments
Artwork Spec	Details about the accessories and colour of the garment to be produced
Pre- Production	Preparation of a pre sample as a model for confirmation of the order
E-Commerce	Buying and selling of goods and services, or the transmitting of funds or data, over an electronic network,
Shipment Sample	A sample with all details which is ready to reach the market

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. A package of information with necessary detail is _____
   (a) Tech Sketches
   (b) Colourway spec.
   (c) Tech pack
   (d) Artwork spec.

2. Expansion of GPT _____
   _____.
   (a)Graded Proto Test
   (b) Garment Performance Test
   (c) Garment Product Test
   (d) Global Program Test

3. A _____indicates the size change by enlarging or reducing
   (a) Graded spec
   (b) Clothing Production
   (c) Flat sketch
   (d) Sampling

4. _____are samples which use the final design before sizing sampling occurs.
   (a) Colorway Specs
   (b) Clothing Production
   (c) Shipment Sample
   (d) Sales Man Sample.

5. _____ is a tool used by the designers and manufacturers to communicate.

(a) Pre- Production

(b) Artworks

(c) Tech Pack

(d) Colorway Specs

PART – II
Answer in Three (Or) Four Points

1. What is a Tech sketch?
2. List the components that are in a tech pack?
3. Expand BOM and explain.
4. Write a note on POM
5. Why counter sample is important?

PART – III
Answer in a Paragraph

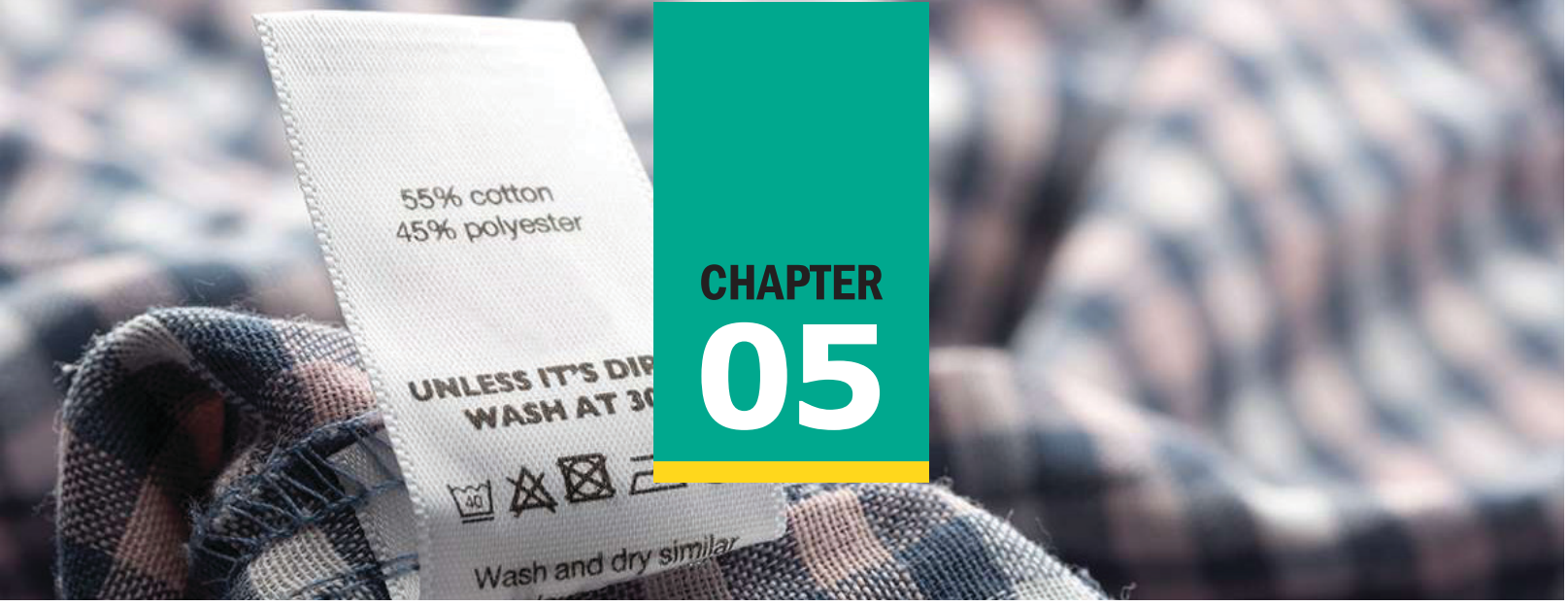
1. Give a detail note on Artworks specification in a tech pack?
2. Explain the components of Colourway Specs?
3. Write the importance of sample making.

PART – IV
Answer in One Page

1. Explain about different types of samples in details.

Answers for Objective Questions

1. (c) 2. (b) 3. (a) 4. (d) 5. (c)



CHAPTER
05

CLOTHING CARE

LEARNING OBJECTIVES

- To learn about the method of selecting clothing and its care.
- To understand concepts about wardrobe planning and care labels.

5.1 Introduction

Clothing can be described as the second skin for human beings. The practical function of clothing is to protect the human body from environmental hazards such as weather, insects, toxic chemicals, weapons and other hazards. Care for clothing is important to asure the life of the garment. since clothing various based upon the fibres, dyes, print and finishes their care also changes. Aspects like laundering, mending and storage are some components of clothing care. commonly most of textile material and garments have care labels. Care labels are information about how to wash,iron and store the textiles or garments. They are used at national and international levels. Wardrobe is a collection of clothing and accessories used by an individual based on his age, sex, occupation, activities and place of living, care taken in maintaining a good wardrobe confirm the life of clothes better portraial of users personality.

5.2 Factors Affecting Clothing Selection

The clothes that you choose to buy and wear are influenced by several factors. Some of the major factors are explained below:

Climatic Factors: People living in cold climate need to wear woollen clothes to keep warm. People living in very hot climates as in deserts need to wear turbans of thick cloth to protect their heads and wear garments made of cotton to stay cool.

Occasion: Bright coloured garments are worn during marriage functions for eg., lehanga cholis, ghagras and shararas often accompanied by bright accessories. Simple

clothing with minimum accessories like a formal salwar kameez will give a more professional look for an interview. Sari, formal trousers shirt, tie would be a good option for the wearer to feel active and confident.

Age: Clothes worn by an adult woman are definitely not the same as those worn by a college going girl. For small children dainty prints in soft colours can be chosen. When children enter late childhood stage, boys like masculine colours like blue, greyish blue and brown and girls like to wear feminine colours like pink, green, red etc. Teenagers like to have variety in their clothes. Selection of clothes for adults depends upon the type of work a person is engaged.

Income: Income affects the selection of clothing. High income group spend more percentage of money on clothing as compared to low income group. They spend more money on fashionable garments rather than on durable clothes. People belonging to low income group prefer durable clothes rather than delicate ones. So, the preferences of the clothing changes according to the income of the family.

Occupation: Many professions have a specific dress code which gives them a special identity. For example: People working in the hotel industry, airlines, traffic policemen, security guards, etc. Certain specialized activities require special apparel. For example: Special overalls are worn in the laboratory, during mixing chemicals for pest control by people or by those who work in nuclear power plants. They protect the workers against radiation hazards. Firemen wear apparel made of fireproof fabric

5.3 Clothing Care

All fabrics and clothes need proper care in order to maintain their lustre, texture, shape, appearance and strength. The life of fabric increases with proper care. Due to cost and importance of clothing's their proper care is always required. Clothing care involves various processes like washing, drying, ironing and storing. Apart from these regular processes, application of starch, blue and fabric softening are carried out depending upon the type of fabrics laundered.

5.3.1 Washing

Washing clothes is an important skill. Washing is one way of cleaning namely with water and often some kind of soap or detergent. It is an essential part of good hygiene and health. Getting clothes clean is not hard if the correct methods and laundry products are used.

- **Principles of Washing and their Applications**

Home laundering is one of the most important and common household chores. Humans have developed many specialized methods for laundering, ranging from the earliest pound clothes against rocks in running stream to the latest in electronic washing machines and dry cleaning. The dirt which soils fabrics may be classified as loose dirt and fixed dirt. Loose dirt is just spread on the surface of the fibers. Fixed dirt is held fast like gum. Loose dirt is removed in steeping and mechanical means such as brushing and shaking. Fixed dirt is removed by means of absorption, washing and dry cleaning.

• Methods of Washing

Commonly fabric or garment washing is carried out by three main methods, namely hand washing, machine washing and dry cleaning.

Hand Washing: Hand washing is vital for clothes and fabric that cannot take the stress and strain of machine agitation and spin. It is the best way to prolong the life of a piece of clothing.

The appropriate method for the treatment of dirt and kind of rubbing is given below:

Who invented the Washing Machine?

The earliest washing machine was the scrub board invented in 1747. American James King patented the first washing machine to use a drum in 1851. In 1858, Hamilton Smith patented the first rotary washing machine. It was a machine which removed and washed away dirt from clothes

Table 5.1 Method for the Treatment of dirt and kind of rubbing

Method of Washing		Process	Use
I. Friction Washing			
a.	Hand Friction	• Wring the article out of the steeping water. • Apply soap to the most soiled parts and rub until the dirt loosened. • Rinse out all soap with warm water	Suitable for cleaning much soiled small articles made of cotton or linen. Suitable for cleaning much soiled small articles made of cotton or linen.
b.	Friction by use of a scrubbing brush	• Wring the article out of the steeping water. • Spread on a flat surface and rub over with soap • Rinse out the soap in warm water.	Suitable for very soiled household articles of any coarse strong fabrics.
c.	Friction by use of the rubbing board	• Washing is carried out in a deep sink. • Place a part of the soiled cloth on the rubbing board and soap well. • Rinse well in warm water.	
II. Suction washing friction with a suction washer		• A suction washer consists of non-rusting material. • It may be of small size or large size. • Make a permanent lather on the water with soap solution or soap flakes. • Immerse the soiled article in soapy water and repeatedly press suction washer down on the article. • The vacuum formed causes the soapy water drawn through the clothes. • The repeated suction of the soapy water through the clothes cleanses the fabric.	It is a quick and practical method of cleansing large quantities of soiled articles. It can be used on garments of any fabric and colour.

Method of Washing	Process	Use
III. Washing by kneading and squeezing	• Knead and squeeze the soiled fabric in warm soapy water without lifting out of the water. • Very soiled parts should be placed on the palm of the left hand and should be kneaded and squeezed until the dirt is loosened. • Rinse thoroughly to remove all traces of soap.	

Figure 5.1 Scrubbing Board Suction Washer

Figure 5.2 Front Loading Washing Machine

Figure 5.3 Top Loading Washing Machine

Figure 5.4 Foldable Drying Rack

Figure 5.5 Indoor Drying Aids

Figure 5.6 Iron Box

Figure 5.7 Ironing Board

Figure 5.8 Storage Clothes

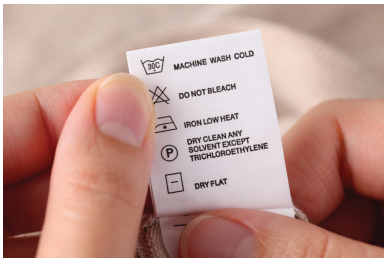


Figure 5.9 Care Label

Figure 5.10 Common Symbols used in Care Labelling

Machine Washing: A washing machine is a machine designed to clean laundry such as clothing, towels and sheets. Clothing had been hand washed for thousands of years to remove loose dirt, rubbing with soap to remove oils and stains. For particularly dirty clothing covered with mud or dirt, it is necessary to constantly rub and flex the cloth to break apart solids and help the soap penetrate through thick, dry or sticky layers of soil on the cloth. Washing machine technology was developed to reduce the drudgery of this scrubbing and rubbing process. Before using a washing machine, it is important to study the maker's instructions.

- A typical household machine takes a load of 6 to 7 lb.
- The machine should never be over loaded.
- Some of the important instructions to be followed are to maintain the time and temperature as per the fabrics use.

The different types of washing machines are

- Front or top loading machines,
- semi and fully automatic washing machines.

Dry Cleaning: Dry cleaning was earlier known as fresh cleaning and chemical cleaning. Dry cleaning indicates the removal of dirt using solvent instead of water. Traditional method of washing damages fine and costly fabrics. Hence dry cleaning method is followed. Dry cleaning method is used to remove soil and stains from delicate fabrics. Some of the benefits of dry cleaning are it maintains the original properties of the material, has better cleaning efficiency, reduction in shrinkages, wrinkling, colour fading and distortion of the fabrics. Eco- friendly solvents and chemicals that disintegrate easily and are less harmful are also available in the market today. The dry cleaning process has some limitations, need of skilled employees to handle the chemical and people with sensitive skin may have negative reactions to the chemicals used in the dry cleaning process.

5.4 Drying Care

The old fashioned method of drying was to remove excess water by hand wringing followed by laying the goods flat in the sun or hanging them on a line. In today's automatic washing machines excess water is removed automatically. Clothes should be taken from the dryer to avoid wrinkling, stiffness or shrinkage. If an item is to be dried on a line, the line should be wiped clean, clothes should be shaken and smoothed out as they are hung, all seams should be straightened and removed from the line before they are fully dry in order to avoid dampening and insure ease in ironing.

DO YOU KNOW? How to make rice starch at home?

Powdered rice or cooked cold rice is taken and grinded until smooth. This should be mixed with cold water and the clothes can be soaked for 10 mins. The fabric is then washed , ironed to enjoy the stiffness of the material on wearing

The washed clothes can be dried conveniently under direct sun rays when sufficient open space is available. The lack of open area in urban areas has stressed the need for other appliances. These appliances can be used for drying of clothes in limited space, as well as in rainy seasons. The commonly used appliances under such situations are explained below.

- **Cloth Line or Cord and Clips**

This is a simple rope or cord made of galvanized iron, plastic, hemp or coconut fibers. It is tied at the two ends. The air as it moves across the clothes, draws away the cloth moisture till they are dried. The cloth line should be of sufficient length and strength to accommodate the number and weight of the wet clothes. To avoid rust-staining of clothes, clips of plastic or aluminum are widely used.

- **Indoor Drying Aids**

The several drying aids are particularly developed and are in use for indoor area, like flats and also when it is raining. One of these is a "wooden rack with rope and pulley" arrangement. The wooden rack has many horizontal wooden bars on which the wet clothes are spread. Therefore, it is pulled to the roof level with the help of a rope passing over a pulley fixed to roof. In additional, many types of folding racks are used for drying purpose. These racks can be of wood, aluminum or a chrome plated metal and may take any shape available for drying. The clothes are spread on these horizontal rods and the racks positioned at a cross-ventilating place till they are dried.

5.5 Ironing Care

Iron is used to remove wrinkles and to give a better finish to the washed fabrics and clothes. Ironing clothes is really a delicate process. Poor ironing procedure leads to damaged clothing. The equipment used for ironing care is irons, ironing boards and sleeve boards.

Irons: Iron is also known as 'flat Iron'. It is used to remove wrinkles in the fabrics. Several types are available, such as dry iron, steam and dry iron, spray-steam and dry iron. The dry irons are useful for synthetic fabrics, but to use the same the natural fabrics require pre-dampening by sprinkling of water. This wastes both time and energy of the user. Steam and dry irons have a water chamber in which a small quantity of water is heated to provide a continuous generation of steam through holes in the soles-plate. 'Spray, steam and dry' models also have one extra control to supply a wet spray or mist at the front of the iron.

The sole plate is smooth and made of rust-resistant aluminum alloys or stainless or chrome-plated steel. The heating units of irons have a single element mounted above or in the sole plate. This is either a nichrome ribbon wrapped around mica sheets or a tubular type element. Standard size domestic irons are rated between 750 to 1200 watts, 220 volts AC only. These are thermostatically controlled to give different temperatures of the sole plate. Setting dial is generally marked with the nature of fabric to set temperature. Generally, the temperature ranges as 191 – 218°C for Linens; 163 – 191°C for Cotton; 135 – 163°C for Rayon and below 135°C for Woolen items. Some

of the most important precautions to be followed while ironing are listed below:

- Always unplug the iron after use.
- When not in use, it should be positioned on the heel rest. The cord should be wound loosely around the handle.
- Use only distilled water in the water chamber of 'steam and dry irons'.
- Fabric laundered with starch, most linens, heavy cottons and some medium and heavy weight linen require pre-dampening before ironing with steam iron
- Do not operate the control knobs unnecessarily.
- Spray-nozzle must be cleaned as per manufacturer's instruction

Ironing Board and Sleeve Board: The ironing board is a horizontal flat board. It is supported on crossed leg frame. The board is padded with flannel it is covered with white cotton or linen cover which is stretched and smooth while ironing. It is generally made of wood but today ironing boards with made with other metal are also available in the market. On one end of the board is a square or rectangular area with an asbestos sheet base. This is used to place iron when hot during ironing. The ironing boards are collapsible and easy to be moved. It requires a very limited space for storage. These are useful for ironing of skirts hence called as "Skirt-boards". Similarly, "Sleeve-board" is useful for ironing of coat sleeves. These also have padded surface but is smaller in size.

DO YOU KNOW?

What does starch do to clothes?

For aesthetic purposes, starch is commonly used when dry cleaning clothes to leave them feeling and looking crisp, somewhat stiff, and free of any wrinkles. Starch protects the fabric from stains by sealing the individual clothing fibres. It can also protect clothes that can't be washed with water. It extends the length of the time between dry clean visits. Typically, someone can wear an article of clothing two or three times before needing it to be dry cleaned again.

5.6 Starching

Starch is widely used stiffening agent. A stiffening starch is applied to cotton and linen fabric only. Some of the common starches used as stiffening agents are rice starch, wheat starch, maize starch, tapioca starch and commercial starches. Liquid starches are also available. The main purpose for use of starch in laundry is to increase the life of the clothes and to make the fabric pliable, smooth and glossy which will prevent direct contact of dirt with fabric. The foremost care taken in starching is the use of precise amount of correct starch with required quantity of water. This varies depending upon the whether the fabric is light, medium or heavy fabric. Use of wrong or excess starch will result in extract deposit of starch on the surface of the fabric creating a dirty patch like effect. Normally starching the clothing is done after washing. The rinsing clothes are finally dipped into the prepared starch solution for two to three minutes, later removed and squeezed gently and hang dried. Starch clothes as when required, storing started clothes results in

attract bugs. Clothes with dry cleaning label must be starched with starch spray while ironing. Iron the starched clothes while the clothing is still slightly damp.

5.7 Laundry Blues

Laundry blues are used to remove the yellow tint of fabrics, yellow tint in fabric arises due to repeated washing. In the last rinse of washing cotton and linen, laundry blue is added. The two types blues are Soluble and Insoluble Blues. Soluble blues dissolve readily in water unlike insoluble blues. Bluing is done as the last rinse of the fabric after washing. For this purpose, care should be taken that no soap is left in the fabric before bluing. The blue is tied in a muslin cloth and squeezed in cold water until the required colour in water is obtained. The articles are dipped in the solution once or twice, taking care that after taking out no solution is left filling in pockets or bag shaped parts. The blued fabric is then squeezed off to remove excess solution and dried. Liquid blues that can be directly added to the water are also available in the market, these are easy to use.

5.8 Fabric Softeners

- Fabric softener or conditioner is used to prevent static cling and make fabric softer. Some brands of washing powder have fabric conditioning built-in. Fabric softeners work by coating the surface of the cloth fibres with a thin layer of chemicals.

There are two types of fabric softeners namely

- Cationic and Anionic Fabric Softeners. The main purpose of softeners is to make the fabrics feel smoother and preventing buildup of static electricity. The other functions are increased resistance to stains and reduction of wrinkling.
- The care taken for the softening process is very simple when compare to other washing processed.
- The softeners must be added before the final rinsing process and mixed thoroughly to dissolve the fabric softener completely.
- Care should be taken to keep the water in vigorous circular movement to enhance the diffusion of the softeners to the fabrics. Later the fabric should be washed thoroughly. Because of this need only the softener is added in the rinse cycle of washing machine.
- Some of the precautions to be followed in the softening processes are locate the fabric softener dispenser in the washing machine and use the recommended amount only.
- If your machine doesn't have a specific dispenser, you will have to manually add the fabric softener during the last rinse cycle.
- Do not add fabric softener to the main detergent dispenser because it needs to be used at the end of the wash cycle.
- Never pour fabric softener directly on to clothes.

5.9 Clothing Storage Care

Clothes require care not only during their use but also while they are stored. The weather is not the same all the year round; hence there is a need for specific fabric

storage. If large number of clothes is there a small room or store can be used for the purpose. Otherwise, a cupboard or a shelf can also be used.

A good storage space should have certain desirable features:

- Drawers/ cupboard should be well lighted with proper doors.
- The shelves should be in plenty and smooth.
- The storage space should be dry, insect free and away from dust and dirt.
- They should be covered with paper.

Factors to be considered while Storing

- The clothes should be dust free. They should be brushed. Pocket should be emptied out, washed and should be exposed to sun before storing.
- Moisture causes mildew which may damage the clothes, hence ensure that the clothes are dry.
- To prevent damage from insect, moths and other repellents use tobacco, dried neem leaves. Naphthalene balls, camphor and odonil are more effective. New white cloth should be wrapped up so as to avoid yellowing, if they are to be stored for long time.
- Change the fold of clothes if stored for a longer duration to avoid cracking especially silk garments.
- Starched clothes should not be stored for a long time.
- Mending of all tears should be done before storing.

5.10 Wardrobe Planning and Care

A wardrobe is a collection of clothes and accessories used by a person based upon his needs. Wardrobe planning is to select clothes that are basic in style, good in design and that are appropriate for the present day to day living, as well as suitable for a few years to come. To device maximum satisfaction one must develop clothing practices. Some of the common aspects influencing wardrobe planning are

- Aesthetic,
- Psychological,
- Sociological and economic factors

Individual taste, social surroundings, climate conditions family income, age, sex, occupation and activities of the family members, quality of clothing items, price, health conditions, ease of care, fashion and lifestyle are other factors involved in wardrobe planning. Steps involved in wardrobe planning are

- Sorting and checking the available clothes,
- Making the list of items needed,
- Allocation of budget,
- Determining the time
- Place of purchase and finalizing the wardrobe.

As examples the wardrobe of the higher secondary school going girls is given in the Table 5.2

Table 5.2 Clothing Items based on Activities of a School going Girl			
S.No.	**Activities**	**Clothes needed**	**Approximate Number Required**
1	Sports	T-Shirts, Shorts, Track suits	2 of each
2	Casual Wear	Jeans, Tops, skirts, Leggings	2-3 of each
3	Formal Wear	Salwar kameez, Patiyala	4 of each
4	Party Wear/ Function Wear	Lehenga Choli, Half saree, Salwar Kameez.	3 of each
5	Night Wear	Pant, T-Shirt, Nighties	2-3 of each
6	Under wear	Panty, Slip, Bra	4 of each

5.11 International Label Care

Care labels provide information on the care instructions of the garments by some internationally recognized signs. The consumer usually does not have knowledge on care treatments to be given for each type of fabrics. Hence the apparel manufacturer provides care information on labels. Care codes are the internationally recognized symbols which are used for caring of garments in case of cleaning and ironing. Apart from proving laundering instruction needed by the customers, care labeling creates good impression of the manufacturing company and facilitate global markets. Some of the common labeling systems are

- The International Care Labelling System,
- The Japanese Care Labelling System,
- The Canadian Care Labelling System,
- The European Care Labelling System,
- The American Care Labelling System.

The common labels used are shown below

International Standard Organaize (ISO) Care Labelling Code

The ISO system commonly known as GINETEX for care labelling was established in 1963 in Paris following several international symposiums for Textile Care Labelling at the end of the 1950s. An internationally applicable care labelling system based on symbols for textile materials has been devised by GINETEX. The care labelling system provides the correct information on the care instruction of textile products to consumers, retailers and textile manufacturing companies. The care labels describe various processes the clothing item can tolerate to avoid any irreversible damage to the product.

5.12 SUMMARY

Clothing is one of the most personal and important components of daily life and at the same time it is an expression of social activities deeply embedded with the cultural patterns of an era. Today everyone wants to look and appear attractive regardless of age, occupation, rural and urban background. Clothes also have a significant effect on physical, emotional, social and mental well-being. The clothing for different age group should be selected with much care. The garments should be comfortable to wear, ease of movement and easy to care. All clothing's need proper care in order to

maintain their luster, texture, shape, appearance and strength. The life of fabric increases with proper care. Planning a clothing budget will help to have an idea on expenditure. An individual who lives within a planned budget is happier, more contended than the one who spends one's money as one earns it. The wardrobe collection should not only be beautiful, fashionable and suitable for the body but it should also be comfortable. The important reason for planning wardrobe was to check for adequacy and to get coordinated wardrobe. Care labels ensure proper laundering processes of clothes.

POINTS TO REMEMBER

- Right clothes are necessary for health, poise and self-respect.Income affects the selection of clothing.
- Home laundering is one of the most important and common household chores. Clothing care involves various processes like washing, drying, ironing storing. application of starch, blue and fabric softening.
- Well planned wardrobe helps in proper storage of clothes.
- Care labels confirms correct laundering and care of clothes.

ACTIVITIES FOR TEACHER

- To show pictures of different types of garments suitable for different occasions,
- To arrange for a visit to know about window display.
- To plan a clothing budget will help to have an idea on expenditure.

ACTIVITIES FOR STUDENTS

- To ask students to make a list of clothing in order to follow mixing and matching
- Collect pictures of clothing for different age groups.

INTERNET RESOURCES

http://www.youtube.com/watch?v=fV8BaP9iz04	Clothing care101: How to care for your clothes
http://www.youtube.com/watch?v=mDxQYYUMoWU	Clothing care 101: Tips and tricks

GLOSSARY

Dry Cleaning	Dry cleaning was earlier known as fresh cleaning and chemical cleaning
Ironing	Iron is used to remove wrinkles and to give a better finish to the washed clothing's
Sleeve Board	Board used for pressing small and narrows pieces such as sleeves, pant legs and children's wear
Care Label	Care labels provide information on the care instructions of the garments by some internationally recognised signs
Wardrobe Planning	Allocate time and funds from your budget for shopping

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QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. Which fabric is worn during hot climate?
   a) Woollen b) Cotton
   c) Knit Fabric d) Polyester
2. A _____ will give a more professional look for an interview
   a) Ghagras b) Lehanga
   c) Salwar kameez d) Saree
3. Place where information is provided about how to clean /take care of a garment
   a) Hand tag
   b) label
   c) Clothes tags
   d) Care label
4. Point to remember before washing cloths
   a) Empty the pockets
   b) Close hooks and zip zippers
   c) Mend zips
   d) All of the above
5. The main purpose of care labels is
   a) Increase sales
   b) Enhance storage
   c) Know the fibers
   d) Ensure proper laundering
6. Dry cleaning was earlier known as fresh cleaning and _____ cleaning
   a) Physical
   b) Chemical
   c) Storing
   d) Starch

PART – II
Answer in Three (Or) Four Points

1. State the functions of clothing care
2. List any two factors affecting clothing selection.
3. Write a note on importance of care labels
4. Describe the types of washing machines.
5. Name the starches used for stiffening the fabric.

PART – III

Answer in a Paragraph

1. Discuss the factors affecting clothing selection.
2. Write a note on the limitations of dry cleaning
3. Brief note on drying care methods
4. What is international care label?
5. What are the steps to be considered while storing clothes?

PART – IV

Answer in One Page

1. Elaborate on the methods of washing
2. Enumerate the steps in planning a wardrobe for a higher secondary school going girl?

Answers for Objective Questions

1. (b) 2. (c) 3. (c) 4. (d) 5. (d) 6. (b)

CHAPTER
06

LAYING THE PATTERN, MARKING AND CUTTING

LEARNING OBJECTIVES

- To learn about the pattern laying methods
- To understand the pattern marking and cutting techniques

6.1 Introduction

Dress designing is an art which includes aspects like preparation of fabric, pattern making, marking, cutting and sewing. Each of these needs to be done with great care. Patterns are usually made of paper, and are sometimes made of sturdier materials. Pattern is also called as sloper pattern (home sewing) or block pattern (industrial production). Pattern made of cardboards can withstand repeated use.

Laying the pattern, marking and cutting are three important aspects in dress designing and construction. Pattern laying refers to the placement of pattern on the fabric. Custom-fitted patterns can be developed from basic patterns. The process of changing the size of bigger or smaller a finished pattern to either is called grading. It can be rightly called the life line of apparel design and construction.

6.2 Spreading of Fabric

Fabric spreading is a method where piles of fabric are spread a specific length and width wise according to the garment marker measurement. A proper fabric spreading process may have an effect on productivity, quality and cost of the production. Fabric spreading is an important task to maintain proper shape of fabric before cutting of garments. There are two methods applied in garment industry for fabric spreading process. They are manual method and mechanical method. The manual method is totally hand spreading method, therefore this process is quite slow on the other hand.

Mechanical method is two types, they are semi-automatic and full automatic.

6.2.1 Types of Fabric Spreading

The spreads can be of two basic types :

- **Flat Spreads**

All piles are of the same length.

- **Stepped Spreads**

As the name suggests, the spread is built up in steps, with all the plies in one step having the same length. A stepped spread is generally used when the quantities to be cut is more. According to the order plan details the cut number, colour and ply length is done for stepped spread method.

6.2.2 Requirement of Spreading Process

- Alignment of plies in both length and width direction.
- Elimination of fabric defects/flaws.
- Correct ply direction (especially for asymmetrical printed fabric) all face up, all face down, face to face etc.
- Correct ply tension- ply tension must be uniform and as much as possible.
- Avoidance of distortion in the spread during cutting.
- Fabric must be flat and free from any wrinkle and crease.
- Checks and stripes should be matched.

6.3 Laying the Patterns

Laying out the pattern on the fabric to prepare for cutting is an important step. So, it should be done carefully and accurately for neat look. Layout has to follow a specific pattern which mainly depends upon the type of the garment, the pattern pieces and the width of the fabric.

The types of layout are lengthwise centre fold, off centre lengthwise fold, cross wise centre fold, off centre cross wise fold, combination fold and open layout.

6.3.1 Principles of Economical Layout

Never mark or cut any pattern until trial shows the best location for all pieces. Make temporary placements using small weights.

Begin with the largest pattern pieces at the opposite ends of the fabric and work towards the centre to fit in smaller pieces.

Place the wider ends of the pattern at the ends of the fabric. Cut notches outward if possible or inward if the material is not enough.

Follow “Dovetailing” technique for pattern laying. Dovetailing is a placement of similar shaped patterns together. For example: A collar pattern can be placed closer to the armscye line. This will help one to save the fabric.

In case the fabric is insufficient for the pattern, then a small piece of fabric can be added to the fabric, at the part where the pattern extends beyond the fabric. This technique is called piecing. Balance the pattern and add small bits on either side of the pattern, this will result in good drape.

6.3.2 Pattern Laying of Special Fabric

Pattern laying need extra care when the fabric vary like knits or silk.

- **Knits**

The inter looping of a single yarn is known as knitted fabric. There are various varieties of knitted fabrics like single and

double jersey, tricot and rib. Jersey fabrics are mostly used for garment construction.

- Pulling or tearing should be avoided to straighten the fabric.
- Lay the folded edges straight on a flat surface or cutting table.
- Fold the fabric at right angles and cut from selvedge.
- Mark the outline of the patterns using a tailor's chalk or red and blue pencil.
- Open layout is best for jersey fabrics irrespective of the type of the garment.

- **Silk**

These fabrics are very thin, slippery and delicate. Great care is required in marking and cutting these fabrics. Pre-shrinking is not required for silk fabrics. They can be used directly as purchased from the shops.

To straighten the fabric, lay them on the table and pull in cross wise direction. Lay the fabric on the flat smooth surface. Move fingers smoothly over the fabric to remove creases.

Place the pattern on the right side of the fabric. Right side can be identified by seeing and feeling. The right side of the fabric is always brighter and smoother. Open layout is best suited this type of fabric especially for beginners.

6.3.3 Pattern Laying Based on Designs

Design incorporated in a fabric should be emphasized to enhance the personalities of the wearer. Hence pattern should be laid carefully to maintain the designs and to harmonize it with the basic silhouette.

Bold Designs: A large motif can be used for all type of garments, but they look best when they placed in irregular fashion. If a fabric has too many motifs arranged in a crowded manner or a irregular pattern, they can be placed next to each other, cut and sewn.When the material has been well designed with selvedge, large motif is repeated at equal distance, place these design onto the centre of the pattern. Do not cut through large motifs because it is difficult to match seam lines.

Pattern laying techniques vary based upon the design also.

Figure 6.1 Correct and Wrong Patterns with Bold designs

One-Way Designs: One-way designs can be printed or woven in nature. Design goes in one direction. Example: Flowers on a creeper can be woven from selvedge to selvedge in the lengthwise direction or a group of geometrical designs can be printed. When patterns are laid on these types of fabric one must carefully check if the seam lines on one pattern match with the design of the pattern which is joined.

Figure 6.2 Correct and Wrong Pattern for Design Running from Top to Bottom

Figure 6.3 Correct and Wrong Pattern for Design Running from Left to Right

Stripes and Plaids - Stripes are straight line running in lengthwise or crosswise direction. These stripes are called vertical stripes and horizontal stripes. Stripes are most commonly used in shirt patterns. They can be cut in lengthwise and crosswise direction to create zigzag effects on garments.Even balanced stripes can be described as lines or bar arranged in a definite colour or placement. Collar, sleeves, pocket patterns can be cut in cross grain on vertical striped material to create interest to the garment. Stripes and plaids can be even or balanced and uneven or unbalanced.

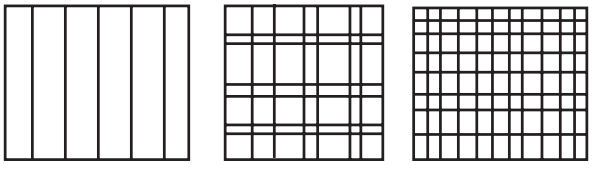


Figure 6.4 Stripes and Plaids Design

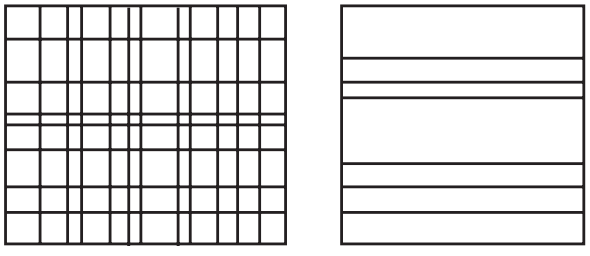


Figure 6.5 Even and Uneven Balance Stripes

Border Designs: These designs run along one selvedge only, they can be woven or printed.These designs can be used along the hem lines of the bodice, skirt and sleeve patterns.In order to maintain the design, line some patterns like yokes and collars cut on straight grain. This fabric cannot be used for curved edged garments like flared skirts. One must make sure that the hem lines are straight to follow this design. While placing pattern on these designed fabrics, one must take care to match the designs.

Figure 6.6 Pattern for Zigzag and Abstract Designs

6.4 Marking the Patterns

Introduction

Marking refers to the process of placing pattern pieces to maximize the number of patterns that can be cut out of a given piece of fabric in order to make garments. Pattern making is a highly skilled technique which calls for technical ability, sensitivity for design interpretation and a practical understanding of the process technology used by the factory. Marking is the process of transferring the pattern lines and details like darts on the fabric. It can be done using different methods like red and blue pencils, tailor chalks, pencil and carbon paper.

6.4.1 Methods of Marking Patterns

Tailor's Chalk: This is one of the easiest and simplest ways of transferring the pattern details on to the fabric. Tailor's chalk is a triangle coloured wax available in dark and light colours.The pattern is placed on the fabric and the outline is drawn using the chalk.

Pencil and Carbon Paper: It is the oldest method of marking the patterns where carbon is placed in between the pattern and fabric. Then the pattern outline and details are drawn using an ordinary pencil.In this technique the sewing line and dart can be transferred.

Tracing Wheel: A tracing wheel is also known as a pattern wheel, pounce wheel and dart wheel is an instrument with multiple teeth on a wheel attached to a handle. The teeth can be either serrated or smooth. It is used to transfer markings from sewing patterns onto the fabric with or without the use of tracing paper and can be used to make slotted perforations. Such markings might include pleats, darts, buttonholes, notches or placement lines for appliqués or pockets. This tool can be used to transfer parallel pattern lines such as both the cutting line and the sewing line, where the distance between them is the seam allowance.

What is skimpy marking?

Skimpy marking is one of the major pattern defects seen in garment industry. It is seen when the person who marks or transfers the pattern on to the fabric does not use the outside line/ edge of the pattern or when the pattern moves or slips off while marking the pattern which results in accommodate the pattern in to smaller space.

6.5 Cutting the Patterns

Cutting is the method of piecing the fabric into suitable sizes, so that it can be sewn together to form a full and neat garment.

6.5.1 Principles for Cutting

The main role of a cutting department is to cut garment components from fabric rolls or fabric as per style specifications. Then the cut components are goes to sewing department in bundles. A cutting department of a garment manufacturing unit includes following sub-processes.

- Fabric relaxation. Fabric spreading / layering on cutting table
- Marker making
- Cutting - manual cutting (using scissors), machine cutting and automatic cutting
- Numbering of garment plies (parts). shorting and bundling
- Inspection of cut components
- Shorting of printed and embroidery panels
- Re-cutting of panels. Fusing garment components

6.5.2 Cutting Special Fabrics

Precision in cut i.e. the dimension of pattern and fabric parts cut should be same

- The cut edge must be cleaned
- Infused edge
- Consistency in fabric cutting
- Support of lay
- Place the fabrics on the cutting surface. This can be a large flat table or counter
- Should position the pattern pieces on the fold or on the grain line as indicated
- Every pattern pieces have a front side i.e. printed side and back side
- If the fabric has a one-way design then lay all the pattern pieces in the same direction with finished project in mind

- Accurate notch size. If it is large in size, it can be seen after sewing of fabrics. Also there is a great probability of producing problems in matching of patterns after sewing
- Drill hole and size should be appropriate and it will be placed in its right place. If it is too large it would be seen after sewing. But if it is too small then it can be blocked easily

6.6 Preserving the Patterns Before Sewing

The sewing pattern or the one that can be used commonly should be preserved. A favourite sewing pattern should be preserved so that it can be used over and over again without becoming distorted or ripped. Patterns can be expensive, and many become unavailable so preserving the pattern will be helpful. Preserve the patterns so that it can be used for a years.

Steps to Preserve a Sewing Pattern

1. Press the pattern pieces so that there are no wrinkles in the pattern. It needs to be smooth so that the final piece will be as accurate as the original pattern.
2. Lay the fusible interfacing on your ironing board (or ironing surface) with the fusible side up, the paper side or parchment paper on the ironing board side so that the fusible web does not fuse to the ironing board cover.
3. Lay the pattern, right side up, on the interfacing, so that the interfacing will be fused to the wrong side of the paper pattern pieces.
4. Place the pieces close together to prevent wasting the interfacing but do not overlap the pattern pieces. (Ignore laying the pattern out following the grain lines for preserving the pattern).
5. Lay parchment paper on top of the pattern pieces and press the pieces to the interfacing, keeping everything flat and smooth.
6. Cut out the pattern pieces, after the pieces are firmly fused together. Consider putting all the pieces in a large brown mailing envelope with the pattern envelope taped securely to the front and back of the brown envelope. Clear packing tape over the pattern envelope. Preserve the original envelope on the brown envelope.

6.7 Pattern Alteration

Pattern Alteration is the processing of changing the garment to fit comfortably on the body. It is neither too large nor too small and conforms to the contours of the body without binding, pulling, sagging, straining or wrinkling. Fitting problems usually involve one or more of these basic body areas: neckline, bust line, hipline, arms, shoulder line, back waistline or abdomen.

Pattern adjustments and alterations are often necessary to achieve a good fit, especially in a form-fitting garment. Making adjustments or alterations before the garment is cut from the fabric will eliminate many problems later.

Who introduced computerized pattern grading?

In 1964 computerized pattern grading was started with the invention of a computerized digitizer by Dr. H. J. Gerber.

A Pattern can be Altered and Adjusted in Three Ways

- By folding out excess fullness
- By slashing and spreading or overlapping along pattern lines to increase or decrease dimensions.
- By redrawing darts or seam lines.

6.7.1 Standards for Pattern Alteration

Pattern Alteration Standards

- Original grain-lines are saved
- Patterns are kept in balance and proportion
- Change is created only in required point needed and is not obvious
- Designer's lines are protected

6.7.2 Basic Rules or Techniques of Pattern Alteration

- All similar pieces must be altered to correspond with the alterations on the major piece
- Additions or extensions must be made by taping an extension strip to the edge involved
- Altered patterns must have the same character as the original pattern piece
- Correct movement on altered pattern to give the altered line the same character as the original line
- The altered pattern must be properly flat, as like the original pattern piece

6.7.3 Basic Alterations

Altering the Length

If the garment is too short or too long can able to lengthen or shorten the pattern before cutting the fabric. Usually one can make the alterations on the horizontal dashed lines marked on the patterns, such as elbow line, waistline or a hip line. On sleeves one can alter the length on the elbow line, on dresses on the waist and hip line and on trousers and skirts on the knee line.

Shortening a Pattern

- Measure the length of the pattern and take the same measurement on your body
- Compare the pattern measurements with individual measurements and calculate the difference
- Draw a horizontal line on the pattern at the level where it needed to be shortened (for example waist, hip, knee etc)
- Draw a parallel line just above periodically drawn line
- Cut the pattern into two parts from the lower line. Move and tape the lower piece straight up on the level of the upper line. Make sure that the centre front/back remains straight
- Draw the sides of the pattern smooth and continuous
- Check that seams that will be sewn together still have the same length

If the pattern gets shortened a lot, it is good to divide the difference into more than one line, for example on the waist and hip or hip and knee, in order to keep the proportions correct. It can be also measure the actual length from waist to hip so that it is easy to calculate the length to be reduced

Lengthening a Pattern

- Measure the length of the pattern and take the same measurement of the body

- Compare the pattern measurements with individual body measurements and calculate the difference
- Draw a horizontal line on the pattern at the level where it has to be lengthened (for example waist, hip, knee etc)
- Cut the pattern into two parts through the lengthening line. Place a piece of paper under the pieces and tape the lower part on it
- Draw a parallel line on the paper, the required amount above the edge of the pattern
- Tape the edge of upper pattern piece on the line. Make sure that the center front/back remains straight
- Draw the sides of the pattern smooth and continuous
- Check that the seams that will be sewn together still have the same length.

Altering the Width of a Pattern

- Altering the width of a pattern from seam
- Measure the length of the pattern and take the same measurement of the body
- Compare the pattern measurements body measurements and calculate the difference. If the difference is significant width can be reduced or added from or to the waist darts, depending on the garment.
- Divide the difference evenly to all seams and mark the difference with a dot on each part has to be changed.
- Draw the outline of the pattern through the dot, adapting to the original shape.
- Check that the new line is not too steep or curved – in that case it will not fit properly after sewing. In case of improper fit allowance reduced or added can be from the waist darts.
- Check that seams that will be sewn together still have the same length.

Note that the patterns of slim garments that are made of elastic fabrics can be slightly smaller than actual body measurements.

Altering the Width of a Pattern from Waist Darts

- Measure the waist of the pattern and individual waist.
- Compare the pattern measurements with your own measurements and calculate the difference.
- Add or reduce the difference from all waist darts so that one can add or reduce the same amount from the side of each dart and draw new lines towards the tip of the dart.
- Check that the sides of darts are the same length and that the edge of the pattern continues smoothly over the darts.

Note that the darts should not be too wide. The back darts closest to center back should be wider than the other back darts – the width should not be more than 3-4 cm. Front darts should not be wider than 2-5 cm.

If there are two back darts, the darts closer to side seam can be left unsewn; this gives the waist more fullness. In this case, draw the edge of the pattern smooth above the dart that you are not sewing.

6.7.4 Pattern Alteration for Centre Front and Centre Back

Points to be Considered

- Keep all fabric grain lines, the centre front, and the centre back on the fabrics straight of grain.
- Make adjustments carefully in order to preserve the garment's original style or

design lines. Maintain ease allowance for comfort.

- Whenever possible, use adjustment lines already provided on a pattern. When you alter a pattern, make corresponding changes on all related pieces.

Full Bust (Large Cup Size)

Slash across the pattern along bust dart fold line to centre front. Slash across the pattern from waist to shoulder along waist dart fold line. Spread the desired amount at centre front and bust area. Do not spread at shoulder seam. Redraw seam lines and darts. (New darts will be larger than the original darts.)

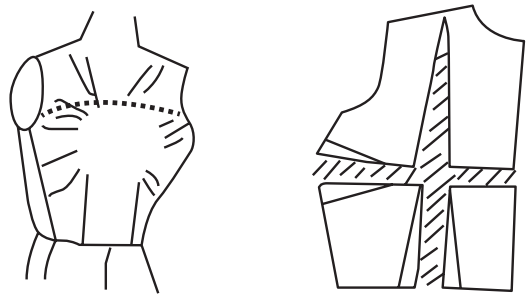


Figure 8.7 Pattern Alteration for Full Bust

Small Bust (Small Cup Size)

Slash across the pattern along bust dart fold line to centre front. Slash across pattern from waist to shoulder along waist dart fold line. Overlap darts the desired amount to decrease the bust area. Do not overlap at shoulder seam. (New darts will be smaller than the original darts).

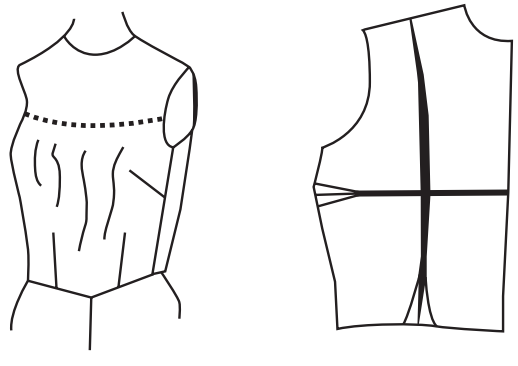


Figure 8.8 Pattern Alteration for Small Bust

Narrow Shoulders

Slash from midpoint of shoulder down and across to middle of armscye. Overlap pattern the desired amount, and redraw. Be sure to complete alterations for both bodice front and back.

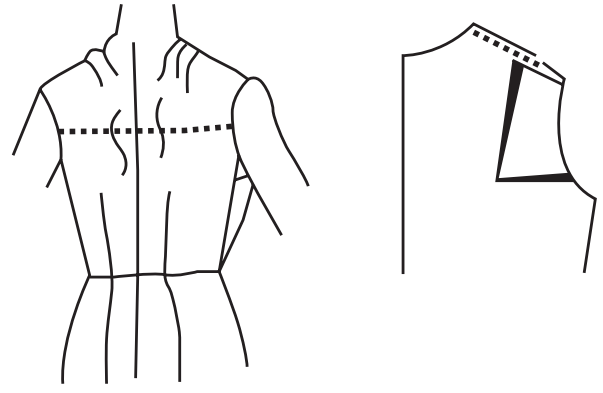


Figure 8.9 Pattern Alteration for Narrow Shoulder

Broad Shoulders

Slash from midpoint of shoulder down and across to the middle of armscye. Spread pattern the desired amount. Redraw seam from neckline to armscye. Be sure to complete alterations for both bodice front and back.

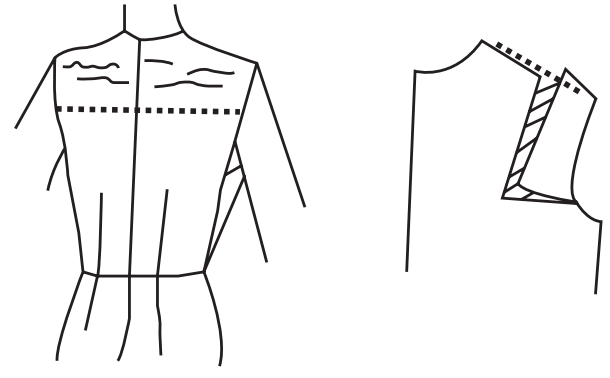


Figure 8.10 Pattern Alteration for Broad Shoulders

6.7.5 Principles of Pattern Alteration

- As far as possible make changes within a pattern by slashing and spreading or slashing and lapping. Patterns can also be altered by redrawing the edges of the pattern. (This is the method

adopted for altering garments at the time of fitting.) But the first method is the best in altering paper patterns.

- To preserve the original grain line, make all slashes and folds parallel or perpendicular to the grain line (to centre front line, centre back line etc).
- Where there are darts, make changes between the tip of the dart and the outside edge.
- If an alteration in length is made along one edge of the pattern, take care to make an identical alteration in the adjoining edge. For example, if back shoulder seam is shortened the front shoulder seam should also be shortened.
- When tucks or darts are used for making a pattern smaller, remember that the width of these should be just half the amount to be removed.
- When decreasing or increasing the width of pattern pieces, if only half the pattern (half back or half front) is used, subtract or add only one fourth of the total adjustment to be made. For example, if waist measurement has to be increased by one inch, add ¼" to the half back pattern and the same amount to the front pattern. If only a front or back section needs adjustment, add or minus half the amount of the adjustment to the respective section.
- When the pattern alteration involves slashing and spreading, it is necessary to keep a sheet of paper beneath and to pin or stick to it the spread-out parts so that they will thereafter remain in position. On spreading or lapping after slashing, some edges of the pattern become jagged. These must be trimmed after drawing the new seam lines.

6.8 SUMMARY

Laying, Marking and Cutting are three very important aspects in garment construction, if it is done carefully, beautiful garments can be sewed to perfect fit in an economical manner. Marking refers to the process of placing pattern pieces to maximize the number of patterns that can be cut out of a given piece of fabric in order to make garments. Pattern making is a highly skilled technique which calls for design interpretation and a practical understanding of the process technology used by the factory.

POINTS TO REMEMBER

- Drafting and pattern making are the basic necessities for making fashion garment.
- Laying out your pattern on the fabric to prepare for cutting is an important step, that must be done carefully and accurately.
- Preparation of fabric for cutting and sewing involves straightening, shrinking and pressing.
- Washing tends to shrink knit fabric than woven fabric.
- Laying, Marking and Cutting are three very important aspects in garment construction.

ACTIVITIES FOR TEACHER

- To show the procedure of the laying, marking and cutting.
- To prepare quarter scale pattern for shirt and make suitable layout on stripped paper and show it to the students.

ACTIVITIES FOR STUDENTS

- To prepare quarter scale pattern for a frock and draw a suitable layout
- To get more practice by doing laying, marking and cutting.

GLOSSARY

Dovetailing	The process of fitting the pattern pieces that are similar in shape next to each other in an economical way is called Dovetailing.
Bodice Sloper	It represents the basic measurements of the body, almost like the second skin. A bodice sloper, for example shows the length, width and shape of one's torso, as well as the bust points and length of darts.
Layout	The placement of pattern on the fabric, in an economical manner, that is without wasting the fabric is known as pattern layout.
A Pattern	It is the template from which the parts of a garment are traced onto the woven or knitted fabrics before being cut out and assembled.
Motif	A pattern is a design in which lines, shapes, forms or colours are repeated and the part that is repeated is called a Motif.
Pattern Alteration	It means to customize patterns to fit according to the body shape. For example, shortening arms or lengthening a top.
Fabric Spreading	Fabric spreading means to spread the fabric in a systematic way. It is a process by which plies of fabric is spread in order to get required length and width as per marker dimension.

INTERNET RESOURCES

https://www.youtube.com/watch?v=tbB61DJ6zgs	Lesson 3-12 - How to Lay, Pin, Mark and Cut the Fabric
https://www.youtube.com/watch?v=r4_3woAP9vw.	Pattern layout, pinning, marking and cutting out - Marfy pattern 3022

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. The interlooping of a single yarn is known as _____ fabric.
   a) Woven b) Knitted
   c) Non-Woven d) Rayon
2. _____ is an arrangement of motifs in a pattern, such as diamond, drop, gradation, grid, spot, and others.
   a) Design b) Pattern
   c) Layout d) Dart
3. Altered patterns must have the same character as the original _____ piece.
   a) Marking b) Cutting
   c) Pattern d) Drafting
4. Best tool used for transferring darts from pattern to the fabric is _____.
   a) Tailors chalk b) Pencil
   c) Pins d) Tracing wheel
5. _____ spreading means to spread the fabric in a systematic way.
   a) Pattern b) Draft
   c) Layout d) Fabric
6. _____ design is based on a geometric pattern, often contrasted with representational designs, such as floral or conversational.
   a) Floral b) Geometric
   c) Line d) Shape

PART – II
Answer in Three (Or) Four Points

1. What do you mean by laying a pattern?
2. List the types of layouts.
3. What is pattern alteration?
4. List out the ways of pattern alteration and adjustment.

PART – III
Answer in a Paragraph

1. Briefly explain the step in pattern marking.
2. Give a brief note on fabric spreading.
3. What are the steps followed in lengthening a bodice pattern?
4. What are the principles of economic layout?

PART – IV
Answer in One Page

1. Discuss about cutting and its principle.
2. Explain in detail pattern alteration for full bust and small bust.
3. Write about pattern laying based on one way designs.

Answers for Objective Questions

1. (b) 2. (c) 3. (c)
4. (a) 5. (d) 6. (b)

CHAPTER 07

FASHION ACCESSORY AND ORNAMENTATION

LEARNING OBJECTIVES

- To identify different types of fashion accessories and ornamentation techniques
- To understand the use of accessories and ornamentation in fashion garments
- To gain knowledge on traditional embroideries.

7.1 Introduction

Fashion ornamentation is a type of decoration done on any textiles and garments to add aesthetic look. Designers include different types of embroidery and decorative work on fabric. Today's customer select garments that are surface enriched with decorative works. Moreover, the embroidered garments attract the buyers. Traditional embroidery found an important place in fashion arena. Especially Indian traditional embroidery has become popular all over the world. Each type of embroidery has its own unique way. Smocking is a surface ornamentation work. It gives an extraordinary look to the children and women's wear garments. Belts are considered to be a fashion accessory. Belts are used as both functional and decorative accessory. Therefore it is essential to have thorough understanding about fashion accessories and ornamentation used in textiles and garments by the fashion designing students.

7.2 Belts and Bows

Belts are flexible band or strap of material worn round the waist over the garment usually to conceal the waist joint of bodice and skirt. The styles of belts go well with the design of the dress. Belts enhance the look of the wearer. Belts may be made soft or stiff, narrow or wide, plain or intricate, depending upon the garment and the fashion trend. Stiffening used as a facing or interfacing keeps the belt in shape and gives it a tailored effect. Muslin, felting,

cross grain ribbon or leather may be applied. The belt is mostly fastened with a covered buckle or a novelty buckle. Faced, interfaced tie belts and skirt bands are cut in lengthwise grain, while sash belts are cut on the bias direction.

Bow is a fashionable accessory used on garments. It is a common trimming found in hats. Bows add beauty and enhancement to the finished garments. These are made of fabric and used with buttons at times. Wedding gowns, hats and party wear dresses are always designed with bows. Bows create a beautiful look when worn.

7.2.1 Types of Belts

Soft Belt: Soft waist belt is a fashion belt made of soft materials. These belts are used by woman folk along with western wear. Soft belts cinch the waist of the hour glass type figure and is ideal to wear over the over sized garments. These belts are adjustable, stylish and suitable for casual and formal wears.

Stiffened Belt: The stiffened belt is one of the stable belts. These belts are cut on grain and are stiffened with interfacings. Stiffening material used in belt holds the belt in place. The stiffening materials are chosen based on the type of material used for the belt. Width of these belts is even and matched with garment styles.

Shaped Belt: The belts are shaped to create variety and beauty. Belt shapes are designed to match various garment styles and the wearer.

Interfaced Belt: The interfaced belt is the softest belt used for comfort. Folding over and becoming rope-like when worn are the disadvantages of this style of belt. From the fashion point of view, it is not the most desirable belt as many prefer stiff belts. One must be careful while selecting washable belts.

Belt with Backing: Belt with backing is a type of belt that gives a professional belt. This belt is constructed with backing material. This type of belt does not fold since it is backed with supportive backing material. Pre-shrinking has to be done if soft and ribbon like materials are used.

Contour Belt: The contour belt is shaped to the body. It will hold the waistline perfectly and rest at the back. It is usually wider at the back and narrower at the front. The wider belts prominently show the contours or curved lines of the body. Narrow belts do not highlight the contours.

Inner Belt Backing: Usually, the inner material is used for extra stiffness. The cross grain ribbon is cut and finished at the inner part of waistband which holds the skirt. The natural shape of the human figure is enriched by this belt.

Figure 7.1 Soft Belt

DO YOU KNOW?

Who invented belt?

Belts as suspenders were used as back as 300 years back. Modern belts were first invented in 1820 by Albert Thurston.

Figure 7.2 Stiffened Belt

Figure 7.3 Shaped Belt

Figure 7.4 Interfaced Belt

Figure 7.5 Belt with Backing

Figure 7.6 Contour Belt

Figure 7.7 Inner Belt Backing

7.2.2 Types of Bow

Bows are classified into three types based on the construction. They are as follows;

Simple Bows: A simple bow is shaped like a butterfly. Sometimes it looks like a longer flowery bow. The wider the bow, the longer is the length required for tying the bow. Normally, the finished edges are wider than the middle part which is narrower. A wide finished width is required with turnings and neat finishing. This is one of the most attractive types of bow.

Gathered Bows: Simple bows with laces, embroidery or shirring create an excellent trimming for the plain garments. When the fabric is soft and needs a little stiffening, a layer of organdy or canvas can be used. Shapes can be created as desired.

Ribbon Bows: Bows are made of ribbon, cords, lace or fabric tubing. These bows are placed at sleeves, pockets, yokes, collars, hem line, neck line and waist line for simple decoration. These types of bows are easy to make and are beautiful.

Figure 7.8 Simple Bow

Figure 7.9 Gathered Bow

Figure 7.10 Ribbon Bow

7.3 Smocking

Smoking is an embroidery technique that is probably thousands of years old. The name was coined during 1700's in England. The technique used at the time was gathering. A full work shirt was gathered at the bodice and the sleeves. This gathered effect in the garment was then called a "smock". Smocking was introduced to work man garment mainly to give fullness or free movement of their body and arms. Smocked garments were worn by agricultural laborers, trades men and shepherds in earlier times. In the 19th century smocks were received by artists, to cover their clothing and ladies adapted them in a modified form with fancy embroidery. Later babies clothing, silk under garments for ladies,and even afternoon dresses appeared with smocking. At present smocking has become the fashion statement.

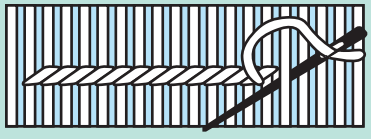
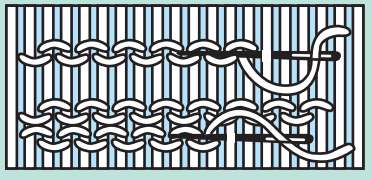
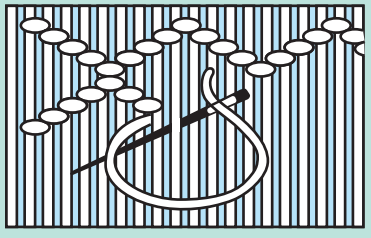
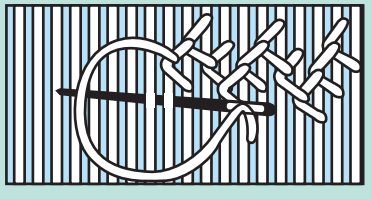
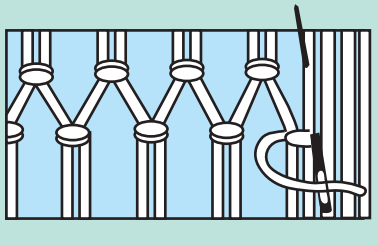
7.3.1 Types of Smocking

There are three types of smocking namely,

- English Smocking
- American Smocking
- Canadian Smocking

Fabric and Stiches Used

Silk, linen, cotton, striped and gingham fabrics are used. Firm fabrics are always preferred and are easier to embellish. The stiches used are as shown below

Outline stitch	
Cable stitch	
Trellis stitch	
Diamond stitch	
Feather stitch	
Honey comb stitch	

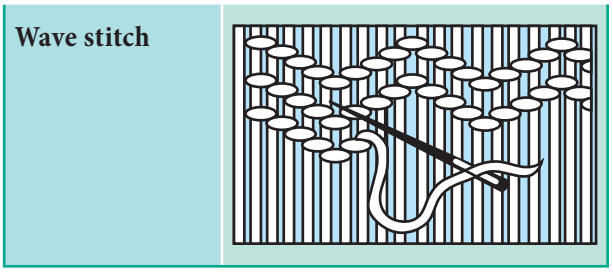


Figure 7.11 Smocking stitches

The gathering or embroidery techniques varied from area to area within a country. However smocking is categorised into three types such as English smocking, American smocking and Canadian smocking.

English Smocking is of two types;

- **Geometric Smocking** - In this type simple borders, lines and thousands of patterns can be created with cable and trellis stitches
- **Picture Smocking** - On the fabric folds, embroidery is done with stacked cable stitches. Embroidered pattern should cover the fabric fully.

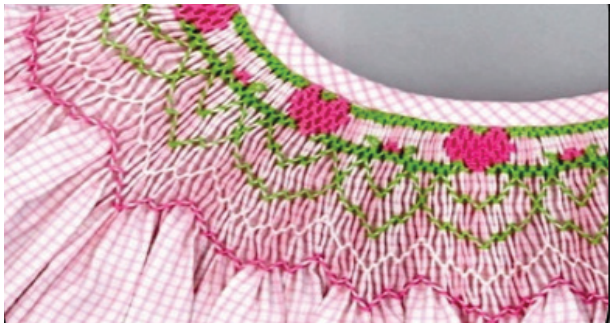


Figure 7.12. Geometric Smocking

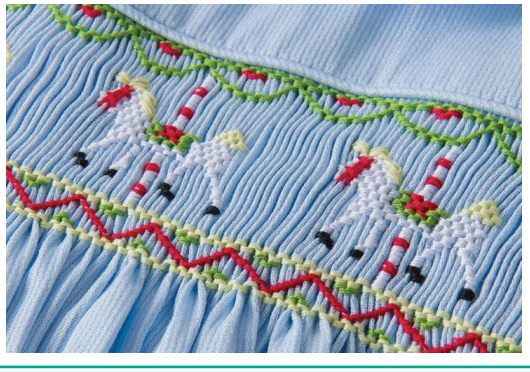


Figure 7.13 Picture Smocking

American Smocking is of three types;

- **Counter Change Smocking** - Most often striped and checked fabric is used to do this work. Three times more fabric is needed to bring to the required length and width.
- **Mock Smocking** - For this type of smocking, fabric folds are created. Only honey comb pattern is created in mock smocking.
- **Direct Smocking** - Grid pattern is used for this type of smocking. Following the pattern, small stitches are made and secured.

Figure 7.14 Counter change Smocking

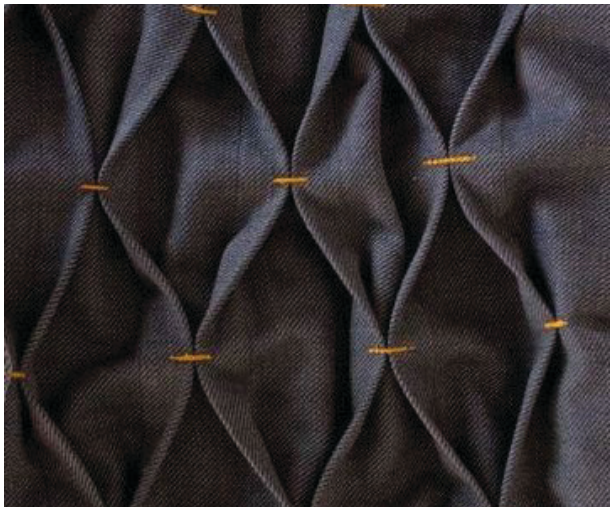


Figure 7.15 Mock Smocking

Figure 7.16 Direct Smocking

Canadian Smocking or North American Smocking: In this type textural effect is created on the front side of the fabric. A grid is used to create the three dimensional effect on the front side of the fabric. The various types of Canadian smocking are Lattice smocking and Reverse smocking.

7.4 Traditional Embroidery

Embroidery is one of the many great methods of applied decoration. But it requires good skill, time and artistic ability. Embroidery may be made by hand or machine. Traditional Embroidery vary from region to region and are explained as follows;

7.4.1 Chikankari Embroidery

Region

Chikankari is whitework embroidery practiced in Lucknow, Uttar Pradesh. It is believed that Nur Jahan, wife of Mughal emperor Jahangir embroidered a cap for her husband, and hence familiarized this craft of white on white embroidery.

Technique

The embroidery is done on fine white cotton fabric with untwisted white cotton or silk thread. There are three types of stitches used in chikankari :

- flat stitches are made with stem stitch
- herringbone stitch is used for raised stitches like bullion and french knots
- pulled thread work or jali work is done

Motifs

The motifs are inspired by nature's flora including flowers, foliages, creepers, flowering stems, mango, almond, peacock, parrot etc.

Style of Embroidery

A common style present in each piece of Chikankari is the shadow work. To create a shaded effect, herringbone stitch is worked from the wrong side of the fabric. This creates a shadow of lighter colour on the right side. It imparts an outline to the motif on the right side. If worked from the right side of the fabric, double back stitch is used.

End Use

Traditionally the embroidery was done largely for male garments such as kurta,

Figure 7.17 Chikankari Embroidery

bandi, choga etc. for summer wear. Currently, Chikankari is being used for apparel as well as home products. Embroidery is done on different fabrics like crepe silks, chiffons, georgettes, and cotton-polyester blends. Traditionally white on white embroidery on white fabric was common. Modern chikankari has a wider colour palette, from pastels to bright colours.

7.4.2 Chambarumal Embroidery

Region

Chambarumal, is originated from Himachal Pradesh. It dates back to 15th century. There is a mention of this embroidery being practiced in Pathankot, Chamba and other remote villages of Himachal Pradesh in Buddhist literature and the Jataka Tales. Chamba was known for the most charming needlework, which the Romans described as 'needle painting'.

Technique

The embroidery is executed on two types of unbleached cotton cloth: lightweight, delicate muslin or hand spun, hand-woven, coarser khaddar. Untwisted dyed silk threads in bright colours like red, yellow, green, blue, crimson and purple are used for the embroidery. The embroidery uses double satin stitch which simultaneously fills in the motif on both sides of the fabric. The embroidered fabric is reversible

Motifs

The motifs used are inspired by Pahari paintings depicting lord Krishna and his playful antics. The embroidery also depicts the flora and fauna of the Himalayan region. Typical motifs include tiger, goat, deer, horse, peacock, parrot, flowers, shrubs and plants, willow and cypress trees; and musical instruments like sitar, tabla, veena, tampura etc.

Figure 9.18 Chambarumal Embroidery

Style of Embroidery

The embroidery is executed on a square piece of cloth. The motifs are arranged on the rumal in order to portray scenes from lord Krishna's life. Some of the popular themes include Rasamandala, Rukmini Haran and Kaliyadaman. There are floral borders on all four sides of the rumal.

End Use

Traditionally the rumal was used as a case for food prasad offered to gods and goddesses. It was also a tradition to gift embroidered rumals at the time of weddings. Nowadays, the Chamba embroidery is made on fabrics like silk, polyester or terrycot and made into blouses, caps, slippers, cushions covers etc. Embroidered silk wall hangings are also exported from Himachal Pradesh.

7.4.3 Kantha Embroidery

Region

Kantha is an embroidery technique that originated in West Bengal. In the past, it was used to convert old used fabric into an embroidered textile.

Technique

The embroidery is executed on layers of old white cotton sarees. Layers of cotton sarees are stitched together with simple running stitch in white thread. The motifs are traced and embroidered using different coloured threads also. The embroidery threads used are drawn from the old saree borders. The basic stitch used is running stitch along with satin stitch and chain stitch

Motifs

The motifs used in Kantha are lotus flowers, floral scrolls, tree of life, mandala, foliages, creepers, animal and bird forms; fish, sunrise, mermaids, ships, submarine scenes, domestic articles like mirrors, pitcher, nutcracker, umbrella, musical instruments and human figures like gods and goddesses, horseman, fisherwoman etc. The designs of folk stories, epics, mythological background, ritualistic motifs, animals, dancing peacock, temples, are also different types of costumes.

Lotus is the most common and important motif widely used in Kantha . 'Kalka' is another important motif a cone mango shaped.

Style of Embroidery

Different embroidery layouts are followed in Kantha. Some examples are; central motif and tree of life on all four corners, arrangement of motifs in panels or a big central panel and placement of smaller motifs all over the textiles

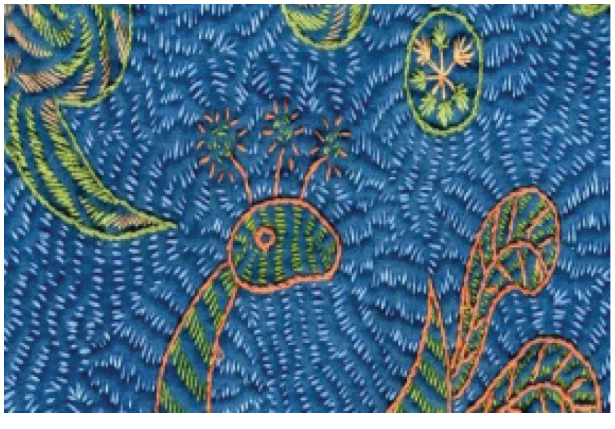


Figure 9.19 Kantha Embroidery

End Use

Kanthas were largely used as quilts. It is offered to special guests to sit or sleep on it. It was conferred to the bride and groom. It is also used to wrap valuables and gifts. Other

uses of Kantha are bags which are used for keeping money and also used as book cover. Nowadays, Kantha embroidery is done on a single layer of white or coloured fabric base using contemporary motifs. Other products made with Kantha embroidery are stoles, dupattas, sarees, and suit materials.

DO YOU KNOW?

Origin of Kantha embroidery.

Kantha is one of the oldest forms of embroidery that originated in West Bengal, India. Its origins can be traced back to the ancient pre Vedic ages. Kantha embroidery was found in Krishnadas Kaviraj's 500 year old book, Chaitanya Charitamrita.

7.4.4 Kathi Embroidery

Region

Kathi Embroidery, Kathibharat or Kathipa style of embroidery is practiced by the Kathi community tribal women of Gujarat. Black colour fabric is used as the base fabric. Stitched Kathipa style of embroidery is otherwise known as 'heer'.

Technique

Repeating patterns of six to eight-pointed stars, triangles and squares are arranged to form a beautiful design. Outlining is done with darning stitches and the fillings are covered with herringbone stitches. Mirrors are attached with buttonhole stitches to form squares and triangles.

Figure 9.20 Kathi Embroidery

Motifs

Motifs such as humans, animals and birds along with landscape forms are used in this embroidery. Bold motifs with mirrors create a colourful depiction in dark blue, orange, purple, indigo, black, deep red with little tints of yellow and green.

Style of Embroidery

Embossed designs are done all over the fabric. Geometric patterns are created

between borders constructing chequered forms. Long stitches along with herringbone stitches and contrasting colours define the design vocabulary of Kathibharat. Small mirrors are stitched to add beauty to the embroidery. The stitches in triangles run in parallel to the warp and weft creating an interesting effect. Single colour silk floss with light and dark shades is often used.

End Use

The traditional attire of Kathi women become an intrinsic part of costumes worn by both rural and urban women during Navratri. Besides the garments, Kathipabharat is also used in creating a range of home adorning textiles like chaklas, torans or textile door frames, cushion covers and mats.

7.4.5 Kasuti Embroidery

Region

Kasuti embroidery is practiced in Karnataka. This is a promising craft produced by women. In early times, every bride would own a silk saree with Kasuti embroidery done on it.

Technique

The embroidery is done on a hand-woven cloth of darker colours. Cotton threads in different colours like red, orange, purple, green, yellow and blue are used. The embroidery threads used are drawn from the old silk saree borders.

Four Basic Stitches used are;

i. Gavanti - double running stitch that creates the same effect on both sides of fabric
ii. Murgi - zigzag running stitch that works in a stepwise manner
iii. Negi - simple running stitch that produces a weave-like effect, and
iv. Menthi - cross stitch that gives a heavier appearance.

Figure 9.21 Kasuti Embroidery

Motifs

The motifs are inspired by religion, architecture, flora and fauna, and objects of daily use. Some examples are star-shaped designs, chariot, and palanquin for deity, tulsi pot holder, cradle, sacred bull, deer, elephant, peacock, horse, and lotus

Style of Embroidery

The embroidery uses a combination of horizontal, vertical and diagonal stitches. The motifs are not traced on the fabric and the embroidery is done by counting the yarns on the base material.

End Use

Traditionally the embroidery was made on Ikhat sari and other apparel items like women's blouse and children's bonnets. Presently Kasuti embroidery is also made on home products like cushion covers, bed covers, curtains and accessories like handbags, mobile pouches, belts etc.

7.4.6 Kashmiri Embroidery (Kashida)

Region

Kashida is embroidery originated from Kashmir. It is practiced by menfolk of the region. The elaborate needlework is inspired by the charming natural surroundings of Kashmir.

Technique

The base material for Kashida is cotton. Wool or silk fabric in a variety of colours like white, blue, yellow, purple, red, green and black are also used. The embroidery threads used are wool, silk or cotton depending on the product to be embroidered. The main stitches employed for Kashida are darning stitch, stem stitch, satin stitch and chain stitch.

Motifs

The motifs used in Kashida depict the natural elements which include the rich flora and fauna of the region of Kashmir. Typical motifs are birds, flowers, butterflies, maple leaves, almonds, cherries, grapes and plums. A popular motif seen on embroidered shawl is the cypress cone.

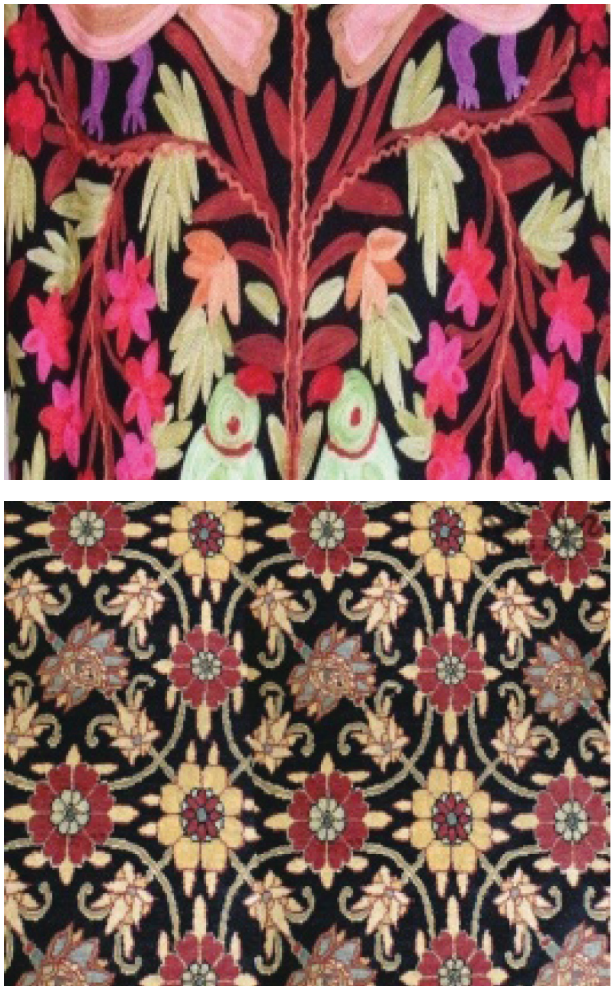


Figure 9.22 Kashidha Embroidery

Style of Embroidery

There are three styles of embroidery followed in Kashmir; (i) Sozni is intricate embroidery that uses stitches like a fly stitch, stem stitch and darning stitch. (ii) aari style, also called Zalakdozi employs hook or aari to fill-in motifs with chain stitch. (iii) Kashmiri couching, zarithread is laid on the fabric along a pattern and is held in place with another thread

End Use

Kashmiri embroidery is primarily done on shawls and regional garments like Phiran. Chain stitch embroidery is made

on woollen floor rugs called Gabbas and Namdas. Nowadays, Kashida is also used to enhance household items like bed covers, cushion covers, lampshades, bags and other accessories.

7.4.7 Phulkari

Region

Phulkari is an embroidery style that is originated in Punjab. The earliest possible article of phulkari embroidery is a rumal embroidered during15th century by Bibi Nanaki, sister of guru Nanak dev. The needlework is widely practiced by the women of Punjab. It carries significance in the life of a woman, from her marriage until her final abode to heaven.

Technique

The base material to execute Phulkari is handspun and handwoven Khaddar that is dyed in red, rust, brown, blue and darker shades. Soft untwisted silk thread 'Pat' is used for the embroidery. The colours of the thread are red, green, golden yellow, orange, blue etc. The basic stitch employed for Phulkari is a darning stitch, which is done from the wrong side of the fabric. The stitches follow the weave and a beautiful effect is created on the fabric by changing the direction of the stitches. For outlining of motifs and borders, stem, chain and herringbone stitches are used.

Motifs

The motifs used in Phulkari are inspired by objects of everyday use like rolling pin, sword, flowers, vegetables, birds, animals etc. They are generally geometrical and stylized. Usually, one motif is left unembroidered or is embroidered. This motif is called 'nazarbuti' which is considered to ward off the evil eye.

Style of Embroidery

The two embroidery styles prevalent in Punjab are Bagh and Phulkari. Bagh is a fully embroidered wrap that is used for special occasions whereas Phulkari is simple and lightly embroidered for everyday use

End Use

Phulkari is an essential part of the bridal clothes and is worn as a veil or wrap by women on special occasions. A specific pattern of Phulkari is also used as the canopy on religious occasions. Presently, Phulkari is being done on bed linen and apparel like tops, tunics, and skirts.

Figure 9.23 Phulkari Embroidery

7.4.8 Dori Work

Region

Dori embroidery is basically a cord or a strong thread. This work is stated to be the Cro Magnon Era.

Technique

It is used to fill up the petals of a flower or leaves. The applique is fixed with chain stitch or Dori work to give it a dimensional effect. It is the tasselled or frilled border for decoration.

Motifs

It can be crafted in a floral pattern radiated all over the attire or having double work border. It is a unique decorative lace, which is frequently available with fine silver, metallic and golden lines.

Style of Work

This art is related to applique embroidery. Woven fabric either gold or silver is fixed onto the other fabric to create different surface textures. Various colours of cords are used for the embellishment of the fabric. Couching stitches and some stitches of zardozi are used. Matching colours of the cord can be used to make couching of the cord invisible.It is usually combined with sequins and pearls to form a mesmerizing effect.

End Use

Lehanga, salwar kameez, kurtis, bags, purses, shoes, blankets, caps, and blouses are worked with cords. This art work gives a rich look to the garments.

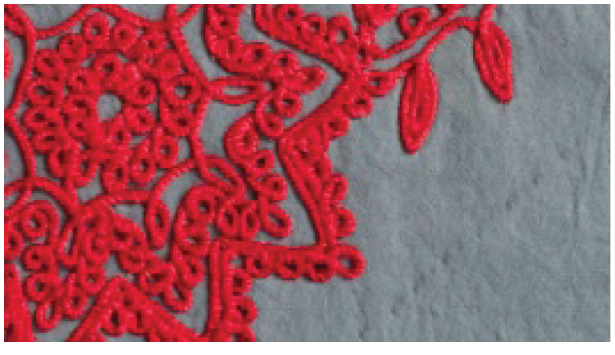


Figure 9.24 Dori Work

7.4.9 Gota Work

Region

Gota work was patronized by the Mughals. This work was spread to the courts of Jaipur and Jodhpur. The embroiderers of Jaipur, Bikaner, Ajmer, Udaipur and Kota are world famous for their uniquely styled gota work. Gota Patti work is also known as Aaritari or zardozi. Moghals and Rajputs royals used to wear the clothes worked with Gota Patti.

Technique

Gota work is done with a strip of gold or silver ribbon. Kasab or ribbon is drawn under a calendar to give it a flattened effect called as "Badla". For custom made garments, the base metal used is copper coated by silver etc. The Gota Patti ribbon is cut, folded and patched over fabric The other materials used are dory, beads, sequins, stones etc. The base fabrics used for Gota Patti work are lightweight chiffon, georgette, satin solid dyed or printed fabrics. Awe or Aari needle is used for this method.

Motifs

The design and motifs are inspired by nature like birds (peacock, parrot, sparrow), human figure (BaniThani), animals (elephant, horse). The modern design like paisley, geometrical, palanquin, checker board are also in fashion. These

motifs are structured into buta, butties and cut into different shapes likes flower pot (Gamla), Keri (Mango) and champak flower, and stitched with the base fabrics by chain stitch or by hemming.

Style of Work

Badla was prepared by mixing 100 grams of silver and 10 grams of gold. The mixture is hammered into thin sheets and cut into very fine strips. In recent years pure yarns are replaced by synthetic yarns. The colours commonly used are red, orange, pink, magenta, maroon and yellow which are nowadays available in all possible shades as per the customer demand.

End Use

Edging of sarees, dupattas, ghagras, lehangha cholis, kurtas, bed spreads, cushion covers, clutches, shoes, rugs, upholstery, anarkali suits, bags, stoles and scarfs.

Figure 9.25 Gota Work

7.4.10 Thread Work

Region

History of thread work dates back to Cro-Magnon days or 30,000 BC. During archaeological findings heavy worked clothing's were found. Chinese thread embroidery work dates back to 3500 B.C. For thread work, natural yarns and fabrics have been used since time immemorial.

Technique

Thread embroidery is the decoration of a wide variety of materials and thread, for example; cotton, silk, wool, gold and silver wires. The work can be done on a frame or in the hand. There are various kinds of stitches used are such as chain, satin, long and short, French Knot, interlacing, herringbone, running, stem and back stitch etc.

Motifs

Naturalistic, geometric, abstract, historical and conventional motifs are extensively used.

Style of Work

There are two varieties of thread work embroidery namely surface embroidery and counted thread embroidery. In surface embroidery, the pattern is formed using decorative stitches. Thread is laid on top of the foundation fabric rather than through the fabric. In counted thread embroidery, the fabric threads are counted and then the needle is inserted into the fabric.

End Use

Textile materials and garments, various garments such as kurtis, salwar kameez, skirts, blouses, skirts are worked with thread embroidery.

Figure 9.26 Surface Thread work

Figure 9.27 Counted Thread work

What is Banjara Embroidery?

The nomadic tribes or the Banjaras were wandering groups. They did not limit themselves with the boundaries and binds of the urban life.

Lambani or Banjara embroidery is a combination of colourful threads, design patters, mirror work, stitching patterns appliqué or patch work

7.5 Summary

Belts and bows are an important fashion accessory worn with garments. Traditional embroideries are unique and give a sense of beauty to the garments. In India, each state has its own traditional embroidery and is practiced even today. All the branded items sold in today's market are enriched with any one of these traditional works. Fashion designers who learn and understand each and every work would be successful.

POINTS TO REMEMBER

- Belts - Flexible band or strap of material worn round the waist
- Bow - A fashionable accessory used on garments and accessories
- Picture Smocking - Embroidery is done with stacked cable stitches on fabric folds
- Chambarumal - Traditional embroidery of Himachal Pradesh
- Chikankari - Traditional embroidery of Lucknow
- Kantha - Traditional embroidery of West Bengal
- Kashida - Traditional embroidery of Kashmir
- Kasuti - Traditional embroidery of Karnataka
- Phulkari - Traditional embroidery of Punjab
- Gota work - It is done with a strip of gold or silver ribbon
- Dori work - It is an embroidery work done with a cord or a strong thread

ACTIVITIES FOR TEACHER

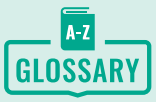
- To show different images for various belts, bows and surface ornamentation items.
- To take students to boutiques in shopping malls to explain various fashion accessories and ornamentation

ACTIVITIES FOR STUDENTS

- To collect images and prepare scrap book for belts, bows and smocking
- To make different types of bow with fabric scrap
- To gather fabric scrapes with embroidery and display

INTERNET RESOURCES

https://mellysews.com/2012/05/smocking-tutorial.html	Techniques of smocking
https://www.youtube.com/watch?v=-fcN2FFVXo4	Making a simple bow
https://www.craftsvilla.com/blog/famous-indian-embroidery-styles/	Indian embroideries
https://hubpages.com/style/types-of-fashion-accessories	Types of fashion accessories



Contour belt	Belt that is shaped to body waist
Canadian smocking	Lattice smocking
Chikankari Embroidery	Shadow work
Dori embroidery	Cord or a strong thread work
Gamla	Flower pot
Gavanti	Double running stitch
Gossamer delicacy	Superfine and delicate materia
Intricate	Complicated
Kantha	Embroidery of West Bengal
Kashida	Embroidery of Kashmi
Kathibharat	Embossed designs
Novelty Buckle	Small and inexpensive toy or ornament
Pre–Shrunk	Shrinking process during manufacturing to prevent further shrinking
Smocking	Gathering a full work shirt at the bodice or sleeve
Traditional gota work	Silver and gold ribbon work

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. Which belt is cut in bias?
   a) Tie b) Faced
   c) Skirt d) Sash
2. A fashionable accessory used on governments.
   a) Belt b) Bows
   c) Faced d) Tie
3. Work done by pulling certain amount of material together.
   a) Bows b) Belt
   c) Embroidery d) Smocking
4. An example for applied decoration.
   a) Applique b) Printing
   c) Embroidery d) Sequence
5. This is also known as shadow work.
   a) Thread work b) Chickankary
   c) Kutch work d) Dori work

PART – II
Answer in Three (Or) Four Points

1. What are simple bows?
2. What is contour belt?
3. Give some techniques of Phulkari embroidery?
4. What is smocking?
5. Indicate the features of Canadian smocking?
6. Define kantha embroidery.
7. List out the traditional embroidery.
8. Name the motifs used in Phulkari.
9. Mention the techniques involved in Kantha embroidery.
10. State the method of doing Kashidha work.

PART – III
Answer in a Paragraph

1. Explain stiffened belt with a neat illustration?
2. Write down the sewing procedure for inter faced belt.
3. Write short note on English smocking.
4. Classify bows and with suitable illustrations..
5. How is Gota work done?
6. Differentiate between Dori work and Gota work.
7. What is thread work embroidery? Give examples.

PART – IV
Answer in One Page

1. Describe the types of belts with illustration.
2. Give an account on the types of smocking.
3. Briefly explain the different types of traditional embroidery.

Answers for Objective Questions

1. (d) 2. (b) 3. (d) 4. (c) 5. (b)

CHAPTER
08

HOME MADE, TAILOR MADE AND READYMADE GARMENTS

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LEARNING OBJECTIVES

- To gain knowledge on the methods of garment manufacturing
- To learn the differences among home-made, tailor made and readymade garments

8.1 Introduction

Clothing has always been important to people because it meets one of their primary needs of human being. Thus, clothing and textiles tend to reflect and offer an important basis for interpreting the social, economic, and political conditions of a nation. Clothing industry or the fashion industry is also a part of garment or apparel industry. The origin of apparel industry dates back to Stone Age when man used leaves, barks and animal skin for covering oneself for protection from climatic conditions.

The apparel industry has gone through several stages worldwide are as follows:

- **Family Stage**

During which all clothing was made at home by family members.

- **Hired Stage**

In this stage, families engaged a dressmaker or tailor to come into their homes and make their clothing.

- **Customer Stage**

In this stage dressmakers or tailors maintained shops to which patrons came to have their clothing made.

- **Commercial Stage**

This introduced men's and women's furnishing stores that featured ready to wear as well as custom apparel.

- **Manufacturing Stage**

This supplied readymade clothing for retail and wholesale trade. There has been considerable over lapping of these methods of clothing production, so that all five stages may be found in most periods of our history.

As the nation became more prosperous and secure, people showed more interest in fashion. Around 1800 century, the custom tailor shops appeared. Here the independent tailor made garments for his customers were made on special order. The seamstress appeared somewhat later. Seamstresses set up shops side by side with the tailors and became known as mistress dress makers.

In general, the apparel industry concentrates on three major methods of garment making namely home-made, tailor made and ready-made.

8.2 Home Made Garments

Home-made garment, as the name indicates are the clothes stitched by the family members for the family members or friends.

8.2.1 History of Home-made Garments

Home sewing remained an individual endeavour until 1863, when Ebenezer Butterick, a tailor and shirt maker by trade, in collaboration with his wife, Ellen, put on the market a set of shirt patterns. All garments were sewn by hand until the development of the sewing machine, which was first introduced in the early 1850.

8.2.2 Description of Home-made Garments

Home-made garments are constructed efficiently at home when required for the family members and also express their talents and interest of the member who sews the garment. If the members in the family are interested and talented in garment construction, they can very well produce garments in the home.

Those who make their own clothing at home have several reasons for doing so. The reasons will vary from family to family, based on the degree of importance given to a particular reason. Home sewing may be done to stretch the family budget although studies indicate that this factor is not as important as it once was.

Figure 8.1 Homemade Garments

8.2.3 Merits of Home-made Garments

- More economical in garment making especially for middle income and low income families
- Requires and increases special talent and involvement among families
- Need not depend on any one outside agent for their garments
- It helps to create unique style among others
- Even though it is time consuming, satisfaction could be achieved in fit and comfort
- Quality garments could be produced based on the availability of the sewing machines and finishing machines

- Motivate creativity among family members.
- Express individual's knowledge and skill in construction.
- Enrichment of the knowledge experience is possible by multiple and regular constructions.
- Applications of CAD in home sewing simplify the procedure.
- Use of old materials is possible.
- Use of bits and unused materials, got while sewing other garments can be combined to make new garments.

8.2.4 Demerits of Home-made Garments

- Time consuming when compared to tailor made and ready made
- It needs special skill and talent to get good style and fit
- It needs adequate knowledge about material types and design styles. Only then it could be managed.

8.3 Tailor Made or Custom Made Garments

Garments made by a person who has knowledge about construction and sews for payment is rightly called as tailor made. Generally the garment is made according to taste and preferences of the individual who is going to wear it. The tailor-made is the opposite of ready-to-wear; it is the realization of a garment according to the morphology and desires of the customer.

8.3.1 History of Tailor-made Garments

English tailoring history dates from the Norman Conquest, at which a more elaborate style of dress was introduced than that to which the simple-living Saxon had been accustomed. In the year 1100, Henry I confirmed the royal rights and privileges to the merchants of Oxford, and by the year 1300 English tailoring had developed to a high degree of craftsmanship. It was in the fourteenth century that the button was devised and this made possible a closer fitting garment. In the same period, dress began to increase in sumptuousness and extravagance, reaching its height in the sixteenth century, and then declining until the industrialism of the nineteenth century. Prior to 1850 all garments were made entirely by hand, but with the introduction of the sewing machine the development of machine-made garments became possible.

8.3.2 Description of Tailor-made Garments

The garments which are constructed with the help of a tailor based on requirement are known as tailor made garments. A tailor is a person who makes garments, repairs or alters clothing up to the satisfaction of the customers. A skilled tailor can make simple clothing from available common fabric material but with time and practice they can learn to create garments of great quality and beauty. A tailor progresses and becomes more skilled as they are able to design beautiful clothing and accessories to compliment every kind of adventure sewing professional work inside the home or out of their home and may work part time or full time.

Figure 8.2 Tailor-made Garments

8.3.3 Merits of Tailor-made Garments

- Economical way of garment making
- Proper fit can be obtained
- This method helps customer to select unique style
- Time saving when compared to home-made garments
- Since skilled tailors work on garment making, the finished garment gives neat appearances.

8.3.4 Demerits of Tailor-made Garments

- Delay in deliver of garments especially during festival seasons.
- Need to depend on tailors for alterations.
- Time consuming when compared to readymade.
- Minimum styles are available for designing.
- Expensive as they are designed and constructed for single person.

8.4 Ready Made Garments

The garments which are available readily in the shops for different age groups with varied colour combinations, up to date styles, latest prints, and trims and also suitable for different occasions and seasons are known as readymade garments. Ready-to-wear is the transition from handmade sewing and tailor-made garments to standardization of sizes for mass production.

8.4.1 History of Ready-made Garments

Readymade clothing had its beginning in the United States between 1825 and 1830. The first manufacturing establishment in New York City was founded by George Opdyke, a former mayor. He opened a factory on Hudson Street in 1831. By 1835, there were several manufacturers of medium grade ready to wear clothes for men in New York; however, the quantities produced were small, and everything was done by hand. The south became an early market for readymade clothes before 1840.

The improvement in ready-made clothing, the wider choice of styles and fabrics, and the ease with which such clothing can be secured have encouraged mainly the homemakers to purchase family wardrobes of ready to wear apparel.

8.4.2 Description of Ready-Made Garments

In the present changing life style, each and every member in the family likes to follow latest trend with regard to their wardrobe. They want to dress up neatly and like to display their status. In today's fast moving life, it is difficult to take the time for getting clothes stitched. We have to go to the market to buy a fabric, look for a tailor order stitching and wait till the dress is ready. To overcome this problem we have an alternative method of buying a readymade dress. Almost for all occasions family members prefer to buy their garments from the leading

readymade shops. They are abundantly available for all the age groups. Suitable accessories are also available along with the garments.

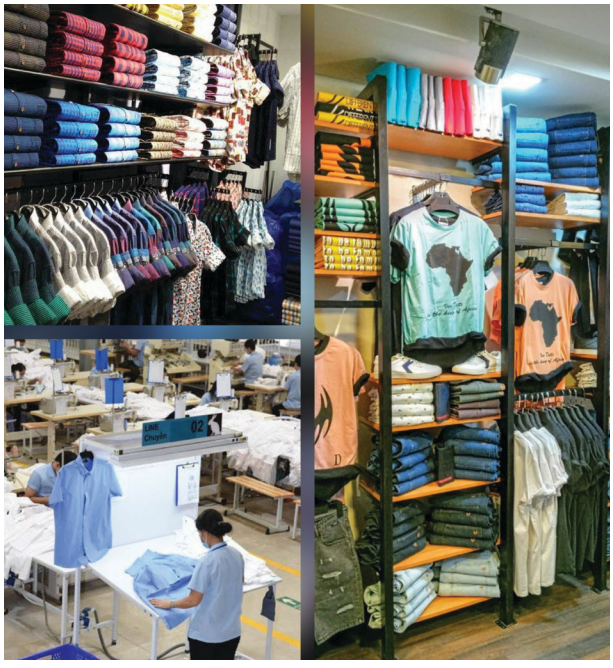


Figure 8.3 Ready-made Garments

8.4.3 Merits of Ready-made Garments

- They are readily available in many places
- Numerous variety in style and materials are possible
- Garments for various seasons and occasions could be purchased whenever necessary
- Saves times spent on construction as in case of tailor made and homemade garments
- Latest trends in fashion could be updated
- Branded goods could be purchased on availability
- Easy care of fabrics is possible with suitable label instructions
- Customers can try out the garments for their personal fitting

8.4.4 Demerits of Ready-made Garments

- Knowledge about proper size is required before getting readymade garments
- Garments may not match the taste of the buyer
- Proper fitting is not possible sometimes due to wrong size
- Expensive than tailor and home-made garments
- In some cases, the readymade garments are less durable due to poor quality in stitching

8.5 Boutiques

The word boutique has become more popular these days but it started as concept stores. These places provide recent fashion garments, best suited for all occasions. Today many of the celebrities go to boutiques to select their dresses.

8.5.1 What are Boutiques?

Boutique is a small shop selling fashionable clothes or accessories. It is also known as a business serving a sophisticated or specialized clientele. The term "boutique" and also "designer" refer (with some differences) to both goods and services which are containing some element that is claimed to justify an extremely high price, is known as boutique pricing. Boutique has various types of fabrics which one can select, match to his/her look and design in a garment. It also has semi stitched or full stitched ready to wear a fashionable garments. An individual could select them and alter it, if needed to provide good fit.

Figure 8.4 Boutique

8.5.2 History of Boutiques

In the late 1990s, some European retail traders developed the idea of tailoring a shop towards a lifestyle theme, in what they called "concept stores" which specialized in cross-selling without using separate departments. One of the first concept stores was 10 Corso Como in Milan, Italy, founded in 1990, followed by Colette in Paris and Quartier in Berlin. Several well-known American chains such as Tiffany and Co., Urban Outfitters, Dash, and The Gap, Australian chain Billabong and, though less common, Lord and Taylor, adapted to the concept store trend after 2000.

8.5.3 Merits of Boutiques

- Specialization in apparel selection and design.
- Own price advantage and expand clothing display scope.
- Improve clothing enterprise by quick response ability.
- Provide more promotion activities thereby meeting consumers personalized demands.

DO YOU KNOW?

When boutique was first started?

As a retailing concept, the boutique is associated with a distinct identity that reflects the taste of the designer or owner; small-scale production with rapid turnover of merchandise; fashion novelty and experimentation; innovative displays and interiors; and an informality among owner, salespeople, and clientele. Although the boutique phenomenon of the 1960s played itself out by the mid-1970s, boutiques remain a vital part of the commercial world of fashion- whether as an individual enterprise or incorporated into a larger setting, such as a department store.

8.5.4 Demerits of Boutiques

- Lack of large variety in design
- Logistics and distribution problems
- Quality and label problems
- Cannot cater to needs of lower income

8.6 Designer Garments/ Wear

Designer garments are similar to boutique garments, but here a particular person with very good knowledge about fashion and skill in garment construction, foresees the upcoming fashion, sketches garment designs, sometimes develop fabrics

suitable for a particular type of garment. A boutique might not have a designer, but usually a designer might have small set up to rather a unit, where he/she can develop patterns cut and stitch. A designer can foresees the upcoming fashion and design a range of garments for either one sex or both sexes of different age groups. Some designers work only for one person. Example- Famous celebrities, movie and the costume designers:

Table 8.1 Designer Garments Wear

Costume Designer	Celebrities Name	Movie
Neeta Lulla	Aishwarya Rai	Jodha Akbar
Anju Modi	Deepika Padukone and Ranveer Singh	Bajirao mastani
Nalini Sriramn	Surya and Tamana	Ayan
Vasuki Baskar	Leading roles in the movie	Kangalal kaithu sei, Chennai 600028, Saroja, Abhiyum Nanum, Goa, Mankatha, Aarambham
Neeraja Kona	Samantha Ruth Prabhu	Mersal
Anu Vardhan	Rajnikanth and Shahruhk Khan	Ashoka (period flim) and Kabali

8.6.1 Merits of Designer Garments

- Unique and made to suit the person
- Very good quality and craftsman ship
- Duplication becomes difficult

8.6.2 Demerits of Designer Garments

- Cost is very high
- In rare case, a designer's garments may not be successful

8.7 Apps for Ready-Made Garments

In present world, the mobile applications have been creating one buzz after the other. According to the stats of business of fashion, the fashion industry has witnessed a growth of about 2.5-3.5% in the year 2017, which was about 3.1% in 2016. Healthy growth of online shopping in previous years and projections indicating boom time has led several companies to launch e-commerce websites for fashion industry, especially after the 2019, when the entire world faced the covid 19 pandemic and lockdown. Traditional shops retained their hold while newer ones consolidated their market position in online. Some of the top online apps for readymade garment shopping are shown below;

Figure 8.5 Top Online Shopping Apps for Ready-made Garments

8.8 Online Shopping of Ready-Made Garments

Online shopping is the trend of the day where in one can sit at his own place and order on his phone, computer or anyone system.

One views the products which are put up on internet, choose and place order. In India, studies by Internet and Mobile Association of India and Indian Market Research Bureau indicate shows about 500 million internet users used online by June 2017. Urban India with an estimated population of 444 million already has 269 million (60 percent) peoples using the Internet.

Over 100 million Indians will have made at least one online purchase in 2017 as compared with 69 million in 2016, a joint report by Associated Chambers of Commerce and Industry of India and Resurgent India states. Unicommerce (2021), reports an increase of 51 percent in volume and 45 percent of Gross Merchant Value (GMV) in the online fashion business as compared to the previous year 2020.

8.8.1 Merits of Online Shopping

- It provides the product with better prices.
- We can get more varieties of product.
- It can give us an opportunity to shop 24/7.
- There is no crowd while online shopping we are free to purchase it any time.
- One can also buy older and unused products at the lesser price.
- One can get their expenses on shopping reduced, like there is no expense on buying and eating out and also in transportation cost.
- Can send gifts more easily to our relatives and friends.

8.8.2 Demerits of Online Shopping

- Delay in delivery
- Lack of significant discounts in online shops
- Lack of touch and feel of merchandise in online shopping
- Lack of shopping experience
- Frauds in online shopping
- Lack of interactivity in online shopping

8.9 SUMMARY

Generally garment manufacturing is carried out in three different methods, namely homemade, tailor made and readymade. As the name indicates homemade is garments made at home by the family members for their family, friends and relatives. Tailor made is garments constructed by a person specially trained using individual body measurements as per the likes on the person. Readymade garments are mass construction of garments for a standardized body measurement. In this case a garment is designed and stitched for various sizes and marketed. Boutiques are becoming a common today. These are small fashion shops where a highly skilled person sews garments for an individual based upon his physical appearance for a specific occasion. Apart in the age of digitization there are many apps, internet and e blogs through which one can buy clothes. Garment making which was once a small job of interest in the family has become a worldwide occupation. Apart the idea of clothes as a means of protection and modesty has changed as fashion clothing for every event mainly through the different methods of garment construction.

POINTS TO REMEMBER

- Home-made garments are more economical method of garment making especially for medium families
- A tailor is a person who makes garments, repairs or alters clothing up to the satisfaction of the customers
- Boutique means a small shop selling fashionable clothes or accessories

ACTIVITIES FOR TEACHER

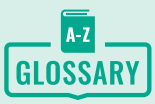
- Arrange a field visit to readymade garment industry.
- Collect different types of home, tailor and readymade garments and show it to the students.

ACTIVITIES FOR STUDENTS

- Ask students to collect different patterns for tailor made garment design
- To encourage students to gather information on how to start a boutique

INTERNET RESOURCES

https://www.youtube.com/watch?v=nLiGsQgCrLw	Owning a fashion boutique - Young entrepreneur
https://www.youtube.com/watch?v=RKjlmj5exiM	How to shop for clothes online and measure garments



Home-made garment	The clothes stitched by the family members for the family members or friends.
Tailor made Garments	Garments made by a person who has knowledge about construction for payment
Boutiques	These places provide recent fashion garments, best suited for all occasions
Designer Garments	A particular person with very good knowledge about fashion and skill in garment construction, foresees the upcoming fashion, sketches garment designs, sometimes develop fabrics suitable for a particular type of garment.
Online shopping	The trend of the day where in one can sit at his own place and order on his phone, computer or anyone system

QUESTIONS AND ANSWERS

PART – I

Objective Questions

1. _____ has always been important to people because it meets one of their primary needs.
   a) Fabric
   b) Clothing
   c) Sample
   d) Yarn

BMH6J

2. _____ increases special talent and involvement among families.
   a) Homemade garment
   b) Readymade garment
   c) Boutique
   d) Tailor Made
3. Numerous varieties in style and materials are possible through _____.
   a) Homemade garment
   b) Readymade garment
   c) Boutique
   d) Tailor Made
4. _____ are mass production of garments for a standardized body measurement.
   a) Homemade garment
   b) Readymade garment
   c) Boutique
   d) Tailor Made

PART – II

Answer in Three (Or) Four Points

1. What is homemade garment?
2. Who is a tailor?
3. Explain the term boutique.
4. What are the merits of readymade garment?
5. Give few online apps for shopping.

PART – III

Answer in a Paragraph

1. Write short notes on history of homemade garments
2. List the merits and demerits of tailor made garments

PART – IV

Answer in One Page

1. Compare readymade garments and boutique garments
2. Explain in detail about online shopping and its apps

Answers for Objective Questions

1. (b) 2. (a) 3. (b) 4. (b)

CHAPTER 09

ORGANIZATION STRUCTURE

OTA5B

LEARNING OBJECTIVES

- To understand the basic concepts of organization structure in garment industries
- To gain knowledge about the merchandiser and quality control

9.1 Introduction

Providing quality products, quality services and timely delivery are the utmost responsibilities of garment industries. Right from the procurement of raw materials to sample development, sourcing, merchandising, production planning, industrial engineering, bulk production, quality control, packaging and shipment process are carried out with integrated information through Enterprise Resource Management (ERP - Software).

9.2 Organization Structure

Coordination between managers, factory managers and relationships among the employees of an organization are important to solve day-by-day problems. One of the main tasks of a supervisor is to create a team spirit among the workers and will ensure everyone's contribution in achieving higher goals of the organization through teamwork.

9.3 Merchandiser

Merchandiser is a person who takes care all the business in the garment industry like buying selling and other business promotional activates. His duties are as listed below

- Works as an intermediate person between manufacturer and buyer.

DO YOU KNOW?

What is matrix organizational structure?

The teams report to multiple leaders and keeps this communication is kept open between the team members and leaders. This helps the company to start innovative projects and create new products.

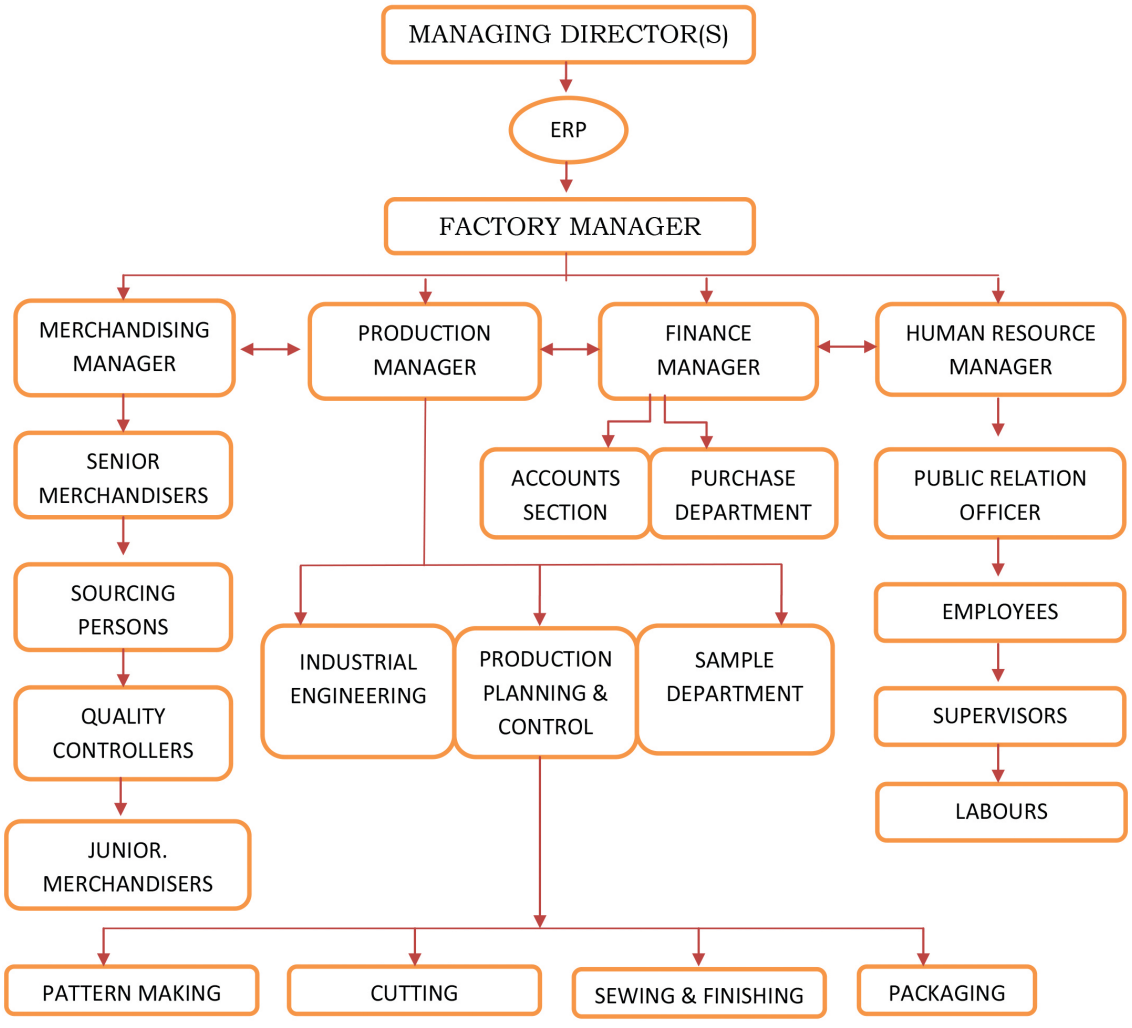


Figure: 9.1 Organizational structure of garment industry

- Coordinates with buyer for orders, sending sample garments for buyer's approval and receives approvals and corrections on the sent samples based on buyer comments.
- Estimates garment cost and follows up on production activities through juniors
- Harmonize with specific buyers/ responsibilities as sampling merchants and production merchants.
- Sampling merchandisers take care of sampling activities and communicate with buyers for the purpose of sample development and queries on sampling.
- Production merchandisers are associated with merchandising activities related to planning, sourcing, bulk production and production follow-up.

9.3.1 Sourcing

Sourcing is defined as the process of deciding and selecting the supplier, based on the lowest quotation with satisfied quality. It includes terms and conditions of payments, from whom and where to purchase manufactured goods or components, number of styles, sizes, colours, which decides the complete procuring of goods. The main motivational

Which city has the best organizational textile structure?

Greenville, south Carolina is known as the "Textile capital of the world" with reference to organizational structures. People from all over the world travel to learn about innovations in the textile organizational structures at Greenville.

force of sourcing garments/fabrics is to give the highest level of satisfaction on quality, at a low production cost. The process of fabric sourcing is very dynamic which predominantly depends on the fabric type, cost, and lead time.

Different types of Sourcing

- Outsourcing
- Insourcing
- Near-sourcing
- Low-Cost Country Sourcing (LCCS)
- Global Sourcing
- Prime/Subcontracting Arrangements
- Captive Service Operations (low-cost location,provide service resources directly to the organization)
- Professional Service

9.3.2 Quality control (QC)

Quality is one of the key success factors of the garment industry. Quality control workers always put efforts to improve and ensure the high quality of garments. Quality assurance builds quality at each step of the manufacturing process including designing, production and beyond. A quality controller is accountable for examining the quality of input and output materials or products relevant to manufacturing. Quality Inspectors or Quality Controllers (QC) are representatives of the audit team, who analyze the production processes and method of working techniques.As per the buyer's requirement **'inspection criteria sheet' or 'inspection checklist'** is prepared by a quality controller to check the contents of the product, packaging, colour, barcodes, appearance, possible defects, functions and special requirements of clothing.

Tasks of the Quality ControlDepartment:

- To set Quality Standards
- To establish Standard Operating Procedures (SOP)
- Pre-production stage: To audit the inward fabric and trims, hence ensure only quality goods are accepted. Taking care of product development and sampling stage in quality aspects of samples.
- To make certain that no defective fabric is sent to the cutting department. If any small defect is found in the fabric, it should be marked or highlighted on the fabric for the purpose of communication.
- To prepare the audit report of the fabric and trims quality.
- To conduct a pre-production meeting before starting bulk production.

9.4 Production Manager

Production manager's task involves planning, coordinating and controlling the manufacturing processes along with industrial engineers, production planning and control workers and sample department people. Production managers work with a team of designers, patternmakers, cutters, sewers and other professionals to ensure their firm's product quality standards.

Role of Production Manager:

- Planning and organizing production schedules.
- Assessing project and resource requirements.
- Estimating, negotiating and agreeing on budgets.
- Managing time scales with clients and managers.
- Ensuring compliance with health and safety laws.
- Determining quality control standards.

9.4.1 Sampling

Sampling is the process of making a garment prototype prior to starting bulk production. Making samples is a crucial step before placing the bulk order in mass garment manufacturing, where clothing firms buy garments in large quantities. This department checks the fit of the sample. The sampling department conveys complications relevant to specific orders at the time of starting bulk production.

Activities of the Sampling Department:

- Analysis of garment spec and comprehending the garment workmanship.
- Help merchants in preparing the bill of material (BOM) for the sample.
- Calculate fabric consumption.
- Follow the complete processes of cutting, sewing, finishing and checking for sample making.
- Test fabric shrinkage.
- Prepare quality inspection sheet.
- Report measurement and visuals.

9.4.2 Industrial Engineering

The Industrial Engineer (IE) team is engaged in cutting, sewing, and finishing work to reduce manpower and increase the machine capacity to complete the work in progress. Major tasks are line balancing, product analysis, preparing operation bulletin for a style of garment, calculating garment SAM (Standard Allowed Minute), garment-based layout modification and workstation layout designing

Role of Industrial Engineer

- Estimate the SAM (Standard Allowed Minute) of the garment.
- Calculate sewing thread consumption for garment construction.
- Prepare operational breakdown with SAM and target for each operation for an order (style).
- Find the construction improvements through method study.
- Calculate the time study of the operators.
- Know the capacity of operators.
- Promote line balancing.
- Calculate the labour wages.

9.4.3 Production Planning and Control(PPC) Department

Production Planning and Control (PPC) departmentis responsible for planning and scheduling orders. It allocates the style to a sewing line and controls the processes such that the deliveries are met on the required time. PCD stands for Planned Cut Date, which means the date on which a garment factory will start the bulk-cutting procedure of an order.

Activities of the Production Planning and Control Department

- Job or Task Scheduling.
- Material Requirement Planning (Inventory).
- Process selection & planning.
- Capacity planning.
- Line planning.
- Loading Production.
- Production follow-up and execution.

9.4.4 Pattern making, Cutting and Sewing Department

Pattern making department makes patterns manually or by the CAD system. Pattern grading, marker planning, incorporating garment fit corrections and fabric consumption calculations are important tasks of the pattern team.

In the cutting department size and production per day are planned according to the input requirements of the sewing department. The cutting department consists of a cutting department head, cutters, spreaders, quality checkers and helpers for sorting, ply numbering and bundling process.

Sewing is a process of assembling the individual parts of garments together and join them into a whole garment. The basic sewing parameters include stitches, seams and method of sewing. A higher number of workers are involved in this process compared to any other processes in the garment industry.

9.4.5 Packing and Shipping Documentation Department

Packing is a process of constructing a wrapper cover over a product for easy transportation and storage purpose. Different kinds of techniques and materials are used to wrap the products to protect the products from shock, weather and the environment. A good packing material stops the product from pilferage and breakage. The packing section packs the goods as per ratio or assortment. In the latter process, the apparel inspector inspects the apparel product according to the apparel packing list.

The shipping and documentation department prepares shipment-related documents. They convey the shipment and dispatch relevant details to the buyer and track the issues till the shipment reaches the buyer's hand.

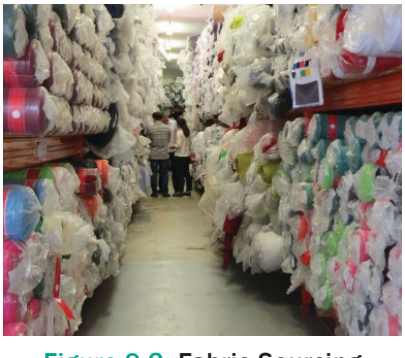


Figure 9.2 Fabric Sourcing

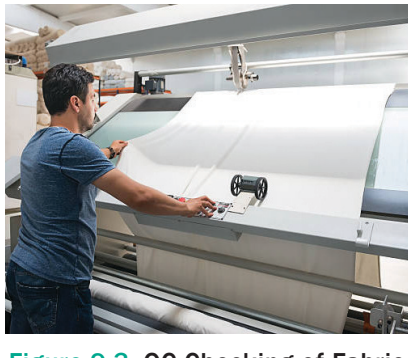


Figure 9.3 QC Checking of Fabric

Figure 9.4 Production Manager

Figure 9.5 Sampling

Figure 9.6 Industrial Engineer

Figure 9.7 Production Planning and Control

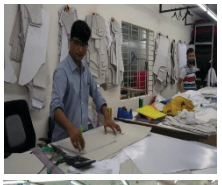


Figure 9.8 Pattern-making and Cutting Department

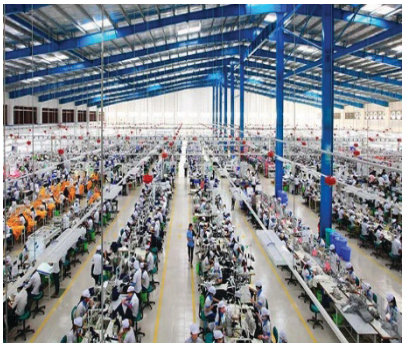


Figure 9.9 Sewing- Bulk Production Lines

Figure 9.10 Production Supervisor

Figure 9.11 ERP Systems

9.5 Financing Manager

A financing manager is on take care of the monetary transaction of the industry. His functions are as follows

- Examine financial statements and report day-by-day expenditure of the garment industry.
- Coordinate with the store and purchase department to complete the sourcing and payment process.
- Prepare salary bills and payments towards employees.
- Retain the records of supplier's due payment and follow the buyer's banks for pending payments.

9.6 Human Resource Manager

All the activates related to employees and human interactions with in the unit is

taken care by human resource managers. Their responsibilities are

- Coordinate the interview process.
- New employee orientation.
- Compiling, sorting, and generating periodic reports.
- Scheduling and coordinating training and orientation sessions.
- Handle labour issues
- Solve factory and social compliance
- Appraisal evaluation for offering promotions and increments

Public Relation Officer

Public relations (PR) Refer to managing industry in reation to the people towards sustainable practices, employment oppurtunity or to increase the livelihood of people.

Role of PRO in Garment/Fashion Industry

- Finding ways to improve the image of the organization in front of media multinational corporations and societies
- Connecting big retail partners to associate business networks
- Selecting right brand ambassadors or influencers to improve the brand value
- Keeping the range of garments in correct sizes for the brand ambassador on the advertisement, flim making and promotions etc.,
- Developing great story angles to pitch media contacts
- Regulating the employee - employer – society relations activities based on social corporate responsibiity

9.6.2 Supervisors

A **production supervisor** is accountable for managing and arranging the process, staff, and equipment on a manufacturing floor. They will oversee scheduling and routine production activities as well as acting as the first line of support for trouble shooting when problems arise.

Finishing supervisor ensures completion for a given order with desired quality to meet shipment schedule.The responsibilities of the supervisores are listed below

- Accomplish manufacturing results by communicating job expectations
- Reach manufacturing objectives by outlining job expectations
- Coach, counsel and maintain discipline among employees
- Initiate, organize and implement the systems, policies and procedures
- Stays calm under pressure and makes tough decisions when ever needed
- Act as a mentor and support others.

9.7 Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is a software package, that is helpful to organize and control everyday industry events such as procurement, accounting, supply chain operations, risk management, compliances and project management. ERP is an integrated business application that helps the garment industry to systematically manage operations towards higher productivity and save time. It streamlines every function in an apparel manufacturing unit like managing demand planning, apparel design,

production, delivery of finished products, cash flow, revenue recognition, and optimizing all core business operations. It leads to reduced inventory and decreases the overall business cost.

9.8 Summary

The process of apparel making in garment production units is a planned operation that includes steps like confirmation of order from buyer, sourcing, quality checking, sampling, pattern making, laying, marking, cutting, stitching, inspection, finishing, pressing, packaging and shipping.This procedure transforms the raw materials into final goods. If the preproduction phase of material preparation is improperly carried out, production will not be up to the mark of quality, making it difficult to maintain the industry. The managers and employees of various departments were coordinately working together to ensure the quality of products and the growth of the industry. Standard Operating Procedures (SOPs) are created by garment industry based on the machines and product types they utilize. The application of ERP in the garment industry helps to oversee and integrate key corporate operations such as accounting, human resources, supply chain management and inventory control into a unified system.

POINTS TO REMEMBER

- Merchandiser works as an intermediate person between manufacturer and buyer.
- Sampling is a process of making a garment prototype prior to starting bulk production.
- A production supervisor is accountable for managing and arranging the process, staff, and equipment on a manufacturing floor.
- Production planning department is responsible for planning and scheduling orders known as Production Planning and Control. Allocates the style to a sewing line and controls the processes such that the deliveries are met on the required time.
- Enterprise Resource Planning (ERP) is a software package, is helpful to organize and control everyday industry events such as, procurement, accounting supply chain operations, risk management, compliances, and project management.

ACTIVITIES FOR TEACHER

- Arrange an industrial visit to the nearest garment manufacturing industry to know the various department activities.

ACTIVITIES FOR STUDENTS

- At the time of industrial visit, collect the responsibilities of each department head and submit a report

INTERNET RESOURCES

Link	Video Title
https://youtu.be/dRu5MJ9nHdI	Merchandiser job description / Fashion merchandising career / Retail merchandiser job interview
https://youtu.be/beCyMXNN9a8	What is Fashion Merchandising | Types of Fashion Merchandisers | Fashion Merchandising Career
https://youtu.be/x2OtFqjZHSQ	Merchandisers & Supply Chain in fashion industry
https://youtu.be/zX9KoZ7tz6Y	Quality assurance in apparel manufacturing
https://youtu.be/IDOq4c-K4tY	Role of a merchandiser in garment manufacturing business

GLOSSARY

Operation	The action of functioning
Quality	It is a degree of an object or product that satisfies a specified set of attributes or requirements.
ERP	Enterprise Resource Planning (software)
Organization	A group of people working together in order to achieve a particular aim
Quotation	A quotation is a fixed price offer that can't be changed once accepted by the customer.
Audit	An official examination of the present state of something,
Standards	A level of quality that people expect and generally accept as normal
Spreaders	A level of material comfort in terms of goods and services available to someone or some group.
Line Balancing	Keeping the same level of inventory or load
Documentation	Material that provides official information or evidence or that serves as a record.
Inventory	A complete list of items or goods in stock, or the contents of a building

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. One of the main tasks of a supervisor is to create _____ among the workers

   a) Coordination b) Team spirit

   c) Unity d) Bond

2. _____are associated with merchandising activities related to planning, sourcing and production follow-up.

   a) Manager

   b) Sample merchant

   c) Supervisor

   d) Production merchandisers

3. As per the buyer's requirement inspection _____is prepared by a quality controller to check the contents of the product .

a) Cost sheet

b) Checklist

c) Quotation

d) Production Management

4. Reading garment spec and understanding the workmanship of the garment is the job nature of _____ department

a) Sampling

b) Production

c) Human Resource

d) Purchase

5. Scheduling and coordinate the training and orientation sessions are job nature of _____ department

a) Sampling

b) Human Resource

c) Production

d) Industrial Engineer

PART – II

Answer in Three (Or) Four Points

1. Define sourcing in the garment industry.
2. Write the role of a production manager in the garment industry.
3. Brief about the sampling.
4. What is meant by packing?
5. Make a note on ERP.

PART – III

Answer in a Paragraph

1. List out the duties of merchandiser in the garment industry.
2. Enlist the different types of sourcing.
3. Explain the task of a quality controller in the apparel industry
4. Write the activities of the production planning and control department.
5. Brief on the responsibilities of the Human Resource Manager

PART – IV

Answer in One Page

1. Elaborate the organizational structure of the garment industry with a flow chart.
2. Describe the responsibility of Merchandiser manager in garment industry.

Answer for the objective questions

1. (a) 2. (d) 3. (b) 4. (a) 5. (b)

CHAPTER
10

APPAREL MERCHANDISING

LEARNING OBJECTIVES

- To understand the merchandising process
- To learn the methods used in apparel merchandising

10.1 INTRODUCTION

Merchandising is an important part of marketing. It is the planning and supervision involved in marketing a particular product and making it available at places, times, prices and in quantities that will best serve to realize the marketing objectives of a business. It involves all activities necessary to determine and satisfy the wants and needs of a consumer. It offers the goods at time and in a place where it can be conveniently purchased. The products must be available in good quantities and in qualities. In textile industry many methods of production are employed to produce products. The techniques adopted to sell the products to consumers are referred as apparel merchandising.

Merchandising deals with the selection, orders and purchase of actual product. One must understand that demand is the foundation upon which all retailers plan their merchandise. Merchandise is chosen carefully to best serve the needs of the target market. The merchandiser requires special skills which include, predicting what one will sell and when it well sell best. A thorough knowledge of the merchandise that includes garment types, its details and methods of production, qualities and finishes are prerequisites to merchandising.

Definition of Important Terms

Merchandising may be defined as "All the planning and activities involved in bringing the goods or merchandise for sales to the customers so that it fulfils the customer needs

ultimately brings customer satisfaction." The process of **apparel merchandising** may be defined as the development, execution and delivery of a product line based upon the needs of a target market.

Merchandising is the process through which products are planned, developed, and presented to the identified target markets.

Marketing identifies the customer and determines what products to offer to that customer and how to do so while meeting the financial return objectives of the company. Merchandising functions as a bridge between the design and sales to fulfill the needs of the buyer. **Marketing** is the management process through which goods and services move from concept to the customer. As a practice, it consists in coordination of four elements called 4P's. This includes identification, selection, and development of a **product**, determination of its **price**, selection of a distribution channel to reach the customer's **place** and the development and implementation of a **promotional** strategy.

- **Right Merchandise**-Retailers should have the merchandise that customer wants.
- **Right Place**-Appropriate location of the merchandise is important since it decides the accessibility.
- **Right Time**-Apparel purchases are mostly seasonal in nature and so it must be supplied promptly when it is most needed.
- **Right Quantity** -Required amount of inventory to get profitable sales volume.
- **Right Price** -Suitable price to get profit and also to meet the competition and customer expectations.
- **Right Promotion** -Right balance between the investment and the appeal created for the customer.

10. 2 Merchandising in Apparel Industry

Merchandiser should have constant eye on the manufacture and communicate with the manufacturer to get the goods as per the requirement of the buyer. A slight deviation in the production of garments in quality may spoil the name of the retailer. Delay in the production may also lead to a great loss for the manufacturer.

Figure 10.1 Merchandising in Apparel Industry

Apparel supply chain involves complicated raw materials and processes to get apparel products from concept to consumer. The apparel supply chain involves five major sectors. They are Fibres, Yarn, Fabric, Garment and Retail sectors

Quality standards and measurements have been set for all the above and other properties and characteristics of the raw materials by various Textile and Apparel Associations in their concerned countries. Apparel product is also associated with accessories and packing accessories. In order to monitor all these quality and other requirements the role of merchandising department

plays a vital role. Merchandising in every garment industry is effected by the various factors like dramatic growth of the economy, complicated raw materials and processes, complex network, advent of new styles, reduced product life cycle, textile innovations, computer applications and global transition.

10.3 Roles and Responsibilities of Merchandiser

Merchandiser is basically a coordinator one who liase between buyer and apparel manufacturer to ensure quality merchandise at right delivery time. Merchandising involves all the activities right from communication to execution. Merchandiser is the person who takes in charge of all these activities. A good merchandiser has attributes of hard work, sincerity, loyalty, team work, managing and negotiation in the apparel industry. Customer satisfaction and retention mainly depends on effective and efficient merchandising.

Figure 10.2 Merchandiser

The major function of merchandisers is execution of sample orders, costing and programming, production scheduling or route card drafting, accessories arrangement (order placing follow up), pattern approval / dummy / actual size set approval, pre productions follow up, pilot run and in process inspection, production controlling, follow quality control procedures, monitoring all the activities of in the main and sub-contractors' units, timely reporting to the management, record maintenance, sample development, taking measures for consistent production and taking preventive action to maintain the targeted performance.

10.4 Process Flow in a Garment Industry

Garment manufacturing includes a number of processes from order receiving to dispatching and shipment of the finished garments. A garment export unit generally has many departments. Some of them are merchandising, sampling, fabric and accessories store, spreading, marker planning and cutting, sewing, washing, quality control, pressing and folding, packing and dispatching and administrative departments.

10.4.1 Merchandising Department

Merchandising department is the star of the department among all the working departments. Merchandising is the only department having maximum control over the departments and totally responsible for profit and loss of the company.

10.4.2 Sampling Department

Designing and sampling are the main process in garment industry and it has a vital role in attracting buyers. The buyers generally place the order after they are

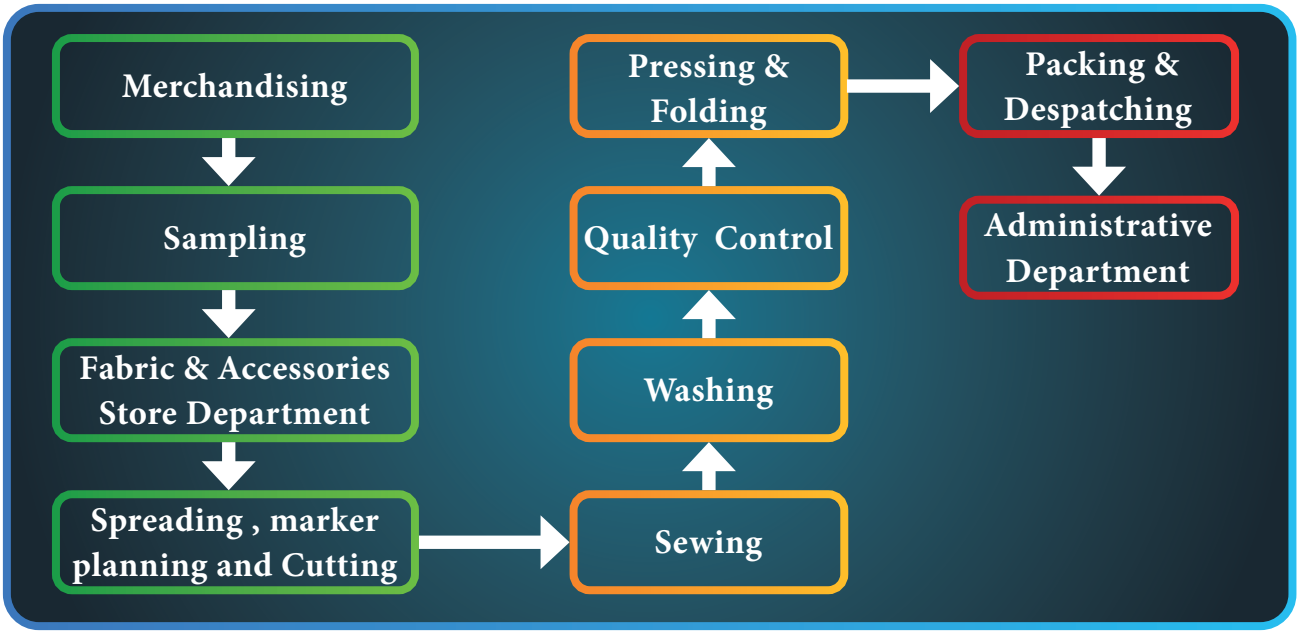


Figure.10.3 Process Flow in Garment Industry

satisfied with the quality of the samples. The samples decide the ability of an exporter. The buyer will access the exporter and his organisation only by the samples. There are different phases of sampling; the first phase covers the development of the initial concept or design idea through its approval by the customer. The second phase covers the process following acceptance of the first prototype sample and includes the functions of sourcing and ordering component, testing the product and carry out trails and finalized sample specifications. The third phase includes a range of activities that are carried out before large scale or bulk production capacity outside the home producer or developers wherever this is applicable.

10.4.3 Fabric and Accessories Store Department

After receiving purchase order from the buyer merchandiser plans and issues purchase order for buying raw materials like fabric, buttons, thread, and for dyeing, printing, embroidery and other accessories. These raw materials are checked for colour, quality and then approved by the merchandiser.

DO YOU KNOW?

What are the most important fashion centres?

- USA - New York- Garment District (Madison Avenue)
- UK - London - British Fashion Council
- FRANCE - Paris-Chamber Syndic ale
- ITALY - Milan- Alta Moda
- GERMANY —Interstoff trade shows in May and November.

10.4.4 Spreading, Marker Planning and Cutting Department

Approved sample, pattern and measurement chart must be ready in the department. The head of the department will be a pattern master. His skill will be a very big asset to the company by way of saving the fabric and making new designs for the export trade.

Spreading

In spreading, the number of plies of fabric, that the production planning process has dictated to the length of the marker plan, colours required are correctly aligned as to length and width, and without tension. This saves time, cost of cutting and cost of materials. Every unit needs at least one steady spreading table which is of 18 m/1.5m length and breadth where the fabric can be spread for marking and cutting.

Marker Planning

The amount of fabric consumed per garment and the total profit of the garment unit is decided by the marker planning and pattern making. The length and width of the pattern sheet is very important here. Based on this marker only the spreading length will be decided. The fabric consumptions and fabric wastages depends on this marker making.

Cutting

This is the process of separating the selected fabric into pattern pieces to be stitched into the ordered garment. The layout has fold and dotted lined marked, this is cut in the cutting department and the pieces are bundled and sent to the sewing department. The common cutting methods are Manual cutting (hand operated with heavy sharp scissors), Semi-automatic cutting (hand operated with Round/ straight knife cutting machine), Fully automatic cutting (using Laser / Water jet / air jet cutting machines).

10.4.5 Sewing Department

Power operated machines preferably batch system is used to get uniform quality and better productivity. Production in charge will be responsible for the sewing operation. He must know quality aspects in every stage, guide tailors and supervisors to get the work done at satisfactory level and to meet the targets. Additional to sewing machines, attachments, guides, folders are required for special operations. Machines like Double needle, Feed of arm, Button Hole and Buttoning machines are also required.

10.4.6 Washing Department

The sewed garments are washed thoroughly as a measure to prevent shrinkage. In some cases washing is carried out to produced special effects, like faded jean pants. Washes vary depending upon the type of fabric used and the type of garment. Some of the common washes are garment wash, stone wash, caustic wash, bleaching acid wash, sand wash and enzyme wash. The basic machines used are washing machine, hydro extractor and tumbler drier

10.4.7 Quality Control Department

Quality is an important concept in all stages of garment production. To get the quality product, check and controls must be ensured in each stage of the production. This will also avoid all kinds of mistakes.

One of the fore most steps in merchandising is costing and ecological testing. Costing becomes a part of every other steps in merchandising, since all the steps includes some sort of cost

Costing is the process of estimating and determining the total cost of producing a garment, including the cost of materials, labour and transportation as well as the general expenses of the

operating the business. Merchandiser must have thorough understanding of costing. The classification of costing are:

Job costing: Cost allocation for a particular manufacturing job.

Process costing: Cost occurred on labour, material and overhead charges.

Direct costing: A total of all expenses those are directly related to the manufacture and selling of a good. This includes processing cost and commercialized cost (money spend on advertisements).

The main advantages of garment costing are;

- To create an expansion strategy,
- To take decisions
- Helps in obtaining maximum profit
- Determination of pricing

Ecological Testing: Ecological testing is one of the prime concern followed in every textile and garment industry especially after the mid of 19th century, when environment safety become the top most priority of production. Since harsh chemicals, dyes maybe used in the production process ecological testing has become a must in all the textile / garment units. This ensures correct uses of ph value, prevention of formaldehyde content, heavy metals plasticizers and organotin compounds.In a nut shell ecological testing ensures the use of eco friendly materials.

10.4.8 Pressing and Folding Department

Most of the garment units are well equipped with steam pressing equipment with vacuum table, dummy blowers, shift folding tables and stain removing guns. The real skill of pressing and folding can improve sales. A well-tailored garment can be finished badly or a badly stitched garment can be presented properly. Some of the methods followed in folding the constructed garments are Stand up pack, Flat pack, Deadmen fold and Semi stand pack

10.4.9 Packing and Dispatching Department

In the garment export trade packing is an art and is a very important stage. If the presentation and packing is good, it will really attract customers and sales will be faster. Our ultimate aim must be to impress the buyer with quality product. While packing, ratios, size, colour, tables are to be observed and followed meticulously. As policy matters decision taking or making has to be done as early as possible. Delay in minutes/ hours will create problems and losses.

10.4.10 Administrative Department

All the departments in a garment industry require administrative support for their operations to ensure orderly and systematic functioning. The procedure covers preparing orders to supplies, checking goods, timing and methods of stock taking, imports and exports, obtaining credits for returned goods and materials, issuing credit for customer returns, negotiating and issuing tenders for major projects and purchase of furniture and equipment.

10.5 Categories of Apparel Merchandising

The most important categories of apparel merchandising include Apparel fashion merchandising, Apparel production or

export merchandising and Apparel retail merchandising

Activities like fashion forecasting, design, product development and retail sales come under fashion merchandising. It also includes production and retail merchandising. Apparel production or export merchandising involves activities with the manufacturer or exporter, like sample development, planning and programming, manufacturing and shipment. Apparel retail merchandising involves mainly retail business like retail promotion and sales, visual merchandising, inventory control, sales evaluation and retail operations.

Figure 10.4 Categories of Apparel Merchandising

10.6 Steps in Merchandising

The main steps involved in merchandising are discussed below:

- **Fashion Forecasting** - Study the upcoming fashion and envisage the expected garment, design, style and other features along with the designer
- **Sourcing** – Based of the garment confirmed, collect the of fabrics, and trims such as interlining, buttons, label, from different mills and stores after checking the quality and prices.
- **Buyer Communication** - Getting information about customer profile (whether be a distributor, retailer or exporter, domestic or international)
- **Enquiry and Sampling**- Ensuring the requirements of the buyer, prepare a sample garment.
- **Pre-Costing** - Calculating the fabric consumption and estimating the cost
- **Order confirmation and acceptance** Display the prepared sample to the buyers in person or by post in case of export orders and get the order confirmed by receiving an order letter of mail. This should mention details about the quality, quantity, price, sample size, shipping and delivery date.

Order Review

Order review - Order review is going through or reading the order sheet carefully to check for the particulars with that of enquiry for any variations and also requirements of the particular order.

Planning and Programming

Planning includes the time calculation and scheduling of the order lead time. Programming involves decision making on certain activities in a particular order. (Like checking the time needed for making one sample, machines in hand and incase production of samples required cannot be produced within the time mentioned by the buyer in the regular two shifts, then one more shifts can be planned)

- **Samples**- Sample is a product which represents a group, lot or batch. The quality, style, fit, design, workmanship or any other characteristic of the product are noted in every sample. Based on

the samples the buyer gives approval or comments for any alteration in design style or quality.

- **Accessories Sourcing and Purchasing** - Accessories can be generally classified into production accessories and packing accessories. Production accessories are the ones which becomes the integral part of the apparel. Packing accessories are those used in packaging of the apparel product which may be individual or bulk packing. If the accessories have to be purchased domestically from the exporters supply, then it needs approval from the buyer.

Inspection

Inspection is the visual examination or review of raw materials, partially finished components of garments and completely finished garments in relation to some standards specifications, or requirements. Here the garments are checked for the required measurements. The principle involved in inspection is the early detection of-defects, feedback of this information to appropriate people. This helps in determination of the cause and ultimately correction of the problem. It is done under three sections namely raw material inspection, in-process inspection, and final inspection

Cutting and Production

Changes or problems cannot be rectified once the cutting process is done. So one has to make sure that certain things are completed or approved before proceeding the work. Before cutting the size set samples, approvals, accessories, in-house testing reports and fabric inspection reports should be checked.

Packing

Packing should be done in accordance with the requirement of buyer as individual or bulk, type of packing material, number of units in each carton. The carton boxes should be checked for total number of cartons, code numbers, shipping marks, order number, style name and other assortment details. Shipping marks are the symbols or logo which are given by the buyers and are to be printed on the carton boxes for easy identification

- **Shipment** -Shipment is the process of expediting the goods to the buyer through proper means of transport so that it reaches the buyer safely and on right time. The most common means of transportation are by water, air, road or combination of these. Products are also transported by courier or post. Various procedure and documents have to be prepared before shipment. Every person importing or exporting goods requires an importer – Exporter Code Number (IEC). The export of goods is controlled by certain rules and regulations. Export of goods may require export license, forwarding and clearing agent, shipping order, customs formalities, excise clearance, insurance and negotiation documents etc.

10.7 Visual Merchandising

Figure 10.5 Store Display for Visual merchandising

Visual Merchandise displays offer retailers non-personal ways of presenting products or information to consumers inside stores. It is common practice for wholesalers and sales representatives to set up and maintain displays of their products. This is one way that these suppliers can insure shelf space for their products, thus, they claim, benefitting both themselves and retailers. Retailers use displays to stimulate sales of products.

Visual Merchandising is the art of displaying merchandise in a manner that is appealing to the eyes of the customer. A creative and talented retailer can use this upcoming art to breathe in new life into his store products. A perfect design process and the ability to create ideas that are different are required. Visual merchandising includes window displays, signs, interior displays, cosmetic promotions and any other special sales promotions taking place.

10.7.1 Elements of Visual Merchandising

Visual Merchandising is commonly accepted as a merchandising technique that uses the visual elements effectively. Visual merchandising encompasses the design of a store. Visual element refers to lighting, colours and signage. In short, they are the visual communications in the designing of an environment.

Some of common tools used for visual merchandising are:

- **Mannequins**

It is a full bodied dummy of human form and it is available in all age groups from children to adults. Mannequins are used by apparel retailers to display their products in-store and in the window display. They are a tool used to show consumers what their products look like on a person. The mannequins will commonly be styled to match trends as well display the latest products available.

- **Forms**

A form is an imitation of some part of a body. It is generally used on top of a stand and serves to display articles of clothing and accessories.

- **Colour**

Colour is a significant tool used in visual merchandising. It can be used to influence the behavior of consumers and evoke different reactions. Colour is a powerful tool in exterior displays. It can aid creativity for exterior window displays and can have a unique effect on the consumer. The use of colour can create atmosphere, grab the attention of by-passers, and attract them to the store. Different colours can trigger different emotional responses.

- **Light**

Light can be used in many ways in retail stores, from highlighting an object or area of a store to simply illuminate the entire store.

- **Store Fixtures**

Stands used in a variety or assortment window from glass line to the back of the display window. Most common types of fixtures

- **Platforms and Elevations**

Platforms or elevations can be tables and other pieces of furniture that can be used to rise up mannequin, a form or arrangement of merchandise

- **Round Racks**

Circular racks on which garments are hung around the entire circumference

- **Bin**

A rimmed table or bin used to hold sale or special merchandise on the sales floor, especially in discount operations; it has no formal arrangement

- **T-Stand**

Freestanding, two-way stand in the shape of that holds clothes on hangers, sometimes with one straight arm and one waterfall

- **Four-way Stand**

A fixture with four extended arms, that permits accessibility to hanging merchandise all the way around

- **Music**

The music played within a store can promote a brand's image, and can also aid consumers into making purchase decisions. Music that suits the style of the store and the target audience is an important factor to consider.

10.7.2 Methods of Visual Merchandising

Visual merchandising includes mainly two types namely interior display and exterior display

Interior Display

The interior display should guide and persuade the customer to purchase. It includes Store Layout, Store Design and Display Space. Store layout is the arrangements of the all the items in the stores for sales. It gives a clear idea of how and where each product must be placed. Store design includes collection of information about the products to be displayed (space required), developing a schematic diagram to check if all the products could be neatly displayed and choosing the right means of display like the stand, lights needed. Display space comprises of the area used for display and area allotted for the movement of the buyers, to pick up the goods and bill them. In display space, an off shelf display can have more impact on the consumers off shelf display shows the product in use. It can motivate buyers to buy the product if displayed along with suitable complementary products. Example: Display of bed spreads on bed with pillows, pillows covers, cushions and suitable blankets. This is also considered as visual features that create interest or excitement within the store.

Exterior Display

This includes aspects like Window Displays and Store Front. Window displays have a particularly important role to play in communicating to the potential customer what the retailer stands for in terms of product and shopping environment. Window displays make customers aware of the type of merchandise being sold, and hopefully will attract the interest of target customers.

10.8 Summary

Merchandising is considered as the core of marketing. It involves all activities in product development and selling. In garment manufacturing, merchandising is divided as apparel and fashion merchandising. The most common activities are designing the product, getting the approval of the product and order, purchasing of raw materials, testing and quality assurance, packing, shipping the product, selling the product and finally satisfying the serviceability of the product. A merchandiser is the person who co-ordinates all these activities. Visual merchandising is the art of displaying merchandise in the most effective manner to motivate customers to buy the products. Visual merchandising includes window displays, signs, interior displays and cosmetic promotions.

POINTS TO REMEMBER

- Merchandising is an important part of marketing and involves all activities necessary to determine and satisfy the wants and needs of a consumer.
- Apparel merchandising involves a constant watch of the production of the apparel products.
- Merchandiser is basically a co-ordinator, one who works between the buyer and apparel manufacturer to ensure quality merchandise at right delivery time.
- Categories of apparel merchandising includes Fashion merchandising, Apparel production or export merchandising and Apparel retail merchandising
- Visual merchandising includes mainly two types namely interior display and exterior display

ACTIVITIES FOR TEACHER

- List the apparel categories and sizes for women, men and children.
- Collect and show sample types and details developed during apparel manufacture and export

ACTIVITIES FOR STUDENTS

- Collect the list of apparel manufacturing centres in India.
- Prepare an album using pictures of different visual merchandising techniques

INTERNET RESOURCES

https://www.youtube.com/watch?v=nLiGsQgCrLw	Owning a fashion boutique - Young entrepreneur
https://www.youtube.com/watch?v=RKjlmj5exiM	How to shop for clothes online and measure garments

GLOSSARY

Apparel Merchandising	The planning, development, execution and delivery of a product line based upon the needs of a target market.
Marketing	The management process through which goods and services move from concept to the customer.
Merchandiser	Coordinator between buyer and apparel manufacturer to ensure quality merchandise at right delivery time
Visual Merchandising	Non-personal ways of presenting products or information to consumers inside stores.
Mannequins	It is a full bodied dummy of human form.
Four-way Stand	A fixture with four extended arms, that permits accessibility to hanging merchandise all the way around

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. Merchandising is the process through which products are planned, developed executed and presented to _____.
   a) Producer
   b) Retailer
   c) Buyer
   d) Wholesaler

2. Visual merchandising includes mainly two types of display namely -----
   a) Store and wall display
   b) Interior and window display
   c) Layout and space display
   d) Window and exterior display
3. A co-ordinator, one who works between the buyer and apparel seller is known as the-----
   a) Merchandiser
   b) Classic designer
   c) Pattern master
   d) Cutting master
4. Stands on which garments are hung around the entire circumference is called
   a) Four way rack b) T-stand
   c) Round rack d) Straight rack
5. Stand up pack and Flat pack are names of different
   a) Stands used for pressing
   b) Folding departments
   c) Quality control systems
   d) Packing techniques

PART – II
Answer in Three (Or) Four Points

1. Define apparel merchandising.
2. What is sampling?
3. What is meant by window display?
4. Describe Mannequins
5. Write about packing department.

PART – III
Answer in a Paragraph

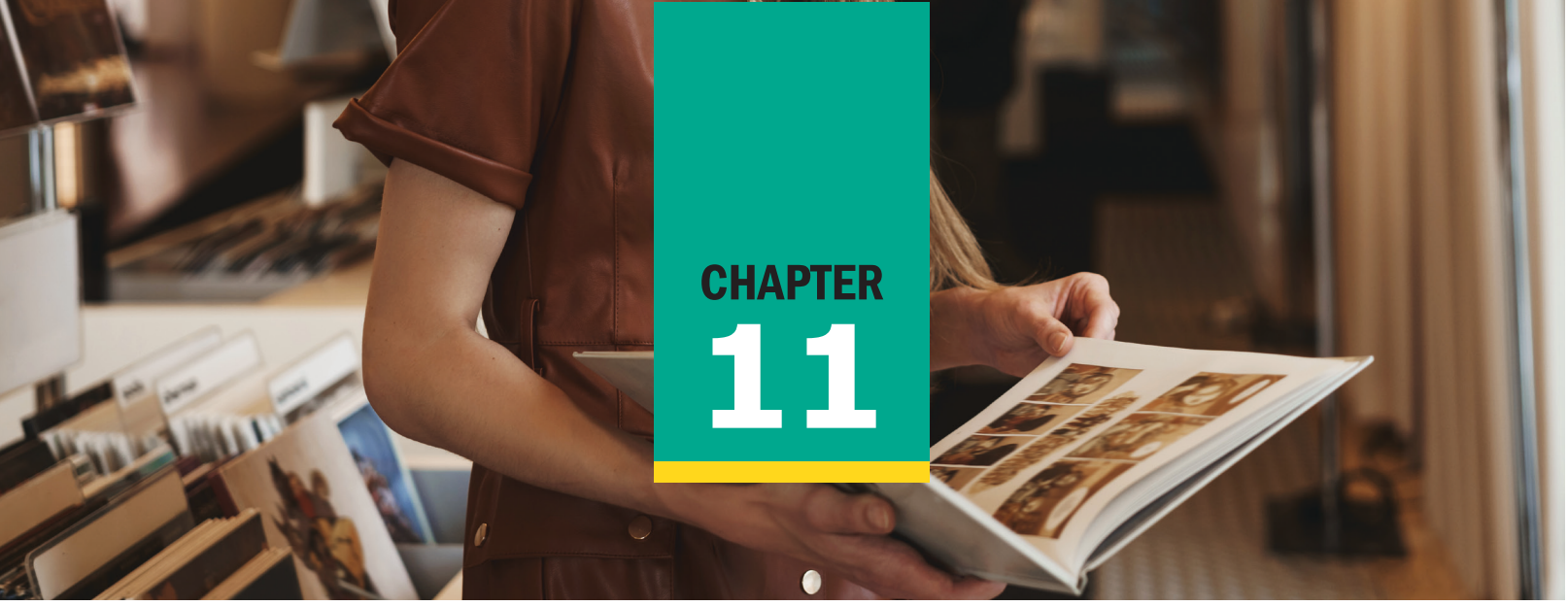
1. Differentiate Merchandising and Marketing.
2. List the roles and responsibilities of merchandiser.
3. Explain the activities carried out in spreading and cutting department.
4. Discuss about categories of apparel merchandising.
5. Write about different store fixtures in visual merchandising.

PART – IV
Answer in One Page

1. Explain the importance terms of merchandising in apparel industry.
2. Describe the various departments in an apparel unit.
3. Discuss the steps in merchandising process.

Answers for Objective Questions

1. (c) 2. (b) 3. (a) 4. (c) 5. (b)



CHAPTER
11

TEXTILE MARKETING AND ADVERTISEMENT

GIOM1

LEARNING OBJECTIVES

- To learn about the importance of textile marketing and advertisement
- To know the different concepts of marketing and types of advertisements

11.1 INTRODUCTION

Marketing is the process of exploring, creating, communicating and delivering value to meet the needs of a target market in terms of goods and services. Textile marketing usually involves an exchange between buyers and sellers or between other parties.

The main objectives of marketing:

- Selection of a target audience and certain attributes to emphasize in advertising.
- Operation of advertising campaigns and to create customer value.
- Agreements with retailers, wholesale distributors or resellers.
- Attempts to create awareness, loyalty and positive feelings about a brand.

11.2 MARKETING CONCEPTS

The "marketing concept" proposes that to complete its organizational objectives. It is defined as a strategy that companies and marketing agencies design and implement in order to satisfy customer needs, maximize profitand beat the competitors or outperform them.

The main five concepts are production, product, selling, marketing and societal.

The Production Concept- Customers are supposed to prefer products that are easily accessible and have low asking prices. This organisational viewpoint is frequently applied when demand exceeds supply or when product costs are high but can be brought down by mass production.

The Product Concept-The company that follows this concept thinks that it can attract customers by producing good quality and high-performance products with innovative features. It is assumed that since the customers prefer superior quality, a better product at a high cost may not affect the customer's budget.

The Selling Concept-Adoption of the concept occurs when extensive marketing and promotion efforts are made. This ideology takes client buying resistance and inertia into account. The presumption is that if a consumer were left alone, they wouldn't purchase enough of the business's goods.

The Marketing Concept-A new corporate philosophy called as "marketing concept" has emerged as a result of consumer-focused marketing. The marketing idea places a strong emphasis on identifying potential customers' needs and providing them with items that would meet those needs.

The Societal Concept-According to the humanistic or social marketing notion, a firm's job is to identify the need of target markets and then satisfy those needs in a way that preserves or improves both the consumer's and society's well-being. Consequently, every company should address social and ethical issues while creating its marketing plans. This would assist the company in developing a more positive public image.

11.2.1 Definition of Marketing

Marketing is the process of "creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large," according to the American marketing Association.

Nature of Marketing

- **Art as well as science:** In the technological arena, marketing is the art and science of choosing target markets and satisfying customers through creating, delivering, and communicating superior customer value.
- **Dynamic process:** Being a branch of social science, marketing is a complex, continuous and interrelated process. It involves continuous planning, implementation and control.
- **Exchange process:** All marketing activities revolve around commercial exchange process. The exchange process implies transactions between buyer and seller.
- **Goal-oriented:** Marketing seeks to achieve benefits for both buyers and sellers by satisfying human needs.
- **Consumer-oriented:** A business exists to satisfy human needs; hence business must find out what the desire of the customer and there by produce goods and services as per the needs of the customer.

Scope of Marketing

- **Consumer Behaviour:**The marketer researches and evaluates consumer reactions to a specific commodity or service.
- **Product Planning and Development:**Idea generation, concept development, product development, branding, packaging, and commercialization of the product

are all included in the process of product planning and development.

- **Promotion:**Sales promotion, word-of-mouth marketing, and personal selling are all examples of promotion. It's important to create the ideal advertising mix if you want to meet your marketing goals
- **Distribution:** In marketing, studying the distribution routes is crucial. A marketer must reach the most clients at the lowest possible cost.
- **Consumer Satisfaction:** The main goal of marketing is to satisfy the needs of the consumer. When a customer's needs are met, they are satisfied. The success of the business depends on the satisfaction of the customers.

Importance of Marketing

- Marketing is the heart of industrial activity that tells what,when and how to produce. It is capable of guiding and controlling business.
- Marketing facilitates the interchange of products by bringing together the producers of those goods who are prepared to sell them for money and the consumers who are prepared to part with their money (purchasing power).
- Marketing creates four components of utilities viz. time, place, possession and form. The form utility refers to the product or service a company offers to their customers. The place utility refers to the availability of a product or service in a location which is ease for customers. By time utility, a company can ensure that products and services are available when customers need them. The possession utility gives customers ownership of a product or service and enables them to derive benefits in their own business.
- By making the client aware of the benefits of purchasing the supplied goods and services, advertising and sales tactics assist in removing the barrier or lack of awareness on the side of potential customers.

11.2.2 Marketing Environment

A marketing environment encompasses all the internal and external factors that drive and influence an organization's marketing activities. A marketing environment is vast and diverse, consisting of controllable and uncontrollable factors.

Marketing managers must stay aware of the marketing environment to maintain success and tackle any threats or opportunities that may affect their work.

A good grasp of your marketing environment helps to identify the market opportunities, the potential threats which may affect your marketing activities and manage changes in the environment and maintain growth in a dynamic economy.

11.2.3 Marketing Segmentation, Targeting and Positioning

STP marketing is an acronym for **Segmentation**, **Targeting** and **Positioning** – a three-step model that examines products or services as well as the way one communicate, their benefits to specific customer segments. STP marketing enables the company to create incredibly targeted marketing campaigns to connect with and engage each target population.

Segmentation

The segmentation stage is the first step in the STP marketing model. The main objective here is to develop various consumer segments based on the features and criteria you select. Following are the top four categories of audience segmentation:

- **Geographic segmentation:** Division based on country, region, state, and province.
- **Demographic segmentation:** Division based on age, education, occupation, and gender.
- **Behavioural segmentation:** Division based on business interactions and purchasing strategies.
- **Psychographic segmentation**: Division based on consumer preference and life stlye.

Targeting

Targeting is the second stage of the STP marketing model. The main objective here is to review the segments, already produced and identify the best segments which are likely to produce the target conversions.The ideal segment is one that is actively growing, has high profitability, and has a low cost of acquisition.

Size: Consider how large the segment is as well as its future growth potential.

Profitability: The market segment that is most willing to pay for own goods or service should be taken into account. Comparatively, calculate the lifetime value of each segment's clients.

Reachability: Every marketing efforts, must take into account how simple or difficult it will be to reach each segment. One should also consider segment's cost per acquisition and low profitability.

Positioning

Positioning, the last step in this framework, enables you to distinguish produced goods or services in the eyes of your target market from those of the competition. One needs to identify what it is that sets your company apart from the many others that do what you do.

Symbolic positioning: Boost the sense of identity, belonging, or even ego of your clients. Luxury cars are a perfect illustration of this because they fulfil the same purpose as other cars while also enhancing the self-esteem and image of their owners.

Functional positioning: Offer customers real benefits while resolving their problems.

Experience-based positioning: Pay attention to the emotional bond of the customers with your good, service, or brand.

11.2.4 Fundamentals of Marketing Mix

Neil Borden in the year 1953 introduced the term Marketing mix, an extension of the work done by one of his associates James Culliton in 1948

Definitions of Marketing Mix

- According to Kotler and Armstrong, "Marketing mix is the set of tactical marketing tools that the firm blends to produce the response it wants in the target market".

- According to W. J. Stanton, "Marketing mix is the term used to describe the combination of the four inputs(4 P's) which constitute the core of a company's marketing system: the product, the price structure, place and promotional activities and the distribution system"

Elements of Marketing Mix

The elements of the marketing mix are often called the four **P's** of marketing, namely product, price, place and promotion.

PRODUCT: An object that is created or manufactured to meet the needs of a certain population is referred to be a product. A product can be an actual good or an abstract service.

They can be categorized on the basis of the following:

Usage:

Consumer Goods: These are items like cloths, soaps, or cosmetics that are intended for individual use by homes or final consumers

Industrial Goods: These include grey fabrics, dyes, machinery, and other items that are used as inputs to produce ready made garments or to provide services, like dry cleaning silk sarees

Durability

Durable goods: These are products that are used for months or years at a time, such as sewing machine.

Non-durable goods: These are products that are often consumed in one sitting or have a limited number of uses, like face masks, medical textiles used for only one time.

Tangibility:

Tangible goods: These items can be handled and seen physically. Example: belts, needles, buttons and hooks.

Intangible products: Services offered to individual consumers or corporate customers are referred to as intangible goods. Example – Teaching the operations of sewing machines. garments pattern making.

PRICE: The cost a customer pays to consume a thing is essentially its price. The demand for and sales of the product are impacted by price changes. Pricing plays a role in how consumers view a product since consumers tend to link cheap products with inferior quality. A price that is too high could cause people to appreciate their money more than the product. It is crucial to consider competitive pricing when setting prices as a result.

Major pricing strategies followed are:

Market Penetration Pricing: Getting a presence in a very competitive market is the goal of this pricing strategy. In order to reach an early breakeven point, maximise earnings in a shorter amount of time or pursue revenues from a niche, the company prices its goods lower than its rivals in the market.

Market Skimming Pricing: This technique, which most often relates to a company's goal to skim the market by selling at a premium price, is the most widely used.

Differential pricing: It requires a company to set different prices for certain market segments.

Geographic Pricing: By setting the product's price lower than that of the competition in one area and using a penetration strategy in another, it aims to take advantage of economies of scale.

Product Line: These are some tactics that a multi-product company can use. Product line can be described as a group of related products produced by the same company and sold under the same brand name. Example – Sports shoes are the major products produced by Nike company. But they also produce and sell related products like tracksuits, sports bras, sports bags and caps.

PROMOTION-Promotion stands for the various forms of communication that marketers employ to inform their target market about the product. It is a crucial part of marketing because it can increase sales and brand recognition.

Promotion is comprised of various elements like:

Advertising often refers to paid-for communication channels including television commercials, radio spots, print ads, and online ads. Tools used to promote sales in a specific area and period of time are referred to as **"sales promotion."**

Personal selling exposes the product directly to consumers or potential customers. It refers to the strategy of using salespeople to influence customers to act favourably and purchase the good. Press releases, exhibits, sponsorship agreements, seminars, conferences, and events all fall under this category.

Word of mouth is an unofficial method of advertising a product's advantages used by happy customers and regular people. Internet word-of-mouth is also a kind of communication.

PLACE: Making the goods available to clients in locations that are convenient and reachable is referred to as placing or distribution. The product needs to be distributed and positioned in an area that is easily reached by potential customers. Planning the distribution network and the logistics might help you reach the market. While logistics refers to the practical side of the distribution, the distribution structure covers channel design, structure and management. The manufacturer, distributor, wholesaler/ dealer and retailer are the channel members who can carry out the distribution.

Organizations can employ distribution alternatives on the basis of their products and they, include:

Intensive distribution: This refers to making the product available at all potential outlets. Soft drinks are an example of this, as they are sold at several locations to provide easy accessibility for the customer.

Exclusive distribution: The business chooses to sell fancy clothing or expensive cars exclusively through one or two large retailers**.**

Selective distribution: This is the middle route approach to distribution, where the company chooses a few outlets to distribute its goods, allowing the manufacturer to obtain greater control and the best possible market penetration. Example – Apple cell phones are sold only in Apple showrooms and big branded mobile shops.

11.3 CONSUMER BEHAVIOUR

Consumer behaviour is the study of how customers behave when they look for, buy, use, evaluate, and discard goods and services they believe will meet their needs. It aids marketers in comprehending how consumers make decisions. Consumer behaviour is described as the "actions consumers engage in when purchasing, using and discarding items and services".

11.3.1 Meaning and Importance

Consumer Behaviour Meaning

Any person who engages in any of the activities (evaluating, obtaining, using, or disposing of products and services) mentioned in the definition of consumer behaviour is referred to as a "consumer" in a more general sense. Consumer behaviour is the decision-making and physical action people take while deciding whether to buy, use, or discard products and services.

Importance of Consumer Behaviour

- The dynamic aspect of the market and its trend is shown through consumer behaviour.
- Customers choose distinctive goods that reflect their unique requirements, personalities and lifestyles. Organizations can satiate particular wants by studying consumer behaviour.
- Finding consumer's unmet needs and wants is made easier with the aid of consumer behaviour research such as customer lifestyles, income levels and new influences.
- After identifying unmet requirements and wants, the organisation must choose the ideal combination of product, price, distribution and advertising.
- The marketer can build and promote products/services that are especially suited to consumers' goals and needs by identifying these groups, learning how they behave, and understanding how they make purchasing decisions.
- Customers now have a wider selection of options than they did before globalisation began in 1991. Therefore, it is essential for marketers to analyse consumer behaviour in order to respond to a variety of customer preferences.
- Maintaining current clients by meeting and even exceeding their expectations is known as customer retention. Consumer behaviour research can help to turn a casual customer into a dedicated, devoted customer.
- The manager can make organisational activities more customer-focused by studying consumer behaviour.

11.3.2 Factors Influencing Consumer Behaviour:

The factors which influence consumer behaviour includes cultural behaviour, social factors, personal factors, psychological factor and economic factor.

Cultural Factors- A person's culture is the collection of fundamental beliefs, values, desires, and behaviours that they have acquired from their family and other significant institutions.The broader cultural setting in which they develop as individuals can have an impact on the kinds of goods and services they choose to purchase. Example: Purchase of gowns

/ Silk sarees / Lehanga and choli/ Dothi and shirt / Sharwani and pyjama by the people of diffrent regions and countries.

Social Factors-Individuals learn many meanings of consuming through social circumstances, which themselves represent a continuous and dynamic intake. Some of the significant social elements are family, reference groups, roles and status. Example – Use of national and international branded clothing by teenagers to depict their status.

Personal Factors- A person's consumption behaviour is shaped by his personal characteristics. Some of the important personal factors are age, income, personality, self-concept, occupation, lifestyle and gender. Example – Purchase of dresses for various wedding functions, birthday parties, sports, pooja by the people from the city unlike a family in a village who may buy just few grand dresses.

Psychological Factors:

Psychological factors also have an effect on consumers. Internal psychological factors can have a role in decision-making. These factors have an effect on what drives a buyer to make a purchase. Some of the important psychological factors are motivation, learning, perception, attitudes and beliefs. Example – Use of a particular colour for all exams / interviews considering that colour as a sign of "Good Luck".

Economic Factors - Economic factor also has a significant influence on buying decision of consumer behaviour. Some of the important economic factors are income, expectations, consumer credit and liquid asset. Example – A middle income adult might not be able to get a wide range of branded clothes.

11.3.3 Role of Consumer Behaviour In Marketing

The marketing concept, a commercial viewpoint that developed through a number of distinct methods, such as the production concept, the product concept, and the selling concept, is the foundation of the discipline of consumer behaviour.

The underlying marketing goals of the manufacturing concept's inexpensive, efficient production and extensive distribution are based on the assumption that consumers are more interested in low-cost product availability. This perspective makes sense when customers are more focused on getting the product than on particular characteristics and will purchase what is currently offered rather than wait for what they truly desire. These days, utilising this viewpoint makes sense in emerging nations or in other circumstances when the main goal is to increase the market.

Marketers discovered that producing only the things that customers desired was much simpler. Research first provided evidence for this. Thus, the company's main focus shifted to the demands and desires of its customers. The marketing concept is the name given to this customer-focused marketing ethos.A marketer should produce what it can sell rather than attempting to market what it has already produced, according to the marketing principle.

A marketer should produce what it can sell rather than attempting to market what it has already produced, according to the marketing principle. The study of consumer behaviour examines how consumers choose what they buy, need, want, or do in relation to a good, service, or organisation. To predict how potential customers would react to a new product or service, it is essential to understand consumer behaviour. It also aids businesses in identifying untapped prospects. Understanding consumers is crucial to finding market opportunities, which in turn helps product innovation.

11.3.4 Stages of Buying Behaviour

The consumer decision-making process involves five basic steps. This is the process by which consumers evaluate and make a purchasing decision. The five steps are problem recognition, information search, alternatives evaluation, purchase decision and post-purchase evaluation.

Stage of Problem Recognition - When a consumer encounters an "issue", they are more likely to recognise a need. When a consumer realises that there is a significant gap between his current level of satisfaction and expectations in a consuming circumstance, the buying process begins.

Stage of Information Search - Following the arousal of a need, a consumer's behaviour leads them to obtain information about the goods and services they are evaluating from a range of sources (personal, public, commercial, and experiential) in order to further analyse it and come to a choice.

Stage of Alternative Evaluation - A consumer moves on to the next step of evaluating alternatives, once their interest in a product has been piqued. Consumers frequently consult two different sorts of information when assessing potential alternatives, this include listing the brands (or models) from which they want to choose (the evoked set) and standards they'll employ to assess each brand (or model). The two types of evaluations are :

- **Cognitive evaluation:** When a customer makes a decision based on facts.
- **Affective evaluation**: Using affective factors to evaluate the options is known as affective assessment.

Stage of Purchase Decision - The consumer finally makes a purchase decision. One of the three possible purchase decisions is purchase now, later, or not at all.Consumers reach the stage of problem recognition when they choose not to buy. A lack of enthusiasm or changing personal or economic circumstances could be the reason for delaying a purchase. The consumer will make a purchase if favourable sentiments regarding the chosen option are created.

Stage of Post-Purchase Behaviour - The term "post-purchase behaviour" describes how a buyer acts after deciding to buy a product.Therefore, post-purchase behaviour results in three states of the customer namely satisfied, delighted, and unsatisfied.

11.4 ADVERTISEMENT

11.4.1 Introduction

Advertising has grown to be a significant area of marketing since it is the most effective and versatile technique for getting goods from the producer to the customer. To boost sales and promotion, even the smallest item needs advertising.

The word "advertisement" comes from the Latin verb "advertere," which meaning "to turn people's minds toward." A marketing communication called an advertisement uses impersonal, overtly sponsored messaging to sell or promote a good or service in the form of audio or video content. The public can be convinced to get familiar with a product using this communication strategy more effectively than any other. Businesses use advertising to quickly spread the word about their goods among consumers. It is communicated through a variety of conventional and modern media; it is a suitable instrument to broadcast the significance and features of any product that carries real-time information with great emotional appeal.

"Advertising is a paid form of non-personal presentation of the facts about goods, services or ideas to a group. These facts are illustrated with the use of copy and art work that includes photographs and drawings", defined by American Marketing Association.

Need for Advertisement

To attract new clients - When a new family enters the community, the market for a product alters continuously to draw in new clients. Consumer lifestyles and purchasing patterns are always changing, which presents opportunities for new clients in every industry.

Influence shoppers throughout the buying cycle - Advertisements directly reach customers, reducing the time spent on price, quality, and service comparisons, and assisting consumers in sticking with their purchase.

It is profitable over the long term - A strong advertisement gives you a long-term advantage over your market's other competitors. According to a survey, businesses increased their advertising during a five-year period, increasing their sales by an average of 100%.

In order to increase store traffic - The first step to boosting sales and broadening the reach of the products is to ensure constant traffic in the store.

To maintain a positive attitude - It attracts more customers and corrects false rumours and attitudes about a product.

Qualities of Good Advertisement

Interpersonal Communication - Given the fierce competition in the market for every product, customers tend to favour advertisements that are visually appealing.

Good Planning - A successful advertisement will always be well-planned and strategic in order to reach the intended audience. When the objective is met, the advertisement is deemed to have been successful.

Superior Creativity - A crucial component of advertising is bringing one's imagination. An advertisement relies on a group's creativity. The fact that it stays

in people's memories allows creative advertising thinkers sustain steady demand.

Precise execution - Having a strategy in place is crucial, and how it is carried out reveals the quality of an advertisement. It displays the specifics, methods, and fine-tuned values.

11.4.2 Classification of Advertisement

The classification of advertisement are as follows:

Institutional Marketing - To keep the firm or product's name in the public eye during a product shortage, this is done. It also helps a corporation to promote its ideas, policies and occasionally even impending problems. Take, for instance, the suiting and shirting commercial from kadhi.

Product Promotion - It is created with the intention of boosting demand in the market and enhancing the sales and reputation of a service or specific product. Government or private advertisements for products are both acceptable. For instance, the proprietor of the textile store was featured in the campaign at first, and once the store opened, more celebrities appeared.

Innovative Advertising - This is primarily employed when a product is first introduced. In the beginning, it generates a primary demand and spreads information about the product category rather than a specific brand. For instance: The jeggings and leggings commercial advertisement.

Competitive Advertisement - It aids products in getting to the point of market maturity. Instead of being general, the specific brand is the focus. A particular brand's edge and unique selling point are emphasised in an advertisement when compared to others. For instance, several clothing brands offer great services at moderate prices.

Retentive Advertising - When a product wins the top spots, this is done because the sponsor wants customers to remember the brand name when soft marketing is practised. As an illustration, Co-tex textile materials still uses their ads even if they have attained the highest level.

Public Service or Non-commercial Advertisement - They concentrate on a society's, a community's, or a country's wellbeing. The response to these commercials might be viewed as good wellbeing generated for the sponsoring company. For instance, use of kadhi, handloom cloth bags initiatives are promoted in the media to raise public awareness of cleanliness.

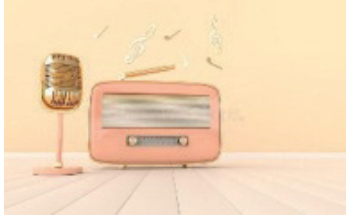
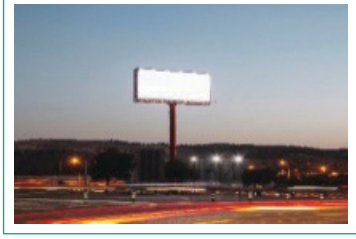
Trade or Business Advertising - It is a type of commercial promotion for wholesale or retail businesses. Focus on product promotion to increase suppliers in the wholesale market. The specific store is underlined in retail. For illustration, popular textile stores use audio and visual media to market.

Regional Marketing - It is an advertisement that is targeted toward a specific geographic area. A company that is based in one area of the world only publishes in that area. For instance, a specific region might include advertisements for local discount sales advertisements.

What is the expenditure of fashion industry per year?

With such a huge amount of money available, the big fashion retailers spend a ridiculous amount of money each year trying to get you to buy their wares. Annual spend on advertising for the industry stands at over $500 Billion, and this figure is only likely to rise by 4.3 %. In the present year 557.99 billion dollars are spent so far.

11.4.3 Types of Advertisements

Type of Advertisement	Description
Print Media	A newspaper can advertise the company to a broad audienceand offer adverts for showrooms and retail stores. Magazines are used to target particular demographics. As an illustration, designer companies advertise in socialites-focused fashion periodicals.
Radio and Audio 	Radio is a fantastic medium for reaching a wider audience. A larger audience is attracted to listening to the radio because of advertising. For instance, the radio announces the Aadi sale for clothes businesses regularly.
Television	Television is a good medium for advertisements that need to reach a wide audience and influence customers through sound, sight, colour and movement. Consider popular textile stores commercial advertisement for its clothesline.
Outdoor or billboard advertising 	People pass by outdoor billboards every day, which influences them to do business with the sponsors. Outdoor billboards located on public buildings and hoardings put along highways have an impact on customers' memories. An illustration might be a highway advertisement for a designer boutique.

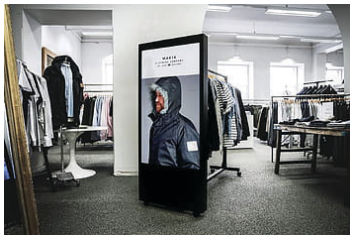
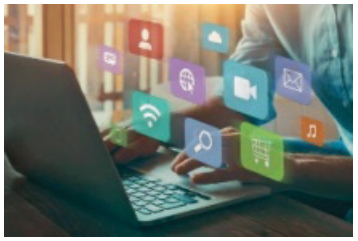
Direct Mail, Catalogues and Leaflets 	It has a more personal approach because it directly addresses the audience that the advertisement can target: the customers. They can also save money for income, and it is more cost-effective. Consumers save pamphlets, as an illustration.
In-store Advertisement 	It happens inside the retail space. Retail companies promote their newest lines of goods or collections at the front of their stores. As an illustration, the store front of a clothing retailer like popular textile stores displays their most recent collection.
Online 	In every regard, it is the most economical method of luring in new clients. Online advertising can reach a global audience. People can view any web page as soon as the advertisement appears on the screen. As in the website's pop-up advertisements for Unique apparel.

Figure 11.1 Types of advertisement

Do you know the present trend in advertisements?

Facebook advertisements are inexpensive and have a high return in sales as it reaches the individuals directly. At the same time the company earns in billions. In 2015 it earned a profit of 3.69 billion through advertisements.

11.4.4 Preparation of an Advertisement:

The stages of preparation of an advertisement include the beginning stage, development stage, execution stage and post-execution stage.

Beginning stage:

- The sponsor presenting the concept to the ad agency,
- Internal deliberation,
- Relevant market research on the target market and competitors for the advertisement
- Media selection for the commercial.
- Allotment of the budget.

Development stage:

- Making or filming the commercial
- Internally evaluating the advertisement
- Creating or creating the advertisement

- Before publishing, test the advertisement
- Receiving approval from the agency's authorities
- Deciding on the advertisement's start and end times.

Execution stage:

- Arranging and reserving the media as advance as needed for publication
- Making the advertisement active and presenting it in the chosen media.

Post-execution stage:

- Watching when advertisements are released
- Assessing and assessing how well the advertisement performed with the audience
- Keep track of consumer feedback
- Evaluating the effectiveness of the advertisement in terms of product sales.

11.4.5 ROLE OF ADVERTISEMENTS

Marketing role - A fantastic way to reach clients is through marketing role advertisements. Any organization's most prominent promotional programme is this one.

The Communication role - It is also a form of mass communication that shapes consumers' perceptions of the product while disseminating various kinds of market information.

The Economic role - Convincing the clients of the virtues and quality of the items can helps society to reach affluence.

The Societal role - It communicates to customers information about the goods. Comparing different brands of the same product is helpful.

ADVANTAGES AND DISADVANTAGES OF ADVERTISEMENT

Major advantages of advertisement

- **It increases Demand** - It attracts the customers and stimulates interest in them to buy the product.
- **It increases the Sales** - As the demand arises, the sale of the product increases.
- **Reduction in Cost and Prices** - As the demand increases the largescale production is made, which will cut down the cost of the product.
- **Creates Particular Image** - A brand image among the consumer is created by the advertisement.
- **Economic Distribution** - The dealers, agents, middlemen distribute the goods and the product
- attains economic distribution.
- **Promotes Business through Competition** - It creates competitor among other brands and results in promotion.
- **Exploration of New Market** - It not only retains the existing customers but also grabs new clients towards them.
- **Helps in Rational Buying** - The quality of the product can be justified.
- **It Guides People** - It helps people to compare various other products.

Major disadvantages of advertisement

- **It increases Unnecessary Needs** Sometimes people buy some unwanted products which they do not use but are merely influenced by advertisement.
- **It increases Cost** - The consumers always bear the expenditure as hidden changes of the product.
- **It misrepresents the Facts** - Sometimes the ideas featured in the advertisements are untruthful.
- **It results in Monopoly** - It acts as a threat to small scale manufacturer.
- **Wastage of Resources** - Human mind is proving to change and they are influenced by other products soon.
- **It spoils the Beauty** - Sometimes spoils the beauty of the city, towns and villages as too much is exposed.
- **Affects the Children** - Children are greatly influenced by the advertisements as they are more prominent wearers.

11.5 SUMMARY

The actions taken by a business to reach its target customer are referred to as marketing.Marketing aims to increase brand awareness among consumers and develop bonds with current clients. It involves creating, distributing, marketing, selling and delivery of products to final customers.Consumer behaviour refers to the study of consumers and the methods they employ to select, utilise and discard goods and services, as well as customer's emotional, mental and behavioural reactions. Advertisement is the most effective form of communication which reaches consumers directly. Advertising has become an integral and inevitable part in create awareness among customers. Thus, it should be planned and executed carefully and more efficiently to be most effective among consumers.

POINTS TO REMEMBER

- A strategy that companies design and implement in order to satisfy customer needs is called marketing concepts.
- Consumer behavior, product planning, promotion, distribution and consumer satisfaction are major factors for development of marketing.
- The fundamental elements of marketing mix are 4P's- Product, Price, Place and Promotion.
- Cultural factor, social factor, personal factor, psychological factor and economic factor can influence the consumer behaviour.
- Advertisements are an essential part in the market which increase the communication of ideas, services or products through newspapers, magazines, TV, posters, online and radio, resulting in purchase of the product.

TEACHER ACTIVITY

- The teacher can show video to the students on how different types of marketing has been done.
- Conduct a debate among students of two groups regarding the advantages and disadvantages of advertisement

STUDENTS ACTIVITY

- Plan and prepare for a marketing mix of any clothing brand
- Collect and show the different types of advertisements.

INTERNET RESOURCES

https://www.youtube.com/watch?v=qCtL8szl-Pk	Segmentation, Targeting, & Positioning
https://www.youtube.com/watch?v=t8_PBTl02Hg	4Ps of Marketing / Marketing Mix
https://www.youtube.com/watch?v=a3a-V3KSsMI	Five Stages of Consumer Buying Decision Process
https://www.youtube.com/watch?v=sUPdwHFO3Do	Importance And Benefits of Advertising
https://www.youtube.com/watch?v=c4DYavFS3qI	How to Create an Effective Advertising Plan

GLOSSARY

Advertisement	A notice or announcement in a public medium promoting a product, service, or event
Consumers	The *consumer* is the one who pays something to consume goods and services produced.
Leaflets	A printed sheet of paper containing information or advertising and usually distributed free
Sponsor	A person or organization that pays for or contributes to the costs
STP	Segmentation, Targeting, Positioning

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. Marketing usually involves an exchange between
   a) Buyers and Sellers
   b) Consumers and Retailers
   c) Organizers and Customers
   d) None of these
2. _____ is the first step in STP marketing model.
   a) Targeting
   b) Segmentation
   c) Positioning
   d) None of these
3. The stage where a consumer encounters an issue is called as _____
   a) Stage of problem recognition
   b) Stage of Information Search
   c) Stage of Purchase decision
   d) Stage of Post-purchase behaviour
4. Regional marketing is focused on _____.
   a) Particular age of people
   b) Particular group of people
   c) Particular geographicalarea
   d) None of the above
5. Which of these advertisements utilizes public buildings?
   a) Direct mail
   b) In-store advertisements
   c) Print media
   d) Bill boards

PART – II
Answer in Three (Or) Four Points

1. Define marketing concept and identify the five main concepts.
2. State the importance of consumer behaviour.
3. Discuss the role of Consumer behavior in marketing.
4. Indicate the qualities of good advertisement.
5. List the stages of advertisement preparation.

PART – III
Answer in a Paragraph

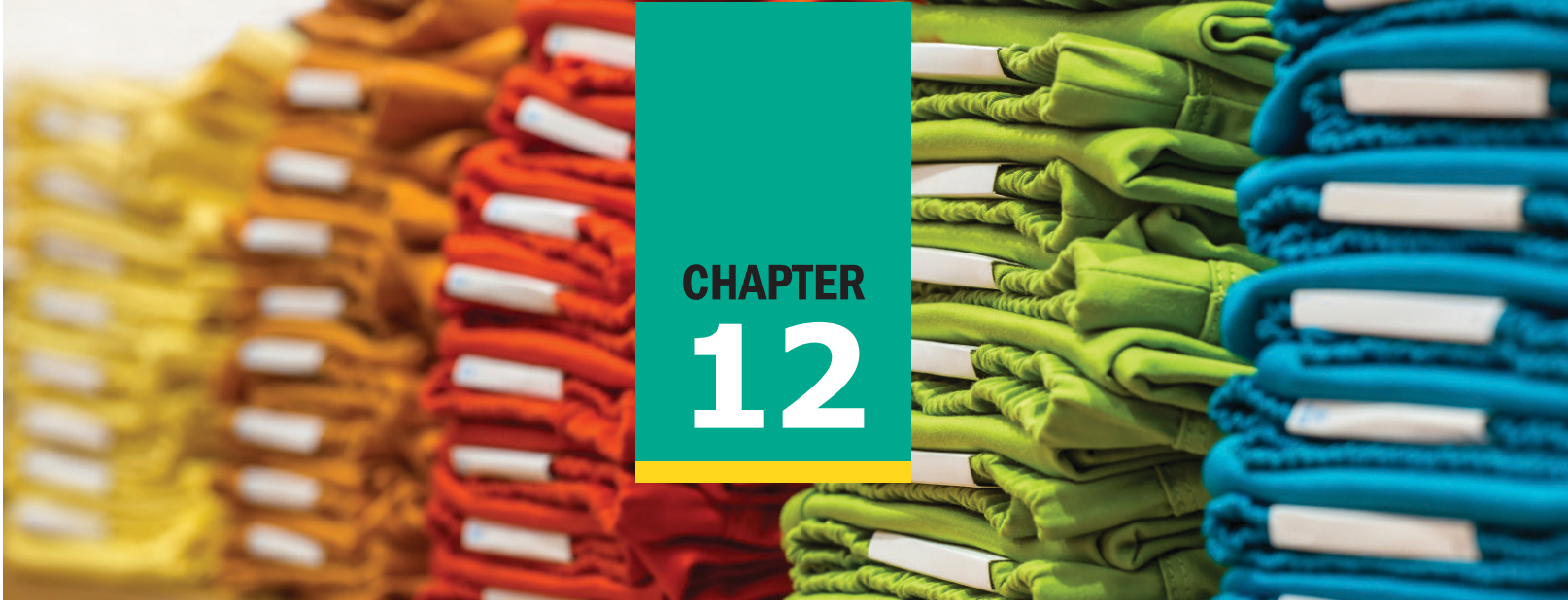
1. Describe the nature of marketing.
2. Explain STP Marketing model.
3. Detail the stages of buying behaviour of consumer.
4. Point out the factors influencing consumer behaviour.
5. Classify the advertisements in brief.

PART – IV
Answer in One Page

1. Elaborate the fundamentals of Marketing mix along with its sub types.
2. Evaluate the different types of advertising with example.

Answer:

1. (a) 2. (b) 3. (a) 4. (c) 5. (d)



CHAPTER
12

ENTREPRENEURSHIP DEVELOPMENT

LEARNING OBJECTIVES

- To understand the concepts and types of entrepreneurs
- To identify and formulate the project for entrepreneurship
- To adopt the method for setting up small scale units

12.1 Introduction

Entrepreneurship plays an important role in the economic growth of the country. Entrepreneurship means doing something in an innovative and effective way. It is a dynamic process of creating wealth by individuals or groups by the use of various resources. Entrepreneurship helps one to start his or her own business. It also lays the foundation for women to become empowered.

The word entrepreneur is derived from the French word 'entreprendre'. It means to undertake. An entrepreneur is a person who establishes his own business or industrial undertaking with a view to make profit. An entrepreneur is one who combines various factors of production such as process and raw material, and then converts the raw materials into finished product. He sells the finished product in the market to earn profit. He can also be described as a person who innovates, raises money, assembles input, chooses managers and sets the commercial organization. Entrepreneurs are people who initiate, organize, manage and control the affairs of a business unit to supply goods and service.

12.2 Entrepreneur

12.2.1 Definition

Entrepreneur is an individual who bears the risk of operating a business in the face of uncertainty about the future conditions.

- Encyclopedia Britannica.

An entrepreneur in an advanced economy is an individual who introduces something new in the economy, a method of production not yet tested by experience in the branch of manufacture concerned, a product with which consumers are not yet familiar, a new source of raw material or of new market and the like.

- ***Joseph Schumepeter.***

"An entrepreneur is a person who acts as agent in tr***ansformi***ng demand into supply"

- ***Adam Smith***

Who was the first Entrepreneur?

George Washington was the first U.S. president, a celebrated military general and also a keen businessman and entrepreneur. But his business smarts have essentially been forgotten by historians and the public, even though Washington's face can be seen plastered across the U.S. currency. A new book called First Entrepreneur, shines a light on Washington's business-minded accomplishments, which helped to set up the nation for future success.

12.2.2 Qualities of an Entrepreneur

The qualities essential to become a successful entrepreneur are;

- **Risk bearer** - Bears problems or hard times in the business
- **Opportunity explorer** - Identifies means and ways to achieve the goals
- **Achiever** - Self determined to achieve the goals in business
- **Individualist** - Job giver and not job seeker
- **Flexible person** - Ready to take decisions based on the prevailing situations and expect changes as and when needed
- **Motivator** - Influences people and make others to think and act accordingly
- **Stress taker** - Discusses physical and emotional stress and helps others to solve them
- **Planner** - Frames step by step activities and follows them to achieve the goal of the company or unit
- **Problem Solver** - Thinks logically and tries to solve problems systematically
- **Creative thinker** - Analyses the current trade situations and comes up with creative ideas **'Out of Book Thinking'**

12.2.3 Types of Entrepreneur

The types of entrepreneurs are innovative entrepreneur, adoptive or imitiative entrepreneur, fabian entrepreneur and drone entrepreneur.

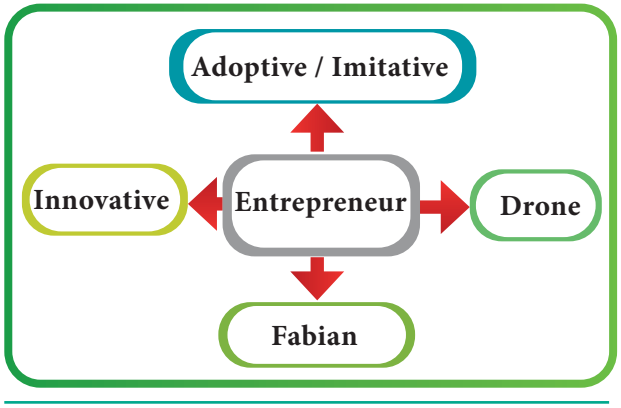


Figure 12.1 Types of Entrepreneur

Innovative Entrepreneur

These entrepreneurs are generally aggressive in experimentation. They are creative and found in developed countries. They keep introducing new techniques, do attractive things in their business. They play a key role in rise of modern capitalism. They face the risk of uncertainty.

Adoptive / Imitative Entrepreneur

These entrepreneurs are adoptive as they are ready to adopt successful innovations created by innovative entrepreneurs. They do not innovate changes but imitate the technology, knowledge and skills found by others. They are found in underdeveloped countries as they contribute to the development of economics. They face lesser risks and uncertainty than innovative entrepreneurs.

Fabian Entrepreneur

These entrepreneurs are very cautious and are very lazy. They are not ready to introduce new changes and do not adopt new methods innovated by the most enterprising entrepreneurs. They are not interested to take risks and they follow the footsteps of their predecessors.

Drone Entrepreneur

These entrepreneurs are conventional. They refuse to adopt and use opportunities to make changes in production. They do not make changes in their methods even if there is a loss in business. They are laggards because they try to continue their job in their traditional way. When their products become uneconomical, they will be pushed out of the market.

Functions of an Entrepreneur

The functions of entrepreneurs are:

- Perceiving market opportunities
- Marketing of the products to overcome competition
- Purchasing inputs and industrial engineering
- Upgrading process and product quality
- Managing money, man, material and machines
- Understanding tax and certification procedures

12.3 Entrepreneurship

Entrepreneurship is a process of identifying and starting a business venture, sourcing and organizing the required resources and taking risks associated with the venture. Entrepreneurship has been defined in several ways and is considered as

- A theory of evolution of economic activities
- A continuous process of economic development
- An ingredient to economic development
- Essentially a creative activity or an innovative function
- A risk taking factor which is responsible for an end result
- Usually understood with reference to individual business.

12.4 Project

Project is the foundation for any company. It is a technical document which approves the activities of a company. It indicates the unit product intermediate or end products to be sold in the market. It helps an entrepreneur

to apply for loan. Project is defined as a non-routine, non-repetitive, one-off undertaking normally with discrete time, financial and technical performance goals. A project is a scientifically evolved work plan devised to achieve a specific objective within a specified period of time. Projects may differ in size, nature, objectives and complexity.

12.4.1 Project Life Cycle

The project life cycle consists of three main stages as shown below :

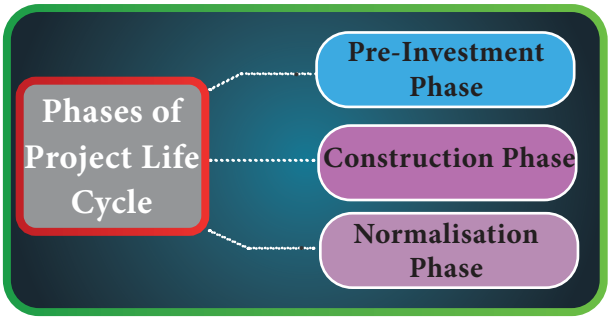


Figure 12.2 Project Life Cycle

- **The Pre-Investment Phase**

  The first phase of the project is pre-investment. It is concerned with objective formulation, demand forecasting, selection of optimal strategy, evaluation of input characteristics, projections of the financial profile, cost benefit analysis and pre investment appraisal. The project idea is developed into an investment proposition during this phase.

- **The Construction Phase**

  The construction phase begins after the investment decision is done. The assets like land, buildings, machinery, communication services, control systems etc. are purchased by investing the resources. The development of the infrastructure for the project is the main concern in this phase.

- **Normalisation Phase**

  Normalisation phase starts after the trial is made during the construction phase. The primary objective of this phase is to produce the goods and services for which the project was established. The assets created during the construction phase are utilised during the normalisation phase.

12.4.2 Project selection and formulation

The criteria used for project selection are;

- Investment size
- Location
- Technology
- Equipment
- Marketing
- Power and water
- Working capital requirements
- Labour component
- Economic viability

Project formulation is the systematic development of a project idea. It involves the joint efforts of a team of experts. It would be helpful if government clearance is obtained. It can be shown to the bankers or other institutions to acquire financial assistance. It is prepared by an expert after detailed study and analysis of the various aspects of a project.

12.4.3 Project Report preparation

The major steps involved in project report preparation are;

Step 1: Choose an idea for the enterprise. The idea selected should be viable, profitable and socially good. These ideas can be acquired from various sources

such as magazines, journals, competitors, employees, distributors, customers and through research.

Step 2: Observations have to be made with regard to the availability of raw material, labour, machinery, technology and demand in the market.

Step 3: Scanning of business environment is the next step. The amount of money required for investment is scanned thoroughly, location of enterprise, labour availability and the extent of marketing are also scanned.

12.4.4 Steps to start small industrial unit

The steps to be taken by entrepreneurs to start a small industrial unit are explained under the following heads;

Selection of the Product: The product selection is made by an entrepreneur according to his or her own capacity and motivation. One may design a new product or may imitate others products. The economic viability of the product should cover the demands such as

- Volume of existing demand in the domestic market and export market
- Volume of potential demand
- Degree of import substitution and substitution of an existing product and
- Volume of demand by big units for ancillary products.

Some of the most common small scale enterprises in our country are based upon the day to day needs such as readymade garments, leather foot wear, detergent soaps, detergent liquids, plastic items and food items like squashes, marmalade, pickles, jellies, jam and macroni.

Selection of form of ownership: The most commonly chosen forms of ownership for Small Scale Industries (SSI) are Sole Proprietorship, Family Ownership, Partnership and Private Limited Company. Sole Proprietorship and Family Ownership have unified control over the unit whereas Partnership and Private Limited Company facilitate the pooling of financial resources, managerial and technical skills.

Selection of Site: The selection of site is planning a suitable plot for the factory or unit while selecting a site. An entrepreneur should see to that the site enjoys government incentives, it is located near the market, it is easier to avail labour and procure raw material. Also it is good to note that the site has modern infrastructural facilities.

Designing Capital Structure: For a new venture the initial capital comes from the sources such as own capital, long term loans and short term loans. Bank plays a very important role in providing working capital to all companies or factories or units.

Acquisition of Manufacturing Know-how: Several institutions like government research laboratories, research and development divisions of industries or individual consultants provide the manufacturing know-how for the young entrepreneurs. This methodology is also provided by the machinery suppliers both domestic as well as foreign. Also the national laboratories and research institution give guidance related to the know-how of productions and operations.

Preparation of Project Report: The project is prepared as per the format of the loan application of leading institution. It covers the aspects like sources of finance (long term and short term), availability of machine, technical know-how, sources of labour, and sources of raw materials, market potentiality and overall profitability. All the aspects are systematically estimated and presented. The project report compiled by the entrepreneur should provide a 'Birds-eye-view' of the entire spectrum of the activity. It should give all information about the following aspects;

- **Technical Feasibility** - Power supply, water availability, transport facilities and communication network
- **Economic Viability** -Share market, revenue, suitable price structure and market forecast.
- **Financial Implications** - This comprises of recurring and non-recurring expenses. The recurring expenses include working capital, raw material needs, and wages for personnel, transport and power. The non-recurring expenses include land, buildings, plant and machinery.
- **Managerial Competency** - All the major economic activities of the company are included under this head.

Registration: An entrepreneur, after deciding upon a suitable product can establish an industrial unit. For this he or she must first issued a provisional (temporary) Small Scale Industry (SSI) Registration Certificate. This certificate is provided for one year and subsequently renewed for two periods of six months each. An extension of the provisional registration may also be given. Permanent Registration Certificate may be given for the industrial unit which has commenced production.

Obtaining Statutory License: The next step is to obtain Municipal License Registration with Central and State Sales Tax Departments. This is important to know about the sales made by each unit which in turn will denote the economic growth of the country. An entrepreneur should study the procedure completely for accounting sales to those departments and returns have to be submitted regularly.

Power Connection: The new entrepreneur should pay security deposit amounting to three months power connection. Formal application should be submitted to get power connection. There are categories of power supply namely Low Tension (LT) and High Tension (HT). To get power connection the entrepreneur has to make an application to the Assistant Divisional Engineer, Tamil Nadu Electricity Board.

Arrangement of Finance: The fund requirements for a project may be for long term and short term. Long term loans are used for acquiring assets like land, machinery and building, and short term loans are used as working capital, repayment for loans, bill discounting and in meeting day to day needs of the industry.

Loans for fixed assets are provided by the State Financial Corporation and Commercial Banks. Apart from this, these loans are based on company status, assets belonging to the entrepreneur and his possibilities for repayment.

Who was the first to start Accounting?

The Italian Luca Pacioli, recognized as The Father of accounting and book keeping was the first person to publish a work on double-entry book keeping and introduced the field in Italy. The modern profession of the chartered accountant originated in Scotland in the nineteenth century. Accounting began to transition into an organized profession in the nineteenth century, with local professional bodies in England merging to form the Institute of Chartered Accountants in England and Wales in 1880.

12.5 Women Entrepreneurs

Women entrepreneurs are those who venture out into industrial activities. They take the lead and organize the business or industry and provide employment to others. They are key players in economic development of the country. Indian women have increasing opportunities in higher levels of education, economic necessities and constitutional rights. The knowledge of dress designing lays a strong foundation for women entrepreneurs. "A women entrepreneur can be defined as a confident, innovative and creative woman capable of achieving self-economic independence individually or in collaboration, generates employment opportunities for others through initiating, establishing and running the enterprise by keeping pace with her personal, family and social life" - **Kamal Singh.**

12.5.1 Need for women entrepreneurship

- Women occupy almost 50% of the population, hence to attain complete development they must also take up jobs or become entrepreneurs. Economic and social development of women will also lead to the political development of the country. The women entrepreneurs play multiple roles doing various activities at home as well as in the working spot thereby satisfying every one. Women start an enterprise due to economic and non-economic reasons.

Motivational Factors

The motivational factors which encourage women to set up an enterprise are;

- Economic necessity
- Self-realization
- Independence
- Government policies and programmes
- Education
- Employment generation
- Social status
- Success stories of friends and relatives
- Family occupation and
- Role model to others.

Facilitating Factors

The facilitating factors which influence the women to set up business are;

- Contacts and networks
- Family cooperation
- Skilled people at work
- Innovative thinking
- Adequate financial facilities and
- Self satisfaction.

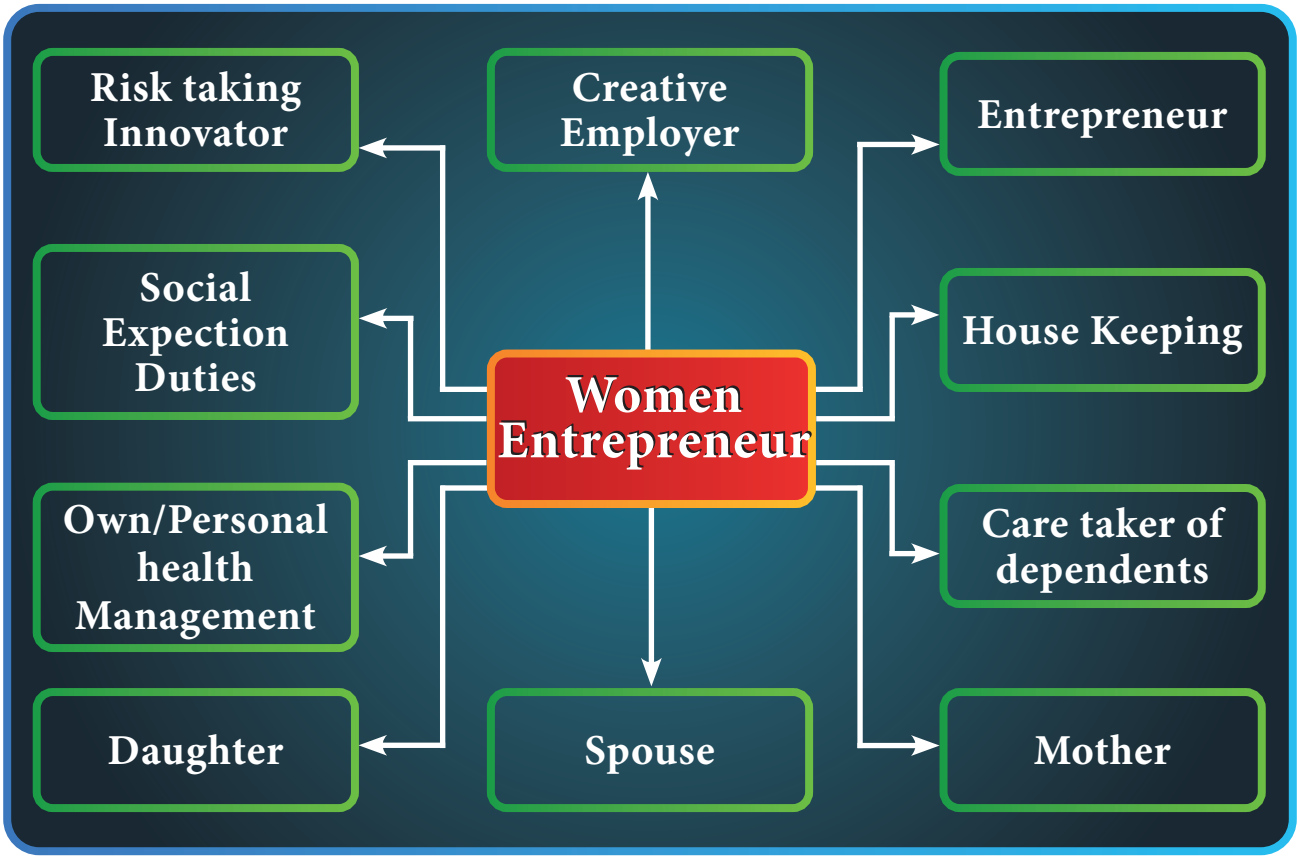


Figure 12.3 Multiple roles of Women Entrepreneur

12.5.2 Problems of Women Entrepreneurs

Various problems faced by Indian women who strive hard to become entrepreneur are as follows;

Financial Problems: Obtaining support of bankers, managing working capital, lack of credit resources are the problems which remain in the male domain.

Shortage of Raw Materials: They encounter problems of shortage of raw materials. This is due to inadequate facilities.

Credit Facilities: Women are often denied credit by bankers on the ground of collateral security. So women's access to risk capital is limited.

Marketing Problems: Women entrepreneurs face the problems in marketing their products. This area is mainly dominated by males. The elimination of middlemen is difficult and the women entrepreneurs are unable to capture the market and make their products popular.

High Cost of Production: High cost of production brings down the efficiency and stands in the way of development and expansion of women's enterprises. The problems faced are labour, human resources, infrastructure, legal formalities, overload of work, lack of family support etc.

Social Barriers: Women are seen with suspicious eyes. Particularly, in rural areas

they face this problem. The issues related to caste and religion also influence the opportunities for women entrepreneurs.

High Competition: Most of the women enterprises have imperfect organizational set up. They are facing severe competitions from organized industries.

Lack of Information: Women entrepreneurs lack knowledge and information about the availability of raw materials, financial facilities, government schemes and various kinds of subsidies available. This hinders the expansion of their markets.

Lack of Self-Confidence: Due to lack of self-confidence, they hesitate to take risks. Their risk bearing capacity is less. Not only women entrepreneur but also the men entrepreneur face certain problems in initiating and running the business on their own. For overcoming such obstacles one has to attend the entrepreneurial developmental programmes for obtaining appropriate training.

12.6 Entrepreneurial Development Programme (EDP)

Success of an entrepreneurship depends on the foresight, knowledge, optimum hard work, persistence and efficient management. The knowledge about various aspects of business can be acquired from the entrepreneurial development programme. The government plays a positive role in the emergence and development of entrepreneurship by providing training, incentives and concessions.

Entrepreneurial development programme may be defined as "a programme designed to help an individual in strengthening his or her entrepreneurial motive and in acquiring skills and capabilities necessary for playing the entrepreneurial role effectively".

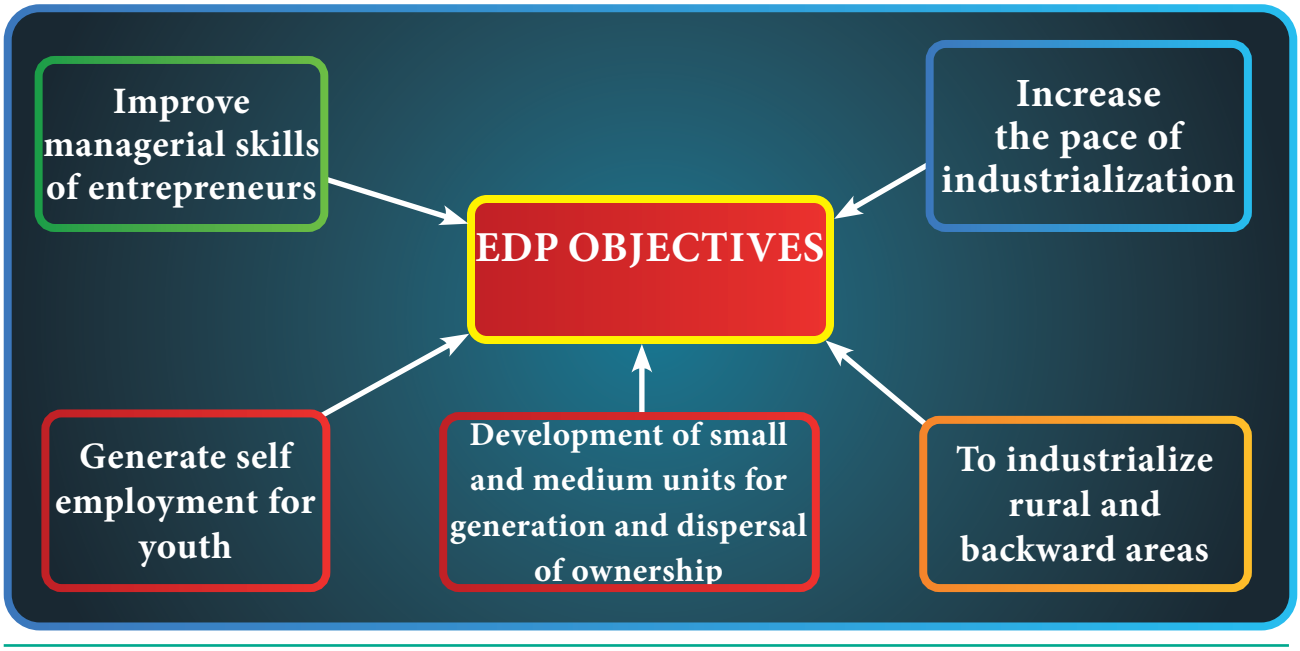


Figure 12.4 Objective of Entrepreneurial Development Programmes (EDP)

12.6.1 Need for Entrepreneurial Development Programme

Entrepreneurial Development Programme is needed for the following reasons;

Eliminate Poverty and Unemployment: Most of the under developed countries are facing the problem of unemployment. The EDP can help in creating self-employment for the unemployed. The programmes initiated by the government for managing the problem of unemployment are

- NREP (National Rural Employment Programme)
- IRDP (Integrated Rural Development Programme)
- Prevents Industrial Slums
- Balances Regional Development
- Use of Locally Available Resources
- Ease Social Tension.

12.6.2 Phases of Entrepreneurial Development Programme

There are three broad phases of Entrepreneurial Development Programme. They are as follows;

Pre-Training Phase: The success of EDP depends on the training carried out by the training organization. Various activities undertaken by an organization are designing of course curriculum, selection of faculty, insertion of advertisement and selection of potential entrepreneurs.

Training Phase: During this phase, the participants are motivated and required skills are developed in them. They are also given practical exposures in the areas like market surveys, project preparation, report feasibility and marketing of products and services. This training is imparted by methods such as individual training, group training, and lecture method, written instruction method, demonstration method, conference method and meetings.

Post Training or Follow up Phase: This phase aims at developing the right type of ability and motivation amongst potential entrepreneurs so as to enable them to set up their own enterprises. Through follow-up, the weakness and problems may be remedied in the future. Appraisal helps in understanding the extent of which the entrepreneurs have selected suitable jobs. It guides them to identify right type of project. It also aims in promoting the entrepreneurial talents.

12.6.3 Role of government in developing entrepreneurship

Government has taken so many efforts in developing entrepreneurial programme through various agencies and institutions. They are as follows;

Institutions at National Level

- National Institute for Entrepreneurial and Small Business Development (NIESBUD)
- Entrepreneurial Development, Institute of India (EDI)
- Technical Consultancy Organisation (TCO)
- Indian Investment Centre (IIC)
- Small Industries Development Corporation (SIDC)
- Industrial Development Bank of India (IDBI)
- Industrial Finance Corporate India (IFCI)

- Industrial Credit and Investment Corporation of India (ICICI)
- National Small Scale Industrial Development Corporation (NSSIDC)
- Small Industrial Development Bank of India (SIDBI)
- Khadi and Village Industrial Centre (KVIC)
- National Bank of Agencies and Rural Development (NABARD)
- National Institute of Small Industries Extension Training (NISIET)
- Science and Technology Entrepreneur Part (STEP).

Institutions at State Level

- Small Industries Service institute (SISI)
- District Industries Centre (DIC)
- State Finance Corporation (SFC)
- State Small Industrial Corporation (SSIC)
- State Industrial Promotion Corporation (SIPC)

12.7 Summary

An entrepreneur is an economic agent who plans, organizes, makes decision and takes risks. Entrepreneurs are essential for economic development of a nation. Entrepreneurship works in different ways in different economic situations. Government has taken several steps and introduced schemes for the men as well as women entrepreneurs. Several financial institutions assist and motivate the entrepreneurs. A person can very easily do his/her own business by understanding the rules and regulations, and initiate a small scale unit. Self-employment brings self-respect for a woman. Women entrepreneur balances both home as well as the business. Entrepreneurship development programmes and training programmes help in locating the developing the entrepreneur based on their suitability and brings success for them.

POINTS TO REMEMBER

- An entrepreneur is a job giver and not a job seeker.
- Self employment brings self respect, confidence and happiness for women.
- On the basis of the information collected through SWOT analysis, the goals which the firm wants to achieve in future can be decided.
- Entrepreneurs act as catalytic agents in the process of industrialization and economic growth.
- Training programmes are organized to enrich and upgrade the knowledge of the young and skilled entrepreneurs.

ACTIVITIES FOR TEACHER

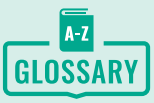
- Can play a skit involving students for bringing the advantages of becoming an entrepreneur (women).
- Can show the videos about the struggles faced by successful entrepreneurs.
- Can make the students to study on the personalities of an entrepreneur.

ACTIVITIES FOR STUDENTS

- Can read and collect some case studies adapted to the successful entrepreneurship and prepare an assignment.
- Can collect information about any one of the institution which helps in the development of entrepreneurship.

INTERNET RESOURCES

http://www.youtube.com/watch?v=Xcsp0486oIY	What is Entrepreneurship?
http://www.youtube.com/watch?vnolbPII-iTI	Introduction to Entrepreneurship



Entrepreneur	Self-employed person
Entrepreneurship	The process of setting up own business
Project formulation	It is the systematic development of a project idea for the eventual objective of arriving at an investment decision.
Motivating	Influence, initiate and make the person think and act accordingly.
Management	On entrepreneur stands for not only working of the venture but also managing of the day-to-day problems.

QUESTIONS AND ANSWERS

PART – I

Objective Questions

1. They are the driving forces behind a nation's economy.

   (a) Entrepreneur (b) Retailer

   (c) Manager (d) Agent.

2. This type of entrepreneur is very lazy and cautious.

   (a) Drove

   (b) Innovative

   (c) Adoptive

   (d) Fabian

3. Observations made with regard to the availability of raw material, labour, machinery, technology and demand in the market,

   (a) is the first step for total quality control

   (b) is the second step project report preparation

   (c) is known as pre training period

   (d) is used for motivating entrepreneur

4. Multiple activities are carried out by this type of entrepreneur.

   (a) Women (b) Men

   (c) Rural (d) Urban.

5. Designing of course curriculum is done during this phase of training programme.

   (a) Training Phase

   (b) Pre-training Phase

   (c) Post-training Phase

   (d) Monitory Phase

PART – II

Answer in Three (Or) Four Points

1. Define entrepreneurship.
2. Differentiate entrepreneur and entrepreneurship.
3. What is a project?
4. Who is women entrepreneur?
5. Define entrepreneurial developmental programme.

PART – III

Answer in a Paragraph

1. What are the qualities required for an entrepreneur?
2. Write the motivational factors involved for women entrepreneur.
3. Give the benefit of Quality Control.
4. Enumerate on project life cycle.
5. Brief on problems of women entrepreneur.

PART – IV

Answer in One Page

1. List and explain various types of entrepreneurs.
2. Elaborate on project formulation.
3. Give a detail note on the steps involved in setting up small scale units.
4. Explain the need for entrepreneurial development programmes.

Answers for the Objective Questions

1. (a) 2. (d) 3. (b) 4. (a) 5. (b)

CHAPTER 13

ROLE OF COMPUTER IN GARMENT INDUSTRY

LEARNINGOBJECTIVES

- **To learn about the use of CAD and CAM in garment sector**
- **To gain knowledge about various textile and fashion softwares**

13.1 Introduction

Computers have influenced every sphere of human life. Life has become easier and comfortable with the use of computer. In the field of garment industry, computers help to design, analyse and manufacture the product within a short span of time. The first step of garment production is designing. The designers do hand sketches, or drape fabric in a dress form. CAD is a Software tool that enables you to make quick and accurate drawings with the use of a computer. CAD software has begun to make inroads into the world of fashion and textile industry, enable mass customization, develop more designs, and facilitate to make frequent changes in styles and production. Computer Aided designing software not only provides the possibility to speed up the process of putting a new model into production and improve the quality of the products, but also reduces material costs and labour intensity.

Definition

Computer Aided Design (CAD) in fashion industry helps to create sketches, prototypes and designs of garments. CAD is essentially an automated system for the design, drafting, display of graphically oriented information and also used in the manufacturing process for layouts. It makes the work easier through efficient use of softwares.

13.2 Types of Cad System

The apparel industry has started using size designation systems, garment style, design, and colour combination to produce and sell ready-to-wear clothing. There are different types of CAD systems available in the market for the use of garment industry are as follows;

Digitizing systems

- Grading systems
- Sketching sheet
- Simulation and texture
- Design modification
- Marker Making Systems(MMS)
- Pattern Design Software (PDS)
- Pattern Generation Software (PGS)
- Body Measurement Software (BMS)
- Texture Mapping
- Embroidery systems
- Specification and costing systems

13.3 Application of Cad in Textile And Garment Designing

The fashion business is growing rapidly and brings great opportunities and challenges to textile and clothing enterprises. Apparel industries follow the trend of the international market and latest technologies for industrial up gradation. Many textile and fashion designers use CAD systems for creating textile and garment designing. The designer may start by hand-drawing a few rough images. Then, the rough images are scanned into a computer and final designing is done using CAD.

A designer uses CAD to modify design drafts and make changes. Depending on the type of textile designing, a designer use different types of CAD software. There are systems for designing as well as creating knitted, printed fabrics, illustration and sketch pad applications that allow a person to draw freehand directly on the computer. There are CAD systems that show a designer how a fabric might drape for a particular style of garment. Some CAD programs even design embroidery patterns.

CAD finds its practical utility in textile, apparel and fashion industry right from design initiation and production stage through lay planning, spreading, pattern making, cutting and finally sewing. Two-dimensional pattern design software's based on flat pattern making techniques have been successfully explored for pattern making, grading, and creating pattern libraries within software for future retrieval.

However, a further progress made in the field is three-dimensional (3D) software. It works in virtual environment permitting 3D visualization of drape and fit on virtual model or avatar. This method eliminates exhaustive process of physical sample generation. 3D scanning, mapping, customized avatars in accordance with

DO YOU KNOW? Why Enterprise Resource Planning (ERP) Software in Textile and Apparel Industry?

It is software that collects information from all sections of the enterprise, assists in planning and implementation of various functions relating to all departments

specific anthropometric and facial features, customized garments are some of the innovative and exciting avenues available with CAD software packages. Enhanced productivity, competitiveness, and shorter delivery schedules can be guaranteed by linking design, manufacturing operations along with other preproduction steps of patternmaking, grading, and marking.

13.4 Cad Hardware and Software

Application of Computer hardware and software in textile and apparel production can be described as follows;

- **Hardware**

  Computer hardware includes types of equipment such as the monitor, hard-drive, keyboard and mouse. Peripherals are added to the hardware to perform specific functions. Examples; Plotters, digitizing tables or printers.

- **Operating Systems**

  An operating system is a vehicle through which the hardware can read the software programmes. These operating systems are used in an organization with software programmes. Certain software programmes can only work on specific operating systems. Examples; Windows, Linux or Mac.

- **Software**

  Software programmes are written to perform different tasks. For example, Microsoft Office is usually used, for writing documents. Other software programmes, such as Corel Draw, are used to create or modify graphics images. Generic software programmes can be used in lot of disciplines. Corel Draw can be applied for design in Graphic Design as well as Fashion Design. For example, Stork is a software programme written exclusively for use in design.

13.4.1 Uses of Computer Aided Design (CAD) in Different Sector

Computer aided design software or CAD software is vastly used in some major sectors of today's technological areas;

- Fashion design sector
- Apparel sector
- AEC i.e. Architecture Engineering and Construction sector
- ECAD i.e. Electronic and Electrical sector
- MCAD i.e. Mechanical sector:
  - Aerospace
  - Automotive
  - Machinery
  - Consumer Goods
  - Ship Building

13.4.2 Different areas of Textiles where CAD systems are used

Textile designing is a technical process which includes different methods of textile production. It includes both surface design and structural design of a textile. The textile designer must have knowledge of yarn making, weaving, knitting, dyeing, finishing processes and also knowledge about different types of looms, knitting machines and printing processes.

Following are the types of software developed for various textiles weave design;

- Design Dobby
- Adobe Illustrator and Photoshop
- C-Design Fashion
- Vetigraph
- Corel DRAW
- Fashion CAD
- Inventor
- Weave It
- Grid 'N Weave It

13.4.3 Types of Textile and Fashion CAD Software's

I. 2D CAD softwares available in the clothing industry are;

- GRAFIS from Software Dr. K. Fridrich
- Audaces Apparel Pattern from Audaces
- COAT from COAT-EDV System
- PAD Pattern design from PAD System Technologies Inc.
- TUKACAD from Tukatech
- CAD Assyst from Assyst
- Fashion CAD from CAD CAM Solutions
- Modaris from Lectra
- Accumark from Gerber Technology.

II 3D CAD software for the clothing industry are;

- Modaris 3D Fit from Lectra
- Virtual fashion from Reyes Infografica
- Vidya from Assyst-Bullmer
- AccumarkVstitcher from Gerber
- 3D Runway from Optitex
- Haute Covture 3D from PAD System
- Design concept from Lectra
- Vstitcher from Browzwear
- E - Fit Simulator from Tukatech.

III Classification of 3D CAD System Used in Apparel Industry

- Combined Techniques
- 3D modelling and 2D pattern unwrapping
- Digital draping
- 3D simulation of 2D patterns
- 2D sketch-based 3D simulation
- Reactive 2D/3D design technique.

13.5 Types of Cad Systems

- Textile design systems
- Knitted fabrics
- Printed fabrics
- Illustrations/ Sketch Pad Systems
- Texture Mapping: 3D Draping Software
- Embroidery systems
- Textile Design Systems

Textile design is the process of developing designs for woven, knitted or printed fabrics or surface ornamented fabrics. Textile designers are involved with the production of these designs.

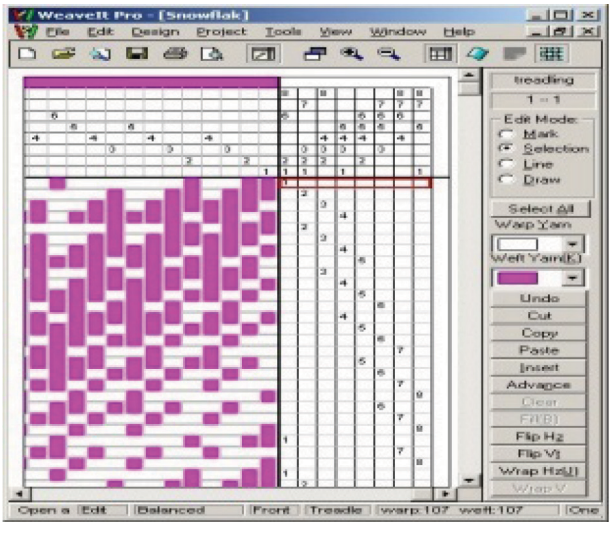
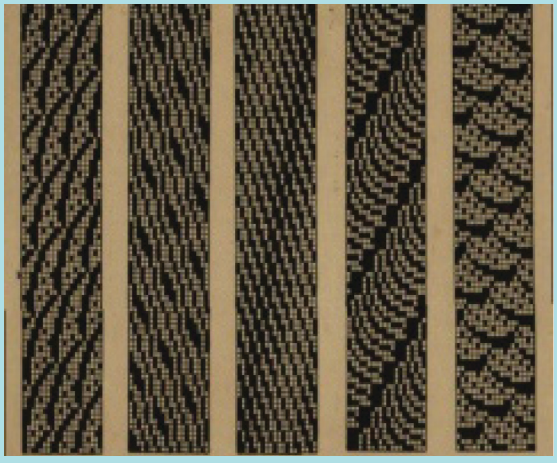


Figure 13.1 Textile Design System

The designs developed are then used on Textiles and clothing materials.

What is weave Library?

Weave library create any weave structure virtually. Predetermined weave designs are stored in weave library. New weave patterns can be created and stored. One or more number of weave structures can be combined in one inch fabric



- **Knitted Fabrics**

The specialized CAD software is also available for knitwear design. Indication of all knit stitch formation can be viewed on the screen. CAD program produces a pullover graph and it specifies the information on amount of yarn needed by colour for each piece.

The other example of the new technology in the industries is using a yarn scanner. It is attached to the computer and it scans a thousand meters of yarn and then simulates a knitted fabric on-screen. This simulation shows how the fabric will look when knitted using the selected yarn.

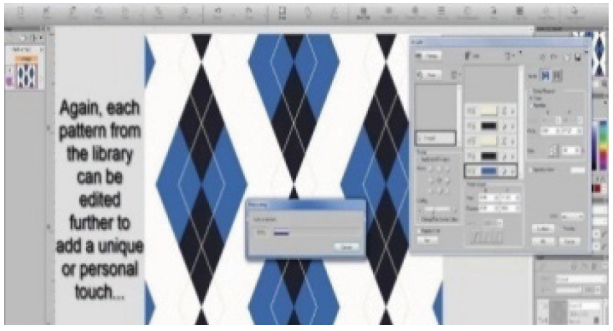


Figure 13.2 Knit Fabric Pattern

- **Illustrations/ Sketch Pad Systems**

Sketchpad is an innovative computer program. It has graphic programmes that allow the designer to use pen or stylus on electronic pad or tablet. Freehand images can be created and then stored in the computer. Using this sketchpad, a lot of different knit and weave simulations can also be created and stored in a library. Later the stored designs can be selected and pasted over the sketches to show texture and dimensions.

- **Texture Mapping : 3D Draping Software**

Texture mapping is a graphic design process which shows the visual effects of fabric on the body. In this system, the fabric can be draped over a form in a realistic way. The designer starts with an image of a model wearing a garment. Each section of the garment is outlined from seam line to seam line. The swatch of a new fabric is created in the textile design system and laid over the area. The computer automatically fills in the area with new colour.

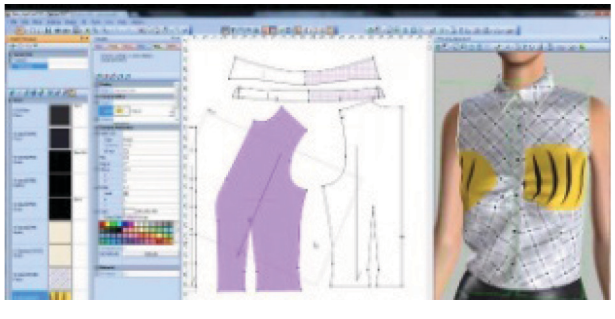


Figure 13.3 Texture Mapping Software

- **Embroidery Systems**

The embroidery design software is used for mass producing the home and commercial embroidered textiles. The designs used for embroidery can be incorporated on the fabric for making garment. Designers can create embroidery designs or motifs straight on the computer. Colour of the design and embroidery stitches is defined. Several combinations of colour and stitches are possible in this system.

Figure 13.4 Embroidery System

- **Digitizing Systems**

Digitizing is a process of adding details to an original pattern or sloper in the computer. The pattern can be prepared by marking the notches, by defining the series of selected points around the pattern. These basic patterns can be manipulated with the help of specific tools in the computer. For example in case of trousers, darts can be moved and pleats can be created, also new designs can be created on screen from pre-existing pattern.

Figure 13.5 Digitizing Software

- **Grading Systems**

Pattern grading is the process of turning base size or sample size patterns into additional sizes using a size specification sheet or grading. It is simply increasing or decreasing the size of patterns. Production sample meant for approval is normally medium size but if the buyer requires different size then the patterns are graded to Small(S), Large (L), Extra Large (XL), Double Extra Large (XXL).

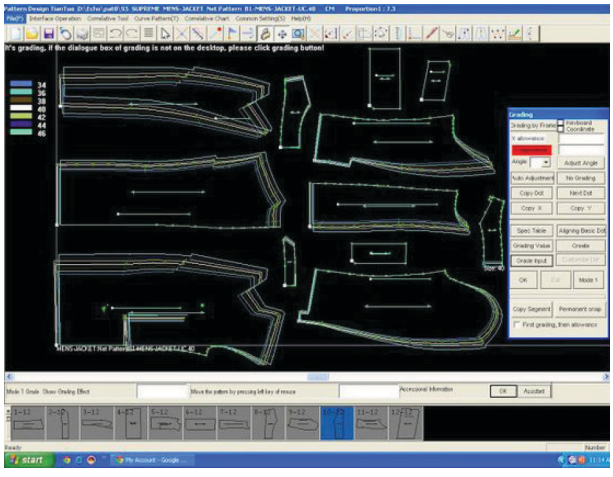


Figure 13.6 Grading System

- **Marker Making Systems**

A marker is commonly done on large thin paper. It holds all the size of pattern pieces for a specific style of garments. Computerized method is the best and

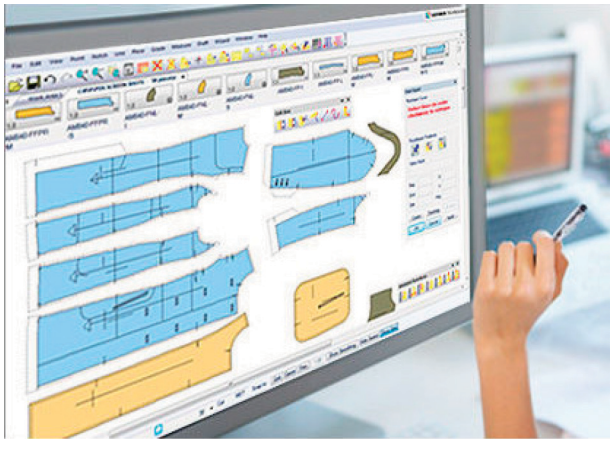


Figure 13.7 Marker Making System

most popular method of marker making which makes the efficient marker. This method ensures minimum wastage of fabric. On plain fabric marker making is relatively simple but on striped fabric, matching of fabric requires utmost care. The Computer Aided marker making system is considered to be an easier way for preparing markers.

13.6 Advantages of CAD

Increasingly, CAD and CAM are considered as standard system used in the textile industry. These systems provide many advantages to textile designers and textile manufacturers. They are as follows;

- CAD allows the designer to be more creative
- Using CAD software, designers can create new sketches more quickly and precisely
- More accurate patterns with less chance of mistakes can be created
- Design can be digitally transferred directly into a CAM system
- It allows designers to graphically test ideas in real time without creating real prototypes
- Redrawing and Resizing of a garment can be done quickly
- CAD systems consumes less time
- CAD and CAM software's are being operated efficiently with expansion of the graphic memory allocation
- Every sector of the fashion industry from haute couture to the mass market has felt the impact of CAD
- CAD has become increasingly important that it has helped to secure a job in fashion design
- Designers can easily adapt a single design to varying materials and patterns, and build upon and also can alter existing designs to create new pieces
- CAD cuts down the cost by letting designers view virtual versions of finished products without the need of purchasing materials
- Designers can view the designs in both 2D and 3D using CAD and can make alterations immediately
- The designers can view the entire design history of their product
- CAD allows fashion designers to work smarter, and shortens the time taken between the initial concepts to the finished product.

13.7 Recent Development in CAD for fashion Industry

Modern computer-aided designing software provides the possibility to avoid small operations and manual work, to raise precision, productivity and organize information flow. Computer Aided garment designing system excludes the time consuming manual preparation of patterns, creation of layouts and also relocation of written information. The computer systems execute every single process and the integration of all processes into one joint flow, for the organization of logistics and the mobility of work tasks. The computerization of different processes in the garment industry is necessary to

reduce the costs of a product and to raise competitiveness.

Computerized designing systems use software specifically designed for the development of industry specific objects, input and output of graphics, scanners and other remote devices. Computer systems allow making two-dimensional and three-dimensional product illustrations and visualizations. It is possible to create computer-aided garment patterns, gradations, and a virtual pattern. Such computer-aided operations significantly save time and costs necessary to design a product. The cost of a product can be calculated with the help of the product management systems of the company stored in a database.

Lectra gives a comparative concentration on the integration of CAD software. It provides a system of simulation for the entire textile industry from yarn and textile design; manufacture of virtual goods and to the ready-to-wear.

Assyst Bullmer system can simulate three-dimensional effect which can give the design structure and fabric. It also has more than 400 different kinds of databases for optional format-making, picturizing and modifying. It can make a format automatically and according to the actual size, it can change the size freely. The system also has intelligent database, which can make styles quick and efficient.

Spanish Investronica system has made more effective efforts in the application of artificial intelligence and other technologies.

13.8 SUMMARY

Computers play a major role in the Apparel Industry. Right from designing to manufacture of garments, specialised CAD and CAM systems are utilised. Newer designs can be created and stored for future use also. Mass production of textile and apparel goods require CAD and CAM systems to reduce the lead time for delivery of goods. In the era of globalisation, there is a great competition for the apparel manufactures to deliver goods in international standards. Use of advanced CAD and CAM systems is the smartest way and the industries could cater to the huge demand of textiles and apparel goods.

POINTS TO REMEMBER

- In the field of garment industry, computers help to design, analyse and manufacture the product within a short span of time.
- CAD software has begun to make inroads into the world of fashion and textile industry, enable mass customization, develop more designs, and facilitate to make frequent changes in style and production.
- The apparel industry has started using size designation systems, garment style, design, and colour combination to produce and sell ready-to-wear clothing.
- The fashion industry is growing rapidly and brings great opportunities and challenges to textile and clothing enterprises.

- CAD finds its practical utility in textile, apparel and fashion industry right from design initiation and production stage through lay planning, spreading, pattern making, cutting and finally sewing.
- Computer hardware includes types of equipment such as the monitor, hard-drive, keyboard and mouse.
- An operating system is a vehicle through which the hardware can read the software programmes.
- Textile designing is a technical process including different methods for production of textile.
- The textile and apparel industry comprises a complex network of interrelated sectors that produce fibres, spin yarns, fabricate cloth, and dye/finish/print and manufacture apparel.
- Sketch Pad has graphic programmes that allow the designer to use pen or stylus on electronic pad or tablet.
- The embroidery design software is used for mass producing the home and commercial embroidered textiles.
- CAD and CAM are considered as standard system used in the textile industry.

ACTIVITIES FOR TEACHER

- Can show how the CAD Software is been used.
- Can show how the different types of CAD systems work

ACTIVITIES FOR STUDENTS

- Can learn how the CAD software is used in the Textile Industry.
- Can do embroidery using the Embroidery Design Software

INTERNET RESOURCES

https://www.youtube.com/watch?v=-2ygIZak6BE	CAD software for Students: Learn assembly modeling techniques with Solid Edge
https://www.youtube.com/watch?v=MaRkMhazpUI	Choosing 3d printing CAD software

GLOSSARY

Computer Aided Design	Helps to create sketches, prototypes and designs of garments.
operating system	It is a vehicle through which the hardware can read the software programmes.
Textile design	The process of developing designs for woven, knitted or printed fabrics or surface ornamented fabrics
Sketchpad	Graphic programmes that allow the designer to use pen or stylus on electronic pad or tablet.
Texture mapping	A graphic design process which shows the visual effects of the fabric on the body. In this system, the fabric can be draped over a form in a realistic way
Pattern grading	The process of turning base size or sample size patterns into additional sizes using a size specification sheet or grading.

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. CAD is a _____tool that enables you to make quick and accurate drawings with the use of a computer.
   a) Electronic b) Current
   c) Software d. Hardware
2. This can be used for design in graphic design as well as fashion design.
   a) Photoshop
   b) CAD
   c) Corel draw
   d) None of the above
3. -------- is an innovative computer program.
   a) Sketch pad
   b) Texture mapping
   c) Embroidery system
   d) Textile design
4. Designer can view the design in ---- ---- using CAD.
   a) 2D
   b) 3D
   c) Visualisation
   d) Both 2D & 3D

5. -------- gives a comparitive concentration on the integration of CAD software.
   a) Lectra
   b) CAM
   c) Corel draw
   d) CAD
6. This can be done by defining the X, Y co-ordinates of series of selected prints around the pattern.
   a) Digitizing Systems
   b) Embroidery Systems
   c) Sketch Pad Systems
   d) None of the above

PART – II

Answer in Three (Or) Four Points

1. Define CAD.
2. Explain Grading System.
3. List the areas of Textiles where the CAD systems are mostly used.
4. Mention the application of Corel draw.

PART – III

Answer in a Paragraph

1. What are CAD Hardware and Software?
2. Explain the use of Pattern Making Software.
3. Write short note on Corel draw.
4. State the types of fashion CAD.
5. Discuss on the Hardware and Software used in Apparel Industry.

PART – IV

Answer in One Page

1. Account for the CAD system used in different areas of textiles and Fashion sector.
2. Enumerate the application of designing software.
3. Present the recent developments in Textile and Fashion CAD.

Answers for Objective Questions

1. (c) 2.(c) 3.(a) 4. (d) 5.(c) 6.(a)

ORGANIZATIONAL COMPLIANCE

LEARNING OBJECTIVES

- To gain knowledge about the standard of organizational compliance
- To understand the social responsibilities in garment industry

14.1 Introduction

In an organization, compliance is the process of making sure that the organization and employees follow applicable laws, regulations, standards and ethical practices. It can be described as the operational guidelines for any organization to keep working as a whole sector to attain its goal, which is completing orders successfully. The goal of any organization is to make profit. To achieve this the organization must have significant **Return on Investment** (ROI). It should also reduce production of defective products and avoid any practices like fraud, abuse, discrimination, which would hinder the company operation.

The compliance department is taken care by the Chief Compliance Officer (CCO) and Chief Operations Officer (COO). The main types of compliance are **Policy compliance** which includes regulations set by the organization for employees to maintain quality standards and ethical practices and **Regulatory compliance** which is the regulations set by the government for the organization to achieve the quality standards and ethical practices. Apart from these types some organization have additional compliances like HR, data and health and safety compliance.

14.2 Elements of Compliance

- **Policies/ Rules and Processes** – Every organization has its own regulation which has to be followed by the employees. Even the issues which one will face on not following the rules and the method of working are given clearly.

- **Monitoring and Auditing** – The heads of all the departments must ensure that all the members are following the rules and incase of any issues they should report at immediately to the heads of the compliance departments.
- **Action for issues** – Facilities to listen to the issues from every employee's must be provided. Smooth solutions for every issues should be taken.
- **Education and Training**- Orientation program for the freshly appointed and refreshers/ developments programs are continuously planned and conducted at regular intervals. On the hand training programs are also conducted for employees in handling machineries.
- **Reporting**- Regular reports of the activates of the compliance department is prepared and submitted. Many organizations put it in their web sites also

14.3 Valuation of Organizational Compliance

In order to check the compliance every organization has its own check list and methods. The most aspect of the check list includes tracking the changing laws and regulations and inform the employees and ensure that they follow it. Involve consultants to monitor and mentor the employees when need arises. Select and use correct soft wares to check, and modify compliance if necessary occurs. Schedule internal audit repeatedly this helps in making the compliance a regular practice and habit.

The main purpose of organizational compliance is attaining a status of Lean manufacturing which is a processes of following manufacturing processes that minimizing waste with maximal production. This can be obtained by some basic principles like elimination of waste during production and delivering of goods, build quality in each and every activity of the organization and optimize the processes, create basic knowledge to every employee about the companies' policies and production systems, enhance it whenever possible. Apart all the employees must be respected and committed for defect free fast production. There are standard systems that help an organization to perform efficiently. 5S & Kaizen, and Six Sigma are two business systems that help in organizing a business and help in improving their performance and profitability.

14.3.1 5S and Kaizen

This 5S methodology derived from the philosophy of 'Kaizen" which means 'continous improvement'. It was conceived in Japan and it helps a business to achieve its objectives by following 5 key steps:

The various steps of 5S are:

- **Sort** - Sort out and separate materials which is needed and not needed in the area.
- **Straighten** - Arrange items that are needed so that they are ready and easy to use and keep them in marked places.
- **Shine** - Clean the workplace and equipment it, on a regular basis, in order to maintain standards and identify defects.
- **Standardise** - Recheck the first three of the 5Ss on a frequent basis and confirm the condition of factory floor using standard procedures.

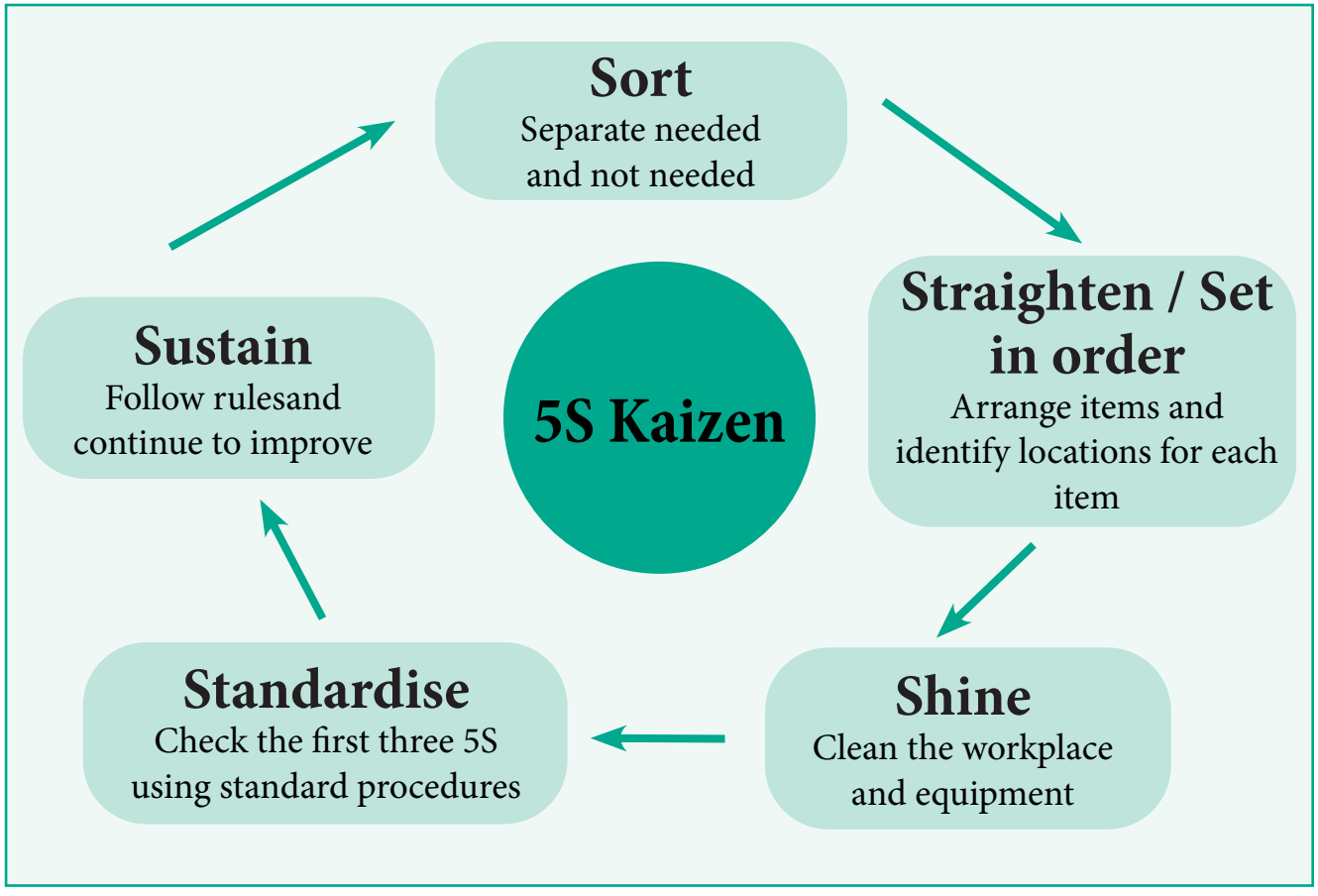


Figure 14.1 Steps of 5S Kaizen

- **Sustain** - Keep to the rules to maintain the standard and continue to improve every day.

Repeat this process continuous to confirm quality.

What is WRAP?

Worldwide responsible accredited production (WRAP) is the world's largest independent Certification program for apparel, footwear and sewn products.

It include compliance, laws and regulation of workplace, prohibition of harassment or abuse, discrimination, forced child labour and gives freedom for association and collective bargaining. It also ensure security and environmental safety.

14.3.2 Six Sigma

Six Sigma method offers tools for organizations to improve their performance and reduce defect rates, improve employee morale and improve quality of products and services that lead to higher profits. Six sigma system is carried out in most of the organizations by describing, measuring and analyzing various problems, finding means of improving the processes and determining quality and sustainable production. In order to achieve the desired outcome, brainstorming, root cause analysis of the problem, voice of the customer, benchmarking, mistake proofing, value stream mapping techniques are followed.

The principles of six sigma system are

- **Focus on the customer** – Give maximum benefit to customer by

understanding the customer needs and giving good quality goods.

- **Measure the value stream and find the problem** – Gather data, analyse and identify the problem.
- **Get rid of the junk** – Once problem is identified, remove unwanted activites and streamline functions to attain efficiency.
- **Keep the ball rolling** – Involve everybody in the team and give adequate training to make sure everybody performs well.
- **Ensure a flexible and responsive ecosystem**– According to data collected on defective stages, business process should be changed to be able to gain a competitive edge

14.3.3 Standard Organizational Compliance

Incorporateandorganizationalmanagement, compliance is the process of making sure your organization and employees follow applicable laws, regulations, standards and ethical practices. One of the Standard Organizational Compliance is SA 8000 Standards and Certification System.

SA 8000 Social Compliance requirements

This is the world's leading social certification program. It provides a framework for organizations in any country to conduct business in a fair and decent manner for workers and also demonstrate their adherence to the highest social standards. In order to receive standard certification, an organization should follow aspects like disciplinary practices, health and safety measures, follow have reasonable work hours, standard remuneration, good management system freedom of association and right to collective bargaining. Apart the should not have child, compulsory workers or discrimination among workers.

14.4 Benefits of Compliance

The benefits of compliances for the employers and retailers are mentioned below

For employers:

- More effective management systems that improve workflows throughout the organization
- Enhanced reputation, appeal to global buyers and preferential status in government tenders
- Better relationships with workers, customers and external stakeholders
- Safe workplaces and healthy working conditions with averages salaries/ wages
- Increased awareness of rights and opportunities to organize
- Better relationships with management and more input in workplace decision-making

Which are most common compliance that are not followed in many of the government industries is.

The major compliances which are not followed in many of the garment industries are proper wages, correct working time, secure and healthy working conditions, stable employment and prevention of sexual harassment.

For Brands and Retailers:

- Third-party oversight for quality assurance
- Supplier ownership of social compliance program
- More resources for capacity-building and other social programs

14.5 Corporate Social Responsibilities in Garment Industry

Corporate Social Responsibility (CSR) is a model that encloses all practice by companies to uphold intensions of a sustainable development with the aim of being socially responsible. CSR is "the concept that business should be actively concerned with the welfare of the society at large".

Corporate social responsibilities in garment industry is changes for different personals. Thes are listed below:

Towards employees: It provides a competitive and challenging work environment, ethical recruitment, remuneration, promotion and other policies, opportunity to express their opinion and complaints and get solution and above all ensures safe working environment.

Towards shareholders and investors: It represents a fair picture of company's financial position and profit/loss to shareholders, pays a fair rate of dividend and confirms good rate of return on investment.

Towards the government: It provides necessary information as and when required, makes tax and duty payment on time, abides the laws and regulations of the region and expands the economy through exports.

Towards customers: It undertakes constant research and innovative product development as per the customers' needs and provides quality products at reasonable prices.

Towards suppliers: It ensures competitive payment to suppliers for the products purchased and maintains a good relationship with suppliers.

Towards society: It undertakes charity work for the underprivileged sections of the society community and area development programs, and create jobs

Towards environment: It ensures the purchase of environment-friendly supplies, pollution-free production, process and product, efficient waste disposal system and eco-friendly packaging.

14.5.1 Corporate Social Responsibility Activities in Leading Organizations

Burberry

Burberry is a leading manufacturer of apparel and fashion accessories. They provide safe working condition, follow ethical employment norms, fair remuneration policies. They also donate money for various charitable causes such as fashion and textile education, medical research and support of orphaned children. Undertakes environmental reviews periodically and ensures that the environment is not adversely affected by its activities and measures are taken in their outlets for energy conservation and reuse of packaging material.

Welspun

Welspun group is chiefly engaged in production of textiles and also other products like electricity and cold storage. It follows a concept of 5 Es and undertakes projects in these areas. 5E- Enrichment of mind, enrichment of body, education, empathy, and empowerment of women. It also Conducts workshops on yoga and nutrition for the benefit of their employees and families and help in the educating the underprivileged children.

Aravind Mills

They are leading Indian producer of textiles. They have helped in the establishment of IIMA (Indian Institute of Management Ahmedabad), AITRA (Ahmedabad Textile Industry's Research Association), and The Kasturbhai Lalbhai Textile Training Center in Ahmedabad and SHARDA Trust, which in co-ordination with Ahmedabad Municipal Corporation provides basic infrastructure and clean water to the society. They organize nutritional programs, food camps for rural people and It takes measures for increasing the greenery cover.

14.6 International Labour Standards

International Labour Standards (ILS) are legal instruments drawn by International Labour Organization (ILO) constituents (governments, employers and workers). ILS are basic principles and rights that are to be followed in a work environment. It also provides guidance to organizations which is not covered by national law. Even though ILS are addressed to governments, they are relevant to business. They are involved in bringing changes in the labour practices which involves administrative measures and cost especially.

14.7 Code of Ethics

Code of ethics in business are a set of guiding principles that are intended to make sure a business and its employees act with honesty and integrity and to only engage in acts that promote benefit to society.Depending on the form of code of ethics, there are three types; which includes

- **Compliance-based code of ethics** – Laws that regulate issues like hiring and safety standards.
- **Value-based code of ethics** –Standards of conduct related to public good and the environment.
- **Professionals code of ethics** – List different ethics required for different professions.

14.8 Working Hours and Wage Rate Compliance

Working hours and minimum wage rates have to be regularized in order to provide a decent working environment and to provide rightful wages to the workers. This has to be followed by all organizations irrespective of its size. The Indian working hours and wage rate compliance are :

Working hours - As per the Factories Act 1948, every adult cannot work for more than 48 hours in a week and not more than 9 hours in a day.

Minimum wages - It is the level of income for skilled and unskilled workers which ensures a sustaining standard of living and also provides for some measure of comfort.

14.9 Disaster Management

Disaster Risk Reduction and Management for garment factories is the maximum care taken to avoid disasters and precautionary measures to manage risks that are likely to happen in a textile /garment industry. This includes heat or chemical exposure from the processing and dyeing of materials, exposure to dusts, musculoskeletal stresses and noise exposure. The major disaster spoken till today is the collapsing of the eight store building in a major garment factory at Rana Plaza in Dhaka, Bangladesh.

14.10 Health and Safety Compliance

Textile/garment industry is one of the major labour-intensive industry. Since workers are the main resource to keep up with production in textile industry, health and safety measures need to be practices with utmost care. The most important safety measures in a garment industry are:

Fabric Store -Keep enough space for walking, air ventilation and light. Store fabrics on racks.

Cutting Section - Wear mask, metal hand gloves while operating cutting machine. Don't use loose wire. All power supply must be covered.

Stitching Floor- Use needle guard and masks while operating on a sewing machine. Keep enough space at each sewing workstation for operator movement. Provide height-adjustable chair and to enough light workers.

Finishing Section - Wear masks while working on a chemical process and keep steam pipelines insulated

Need of compliance codes -As brand name and reputation are important in garment industry from a consumer's point of view, it is necessary that companies should follow compliance codes.

Compliance code guidelines

Garment industries should follow the following standard compliance codes:

- Industries should follow Intenational standard code like ISO to remain competitive in the international market.
- People should not be allowed to work on dangerous machine without proper training
- Safety measures like wearing protective eye-wear, face shields, ear plugs, hard hats, and protective suits should be worn wherever needed.
- Safety equipment like fire-extinguishers, should be placed at properly designated places and personnel to be trained in using them at times of need.

14.11 Summary

Organizational compliance is very important for smooth working environment. 5S and Kaizen, Siz Sigma and Standard organizational compliance SA 8000. Provides organizational compliance. Corporate Social Responsibility is seen as a contribution of corporates to the environment and society at large. The International labour standards, Code of Ethics, working hours and wage Rate compliance are to be followed for the success of the industry. All these compliances and measures are laid down to have a sustainable business environment at large.

POINTS TO REMEMBER

- Organizational compliance make sure that the business and its employees follow rules, regulations and ethical practices
- Systems that help in its improvement and increase the profitability are 5S & Kaizen and Six Sigma
- SA 8000 social compliance system ensures that the organization conducts business in a fair and decent manner adhering to highest social standards.
- Corporate Social Responsibility (CSR) is a concept in which businesses involved in activities that benefit its employees and the society and also help in uplifting the society at large.
- International Labour Standards are legal instruments to ensure that basic principles and rights are followed in a work place.
- Code of Ethics are guiding principles to make sure that the business, its employees act with honesty and integrity and only involve in activities that are beneficial to the society
- Working hours and wage rate compliances are to ensure that the workers are not exploited.
- Disaster Management in terms of risk reduction and management are to minimize the occurrence of disasters in the workplace.
- Health and Safety Compliance are precautionary measures and guidelines to be followed in the workplace to ensure the health and safety of the workers.

TEACHER ACTIVITIES:

- To arrange for an industrial visit in the near-by locality and to show the students what are the Organizational compliances that the industry follows.

STUDENT ACTIVITIES:

- Collect pictures of safety sign relevant to a garment industry
- Get into a group of 5 to 10 students and prepare a chart showing the minimum work hours and minimum wages that your parents work in.

GLOSSARY

Compliance	Obeying / following a rule or order or request
Streamline	To make a work process easier by systematic steps
Brainstorming	Thinking of as many ideas as possible for a problem
Benchmark	A standard for comparison
Certification system	Provide an official document attesting a level of achievement
Exploitation	Treating unfairly
Remuneration	Money paid for work or a service

QUESTIONS AND ANSWERS

PART – I
Objective Questions

1. 'Kaizen' means _____
   a) System improvement
   b) Continuous improvement
   c) Infrastructure improvement
   d) Resource improvement

2. Six Sigma systems is carried out in most of the organization by _____problems.
   a) Measuring and analyzing
   b) Experimental data
   c) Statistical and data analysis
   d) Data analysis

3. SA 8000 is a _____
   a) Business organization certification programme
   b) Environmental certification programme
   c) Product certification programme
   d) Social certification programme

4. The concept in which businesses actively involve in social developmental activity is _____
   a) SA 8000
   b) ILS
   c) CSR
   d) ISO

5. Set of guiding principles that are intended to make sure a business and its employees act with honesty and integrity are termed as _____
   a) SA 8000 social compliance
   b) Six Sigma compliance
   c) Health and safety compliance
   d) Code of ethics

PART – II
Answer in Three (Or) Four Points

1. What is regulatory compliance?
2. Give the benefits of compliance of SA 8000 for employers.
3. Give the working hours standard as mentioned in Factories Act 1948.
4. List the safety measures to be followed in a cutting department of a garment industry.
5. What does CSR activity contribute towards environment?

PART – III
Answer in a Paragraph

1. Give the steps of 5S system.
2. List the principles of Six Sigma.
3. What do you mean by CSR and give one example of an organization's CSR activity.
4. What are the SA 8000 social compliance requirements?
5. What is 'Code of Ethics' and what are the types of Code of Ethics?

PART – IV
Answer in One Page

1. Elaborate the principles, phases and techniques for Six Sigma.
2. List out the Health and Safety measures to be followed in a garment industry in relation to the various departments.

Answers for Objective Questions

1. (b) 2. (a) 3. (d) 4. (c) 5. (d)

Model Question Paper

Textiles and Dress Designing - Theory

STANDARD XII **MARKS: 90**

PART- A

Circle the correct answers **1 x 15 = 15**

1. The process of removing small projecting fibers from the surface of the woven fabric by passing it over the flame is known as _____

   (a) Flame Retardant (b) Anti Static c) Singeing d) Mercerizing

2. Three dimensional or raised effects on the fabric surface can be introduced by----------

   a) Calendaring b) Raising c) Embossing d) Flocking

3. Pink colour is a tint of ……..

   a. Blue b. Green c. Red d. Yellow

4. Flat sketches are ---------- technical drawings which illustrate the garment with basic solid lines.

   a) 2- Dimensional b) 3- Dimensional c) Creative d) Visual

5. _____are sent out to sales representatives for intent orders from trade shows and wholsalers.

   (a) Colour way specs (b) Clothing production

   (c) Shipment samples (d) Sales man samples (SMS)

6. The main purpose of care labels is to ----------

   a) Increase sales b) Enhance storage

   c) Know the fibers d) Ensure proper laundering

7. _____ spreading means to spread the fabric in a systematic way.

   a) Pattern b) Draft c) Layout d) Fabric

8. It is work done by pulling certain amount of material together.

   a) Bows b) Belt c) Embroidery d) Smocking

9. _____ increase special talent and involvement among families.

a) Homemade garments b) Readymade garments

c) Boutique garments d) Tailor Made garments

10. The process of scheduling, coordinating the training and orientation sessions are the job nature of _____department

a) Sampling b) HR c) Production d) IE

11. A co-ordinator who works between the buyer and apparel seller is known as the-----

a) Merchandiser b) Classic designer

c) pattern master d) cutting master

12. Marketing usually involves an exchange between

a) Buyers and sellers b) Consumers and retailers

c) Organizers and customers d) Costumers and product manufactures

13. Course curriculum designing is carried out during this phase of training programme.

(a) Training phase (b) Pre-training phase

(c) Post-training phase (d) Monitory phase

14. CAD is a _____tool that enables one to make quick and accurate drawings with the use of a computer.

a) Electronic b) Current c) Software d. Hardware

15. SA 8000 is a _____

a) Business organization certification programme

b) Environmental certification programme

c) Product certification programme

d) Social certification program

PART- B

Answer any 10 question in short (28-compulsory question) **10 x 3 = 30**

16. Define calendaring

17. What are primary colours?

18. List out the types of presentation boards

19. Expand BOM and explain

20. State the functions of clothing care

21. List the basic ways of pattern alteration to ensure good fit

22. Give some techniques of pulkari embroidery.

23. Write a short note about online apps for textiles/garment shopping

24. Enlist the different types of sourcing.

25. What is sampling?

26. Define marketing concept and identify the five main concepts.

27. Define quality control and mention its importance.

28. Differentiate colour way specs and artwork spec.

PART- C

Answer any 5 question in short (35- Compulsory question) **5 x 5 = 25**

29. Explain the any two styles of printing.

30. What are the principles of economic layout?

31. Differentiate Dori work and Gota work.

32. What are the merits and demerits of tailor made garments?

33. Mention the functions of merchandiser

34. Analyze and classify the advertisements in brief.

35. Give a brief note on theme selection.

PART- D

Answer all the question with internal choose **2 x 10 = 20**

36. Explain in detail the classification of dyes.

(or)

Elaborate about the different types of samples

37. Describe the various departments in an apparel unit.

(or)

Give a detail note on different types of figure irregularities and the means of altering patterns

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TEXTILES AND DRESS DESIGNING

Practical

Textiles and Dress Designing Practical

Exercise No.	Chapter Title	Page No.	Month
1	Dyeing of cotton yarn with cold brand reactive dyes.	191	June
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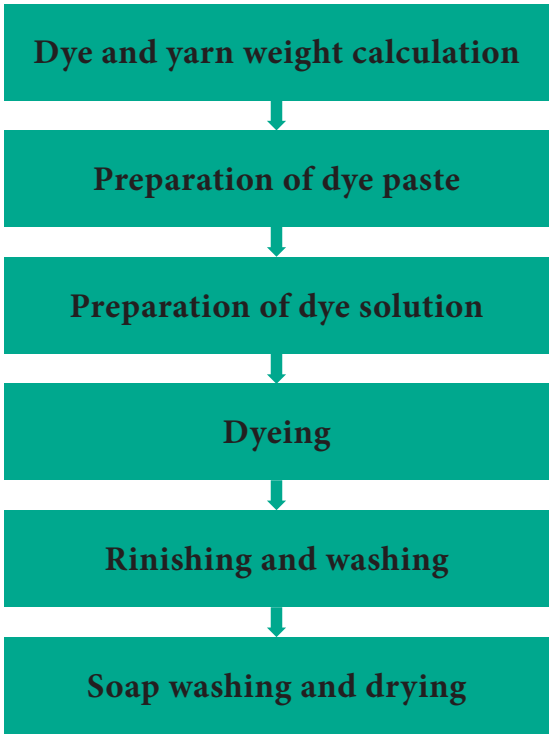
PRACTICAL
01

DYEING OF COTTON YARN WITH COLD BRAND REACTIVE DYES

Objectives

- To learn about cold brand reactive dyeing
- To acquire skills in yarn dyeing with reactive colours
- To carryout dyeing calculation based on the yarn weight

Operation sequence to be followed



Tools and Equipment Required

Activity Title	S.No	Name of the apparatus/ components	Range/Value	Quantity
Dye and Yarn weight calculation	1.	Mini electronic balance for calculating the weight of yarns and dyes	0-1000g	1
Preparation of Dye solution and dyeing	1.	Cotton yarn	Half bleached	1 lea
	2.	Bowl	1litre	1
	3.	Glass rods	30-50cms	2
	4.	Dyes	Selected colours	As required
	5.	Sodium chloride (NaCl)	Ordinary salt	As required
	6.	Sodium carbonate (Na_2CO_3)	Soda ash	As required
	7.	Water	Soft water	As required
Soap Washing and Rinsing	1.	Detergent	Non-ionic Detergents	As required
	2.	Water	Soft water	
Drying	1.	Stand for drying the yarns	30-50cms	1

Dye and Yarn weight calculation

Step 1: Determine the weight of yarn.

Step 2: Calculate and measure the required amount of dyes, chemicals and water required to dye the given yarn.

Weight of the yarn = 10gm

Dye percentage = 1%

Dye weight = Dye % x Weight of the yarn x 1000

(Multiply 1000 for gram converted into mg)

= 1/100 X10 X 1000

= 100mg

Yarn and Weight Ratio = 1:20

Required water = yarn weight X 20

= 10 X 20

= 200ml

Sodium Chloride

Dye %	Sodium Chloride/liter (1000ml)	Sodium chloride / 200ml
1%	30g	30/1000 x 200 = 6g
2%	40g	40/1000 x 200 = 8g
3%	50g	50/1000 x 200 = 10g

Sodium Carbonate

Dye %	Sodium carbonate / 1000ml	Sodium carbonate / 200ml
1%	3g	3/1000 x 200 x 1000 = 600mg
2%	4g	4/1000 x 200 x 1000 = 800mg
3%	5g	5/1000 x 200 x 1000 = 1000mg

Preparation of dye paste

Step 1: Take required quantity of dye powder based on yarn weight and depth of colour

Step 2: Add 5ml of water to the dye powder

Step 3: Mix the dye powder thoroughly to form a paste.

Preparation of dye solution:

Step 1: Prepare dye liquor by adding 15 ml of water to the dye paste

Step 2: Take half of the dye liquor and add remaining water

Step 3: Add sodium chloride to the dye liquor and mix thoroughly

Dyeing

Step 1: Immerse yarn to be dyed in water and squeeze thoroughly

Step 2: Soak and rotate the yarn in the dye liquor for 5 minutes continuously

Step 3: Add the remaining dye (Concentrate) liquor to the dye bath

Step 4: Immerse the dyed yarn and repeat the dyeing process for 5 minutes

Step 5: Divide the measured sodium carbonate into 3 parts.

Step 6: Add one part of sodium carbonate in the dye bath and dye the yarn for 10 minutes

Step 7: Remove the yarn from dye bath and then add second part of sodium carbonate

Step 8: Repeat the dyeing process for 10 minutes and remove the yarn from dye both.

Step 9: Finally add third part of sodium carbonate to dye bath and again dye the yarn for 10 minutes.

Step 10: Continue dyeing for 15 -20 minutes. This dyeing process requires one hour of dyeing

Rinsing and washing:

Step 1: Take out the dyed yam and squeeze out to remove excess dye solution

Step 2: Rinse the dyed yarn thoroughly in cold water and squeeze to remove excess water

Soap washing and drying

Step 1: Add required quantity of detergent powder in water and boil the content

Step 2: Immerse the dyed yarn for 15 minutes in boiling water containing detergent to remove excess dye present in the yarn

Step 3: Remove the yarn from detergent bath and squeeze

Step 4: Thoroughly wash the yarn in cold water and dry under shade.

Conclusion

- Gained knowledge about dye calculation for different percentage based on yarn weight
- Understood the cotton yarn dyeing with cold brand reactive dyes.

Video Suggestions:

Title/Purpose	Link
Dyeing cotton yarn with cold brand reactive dyes.	https://youtu.be/l79ymybMLJo

PRACTICAL
02

PRINT THE FABRIC USING STENCILS

Objectives

- To learn the stencil preparation techniques
- To acquire skills in stencil printing

Process sequences to be followed

Selection of Design

↓

Preparation of Stencil

↓

Printing paste preparation

↓

Stencil printing on fabric

↓

Steaming

Tools and Equipment Required

Activity Title	S.No	Name of the apparatus/ components	Range/ Value	Quantity
Stencil cutting	1.	Cardboard or thick plastic sheet	-	1 sheet
	2.	Stencil cutter	Iron	1
	3.	Emery paper	-	1

Printing paste preparation	Binder Emulsion Paste preparation			
	1.	Acramine binder	-	200 part
	2.	Emulsifier	-	5 part
	3.	Urea	-	50 part
	4.	DAP (Di Ammonium Phosphate)	-	30 part
	5.	Kerosene	-	665 part
	6.	Water	-	50 part
		Total	-	1000 part
	Pigment Paste Preparation			
	1.	Pigment colour		50 part
	2.	Fixer LLL		10 part
Stencil printing	1.	Fabric to be printed	Cotton	Based on the size of design
	2.	Brush	-	1
	3.	Printing table	Wooden	1
Steaming	1.	Suitable apparatus for Steaming	-	1

Selection of design

Step1: Use graphics programme such as Photoshop or Illustrator to create a design

Step2: For simple designs Microsoft Word can be used

Step3: For beginners, simple designs which are available for embroidery can be selected and design should be modified in such a way that two lines do not touch each other

Step4: Beginners should avoid choosing intricate patterns.

Step5: Design size should be determined based on the area to be printed

Preparation of stencil

Step 1: Prepare the stencil based on the selected design

Step 2: Stencil is prepared by cutting out a design on a flat sheet of cartridge paper, metal, or plastic, with a sharp-pointed knife

Printing paste preparation

Step 1: Emulsion paste and pigment colour should be prepared separately before combining them to create the printing paste.

Step 2: To prepare the emulsion paste, water, binder, emulsifier, and kerosene are mixed in a bowl

Step3: Add urea, DAP (di-ammonium phosphate) into the paste and mix well.

Step4: To prepare the pigment paste acramine pigment colour, emulsion and fixer LLL are mixed together

Step5: Now combine the emulsion paste (940 part/1000part) / and pigment paste (60 part/1000part) to form the printing paste

Stencil printing on fabric

Step1: The fabric to be printed is spread without any wrinkle on printing table. The

stencil is placed on the desired printing position

Step 2: It is important to make sure that the stencil is in good adhesion to the fabric. This will prevent the colour bleeding from the print area

Step 3: Apply the printing paste evenly with the help of sponge or painting brush or squeezee.

Step4: Do not remove the stencil until the printing paste is dry

Steaming

Step1: Once the fabric is fully dry, remove the stencil sheet.

Step 2: Prepare a steam bath and spread the printed fabric on top to improve the printing paste penetration and fixation.

Conclusion

- Gained knowledge on preparation of stencils
- Understood the technique of stencil printing on fabrics

Video Suggestions:

S.No	Title/Purpose	Links
1.	Stencil preparation and cutting	https://www.youtube.com/watch?v=zNIBUQ90tE0
2.	Stencil printing	https://www.youtube.com/watch?v=XbT1n7fI5o4

PRACTICAL
03

DEVELOP SAMPLES FOR VARIOUS TYPES OF TRADITIONAL EMBROIDERY

Objectives

- To identify different types of embroidery that are suitable for fashion garments
- To understand the steps and tricks of different embroidery styles
- To gain knowledge on selected traditional embroideries

Operation sequence to be followed

Selection of tools and fabric

↓

Selection of the motifs

↓

Transfer of motifs on to the fabric

↓

Outline stitches

↓

Filling stitches

↓

Finishing

Tools and Equipment Required

Activity Title	S.No	Name of the apparatus/ components	Range/Value	Quantity
Selection of tools and fabric	1.	Embroidery hoop	Wooden or plastic	1
	2.	Scissors	Small size	1
Selection of motifs	3.	Motifs from internet source	2 designs	2 sheets
Transfer of the motifs on to the fabric	4.	Tracing paper/ Marking pencil/ carbon paper and tracing wheel	Any one is preferred	1
Outline stitches	5.	Embroidery threads (Cotton/ Silk)	Any colours based on the design	5
	6.	Needles (Number based on the fabrics)	Strong sharp needles	1
Filling stitches	7.	Embroidery threads (Cotton/ Silk)	Any colours based on the design	5
	8.	Needles (Number based on the fabrics)	Strong sharp needles	1
Finishing	9.	Electric Iron box	Any brand	1

Steps to do Basic Embroidery

Selection of Tools and Fabric

Step 1: Take embroidery hoop, fabric and the needles with embroidery threads.

Step 2: Loosen the screw to take out the inner piece of the frame.

Step 3: Take the right side of the fabric facing upwards and cover the inner frame with the fabric.

Step 4: Place the outer frame around the inner frame and tighten it with the screw.

Selection of Motifs

Step 1: Motifs or designs should be selected based on the fabric and the end use of the material.

Step 2: To start with any simple designs are preferred.

Step 3: Any designs from the internet can be selected.

Transfer of Motifs on to the Fabric

Step 1: Select the motif that needs to be embroidered.

Step 2: Place the tracing paper above the cloth and the motif over the tracing paper.

Step 3: Start tracing the motif so that the impression is transferred on to the fabric through the tracing paper.

Step 4: The design will be transferred on to the fabric. Now fix the embroidery frame firmly.

Outline Stitches

Step 1: Initially the outer layer of the design is embroidered.

Step 2: Outline stitches such as running stitch and stem stitch can be used.

Running stitch: The running stitch probably is the most simple and basic embroidery stitch. It is worked in a simple up and down motion.

Stem stitch: The stem stitch resembles a rope. The slanting segments make this stitch blend the single stitches into a smoother line than the more distinct segments of back stitch or chain stitch. The stem stitch is worked from left to right. The individual stitches are longer and worked offset to the previous one.

Filling Stitches

Step 1: Once the outline is done, filling stitches are used to fill the inner part of the motif.

Step 2: Satin stitch and herringbone stitch are used as filling stitches.

Satin stitch: The satin stitch is widely used as a **fill stitch.** The name comes from the smooth surface similar to the surface of the fabric called satin. To embroider the satin stitch, set up multiple stitches parallel to each other along the shape to fill out.

Herringbone stitch: The herringbone stitch is a crossed stitch. It is commonly used to fill areas with a low amount of waste yarn in the back. To embroider the herringbone stitch, make sets of two stitches that are worked so that they cross at the top and bottom of the line.

Finishing

Step 1: The end threads are cut and secured knots are made.

Step 2: Sometimes non woven sheets are used at the back of the fabric to prevent the delicate fabric from tearing due to the needle actions.

Step 3: The upper side is finally pressed to make the fabric free of wrinkles.

Example-1

Steps to do Traditional Embroidery – Chickankari

Selection of Tools and Fabric

Step 1: Select same colour thread and fabric for Chickankari work

Step 2: Take embroidery hoops, fine white fabric and needle with embroidery thread (silk or cotton white colour thread are used since white fabric is selected).

Step 3: Loosen the screw to take out the inner piece of the frame.

Step 4: Take the right side of the fabric facing upwards and cover the inner frame with the fabric.

Step 5: Place the outer frame around the inner frame and tighten it with the screw.

Selection of Motifs

Step 1: Motifs or designs should be flowers and paisley as chickankari designs depicts the designs from nature.

Step 2: Any simple traditional designs from nature such as birds or flowers can be selected.

Transfer of Motifs on to the Fabric

Step 1: Select the motif that needs to be embroidered.

Step 2: Place the tracing paper above the frame and the motif over the tracing paper.

Step 3: Start tracing the motif so that the impression is transferred on to the fabric through the tracing paper.

Outline stitches

Step 1: Initially the outer layers of the design is embroidered using flat stem stitches.

Filling stitches

Step 1: Once the outline is done, filling stitches are used to fill the inner part of the motif.

Step 2: Herringbone stitches are used as filling stitch to give the shadow effect.

Step 3: Pulled thread work named Jali work is done to fill the design.

Jali work: This stitch gives an effect of open mesh or net created. In this stitch the thread is never drawn through the fabric, ensuring that the back portion of the garment looks as perfect as the front.

Finishing

Step 1: The end threads are cut and secured knots are made.

Step 2: The upper side is finally pressed to make the fabric free of wrinkles.

Example-2

Steps to do Traditional Embroidery – Kantha

Selection of Tools and Fabric

Step 1: Thread and fabric used for Kantha work depends on the motif and creativity of the designer.

Follow the steps (2 to 5) as given in Example-1 for Chickankari

Selection of Motifs

Step 1: Motifs or designs commonly used are foliages, flowers, birds, elephants, chariot and human figures

Transfer of Motifs on to the Fabric

Follow the steps (2 to 5) as given in Example-1 for Chickankari

Outline stitches

Step 1: Initially the outer layers of the design is embroidered using running stitches.

Filling stitches

Step 1: Outline and filling of the motif is done using running stitches. Care is taken to make the stitches small and even. The filling must be done close to give a beautiful effect.

Finishing

Step 1: The upper side is finally pressed to make the fabric free of wrinkles.

Example-3

Steps to do Traditional Embroidery- Kasuti

Selection of Tools and Fabric

Step 1: Thread and fabric used for Kasuti work depends on the motif and creativity of the designer.

Follow the steps (2 to 5) as given in Example-1 for Chickankari

Selection of Motifs

Step 1: Motifs or designs commonly used are temple architecture, gopurams of South India, lotus flower, raths and palanquins, bird motifs such as parrot, the peacock and swan.

Transfer of Motifs on to the Fabric

Follow the steps (2 to 5) as given in Example-1 for Chickankari

Stitches for Embroidery

Step 1: Gavanthi, Murgi, Negi and Menthi are the commonly used stitches.

Gavanthi is a double running stitch used for marking vertical, horizontal and diagonal lines. Murgi is a zig-zag stitch. Negi is a running stitch. Menthi is a cross stitch resembling fenugreek seeds.

Finishing

Step 1: The upper side is finally pressed to make the fabric free of wrinkles.

Conclusion

- Gained knowledge about various stitches that are specifically used for selected traditional embroidery
- Understood the working of Chikankari, Kantha and Kasuti embroideries

Video Suggestions:

S.No	Title/Purpose	Link
1.	How to do chikankari embroidery	https://www.youtube.com/watch?v=HQppTEVqxD8
2.	How to do Kasuti embroidery	https://www.youtube.com/watch?v=vrEElNnZnZI
3.	How to do Kanthaembroidery	https://www.youtube.com/watch?v=G7llGYjI4JE

PRACTICAL

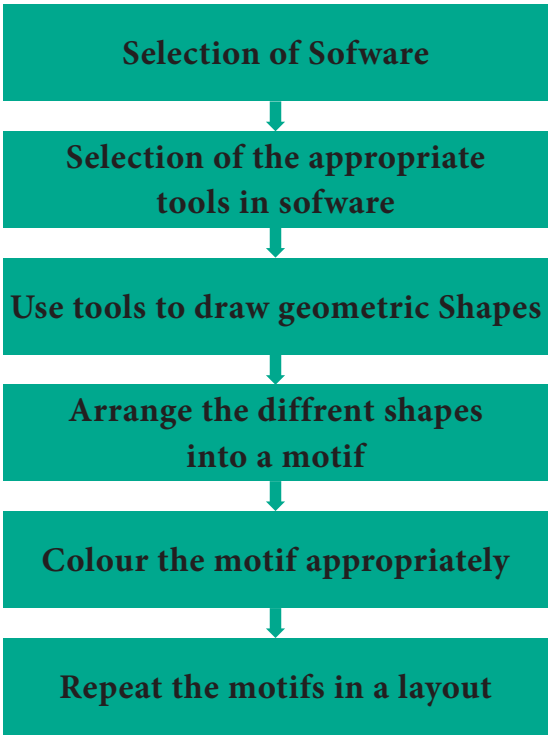
04

DEMONSTRATION OF COMPUTER AIDED MOTIF DEVELOPMENT

Objectives:

- To learn the software tools for design development.
- To acquire skills in motif using CAD software

Operation sequence to be followed

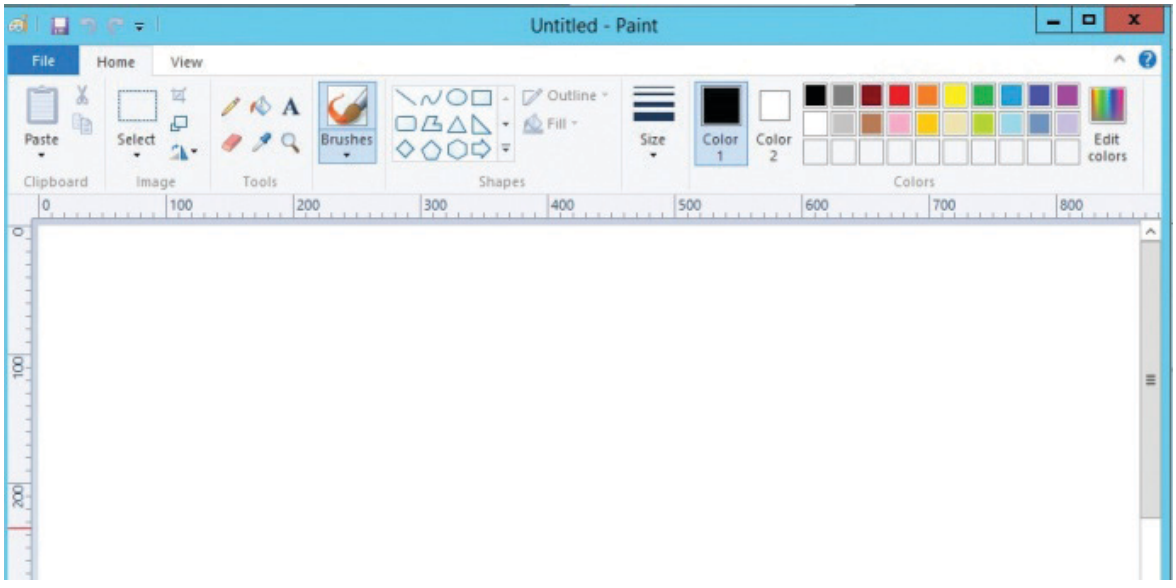


Tools and Equipment Required

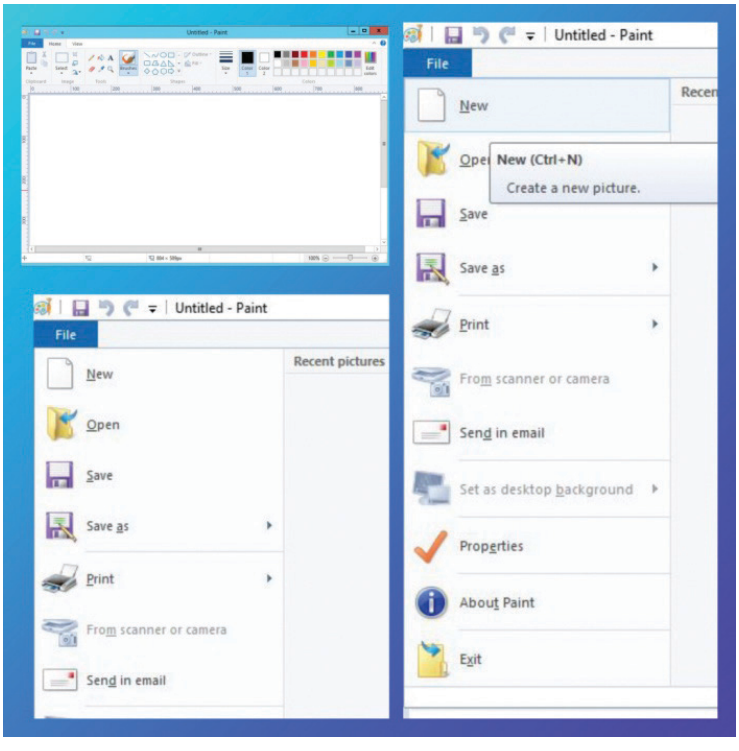
Activity Title	S. No	Name of the apparatus/ components	Range/Value	Quantity
Design development by using Microsoft Paint	1.	Desktop Computer	I 5 processor /4G RAM	1

Selection of Software

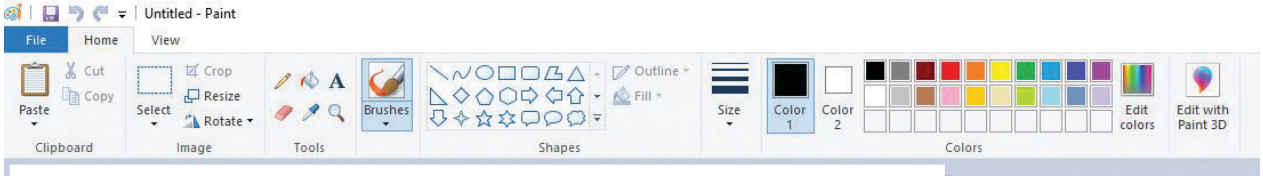
Step 1: Microsoft Paint is an open source software used for CAD designing in the beginner level.



Step 2: Open a New File

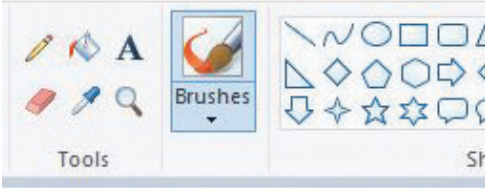


Step 3: Navigate the window and know the different tools available for drawing



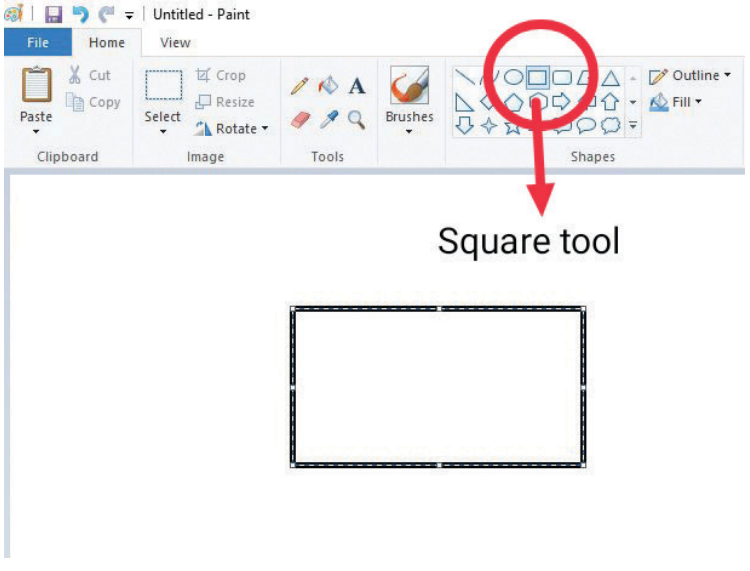
Selection of appropriate tools

Step 1: Choose free hand drawing tools like Pen, Pencil, Brush tools available for drawing free hand strokes.



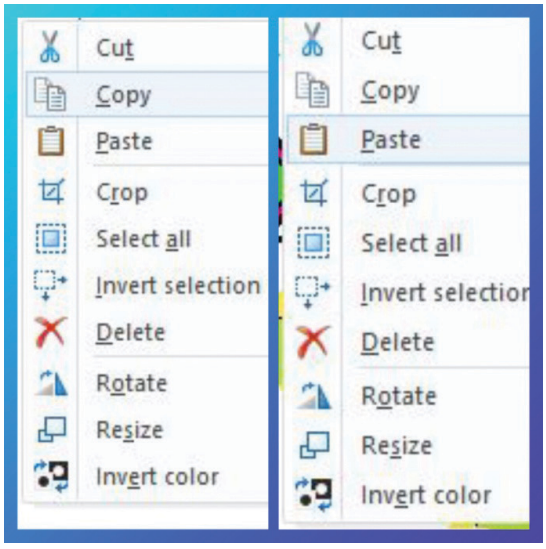
Step 2: Various ready shapes are available in the programme. Select any one shape and drag on the window to form the shape in the required size.

Step 3: For drawing a square, select the SQUARE TOOL. Click and drag the cursor while pressing 'shift' key to get square. By selecting, clicking and dragging the square tool, a rectangle shape is obtained.



Step 4: To draw a circle, select CIRCLE TOOL. Click and drag the cursor to get a circle while holding the 'shift' key. By selecting, clicking and dragging the circle tool, a oval shape is obtained.

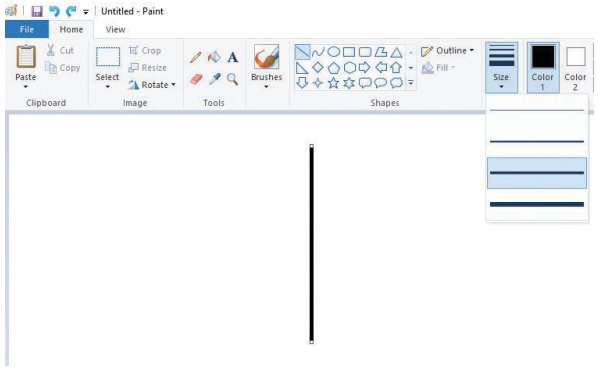
Step 5: To create multiple copies of a shape, you can select the shape and copy, paste it.



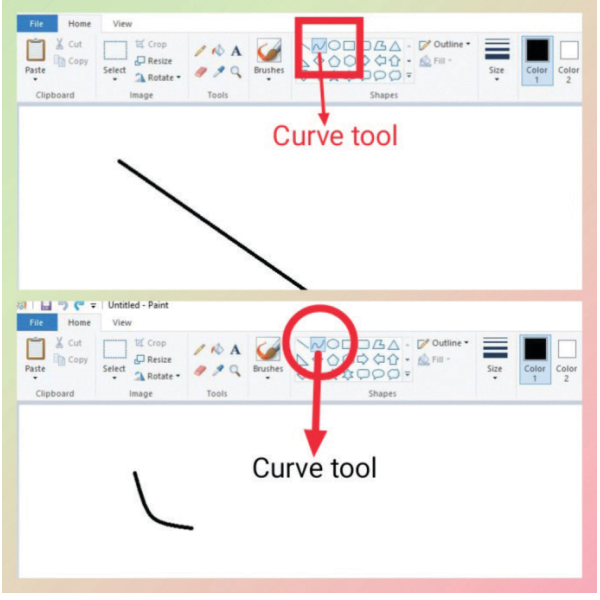
Step 6: Using the rotate option, the shape can be fixed at angles of 90° and 180°

Using tools to draw geometric shapes

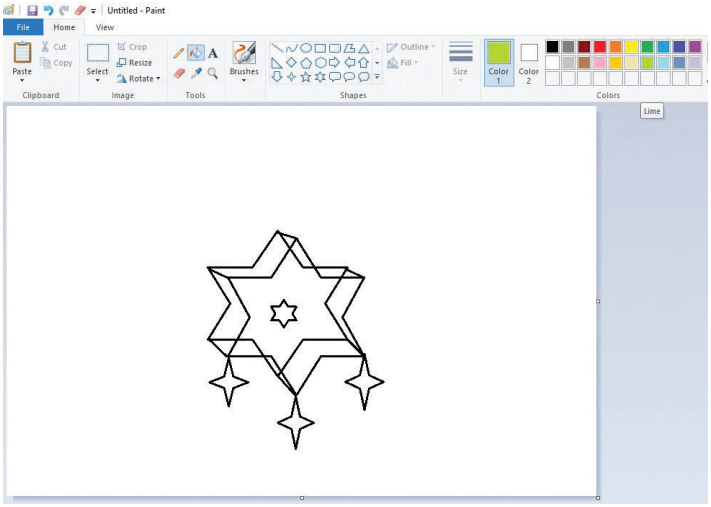
Step 1: For drawing a line, use **LINE TOOL**. For a perfect straight line, hold down the Shift key and drag across



Step 2: For drawing a curved line, use the **CURVE TOOL**. Click it at two points to form a line, then drag the cursor to form a curve.

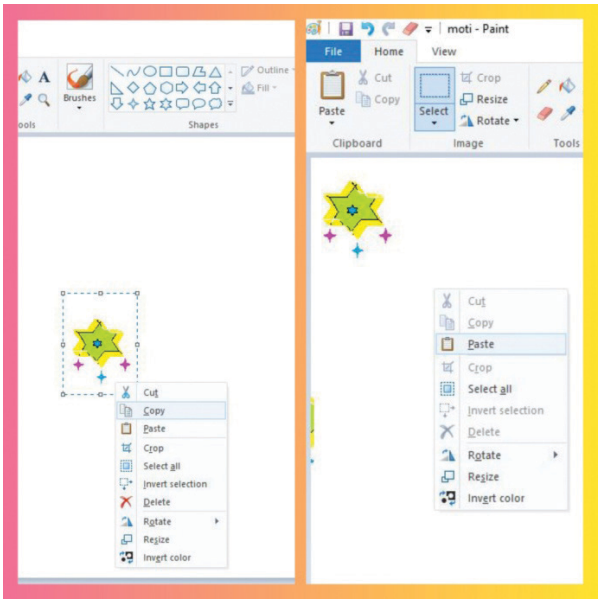


Step 3: For shapes like square, rectangle, oval, circle, star, hexagon use the **SHAPE TOOL** and draw the shape



Step 4: Use the **ROTATE TOOL** to rotate a shape to flip the object vertically or horizontally.

Step 5: Use the copy, **PASTE TOOL** to make copies of the shape



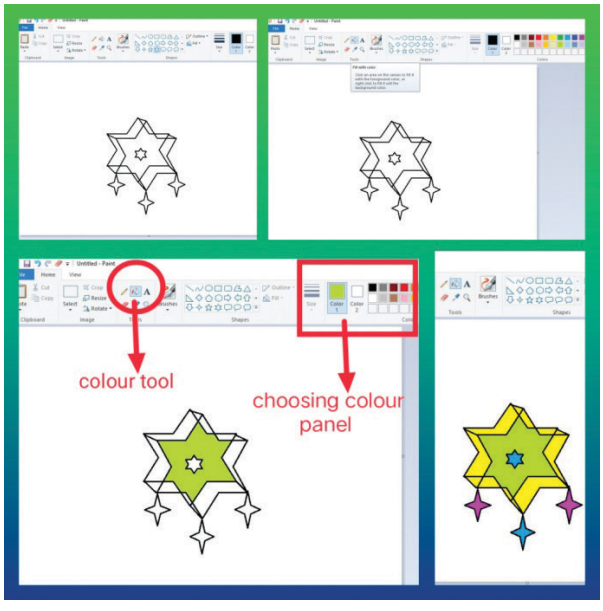
Arrange the different shapes into a motif

Step 1: As per the design requirement, use the move tool to arrange the different shapes to form a motif

Colour the Motif

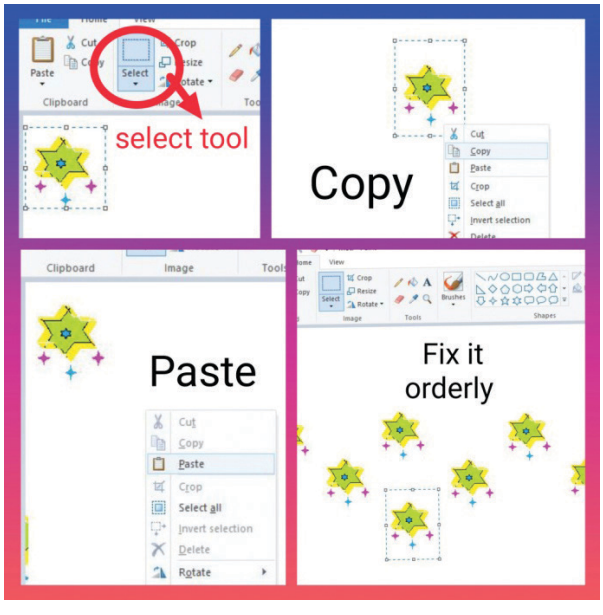
Step 1: Open the colour palette and select the required colour and using the **FILL TOOL**, the different shapes can be filled.

Step 2: For each complete shape, colours can be filled individually.

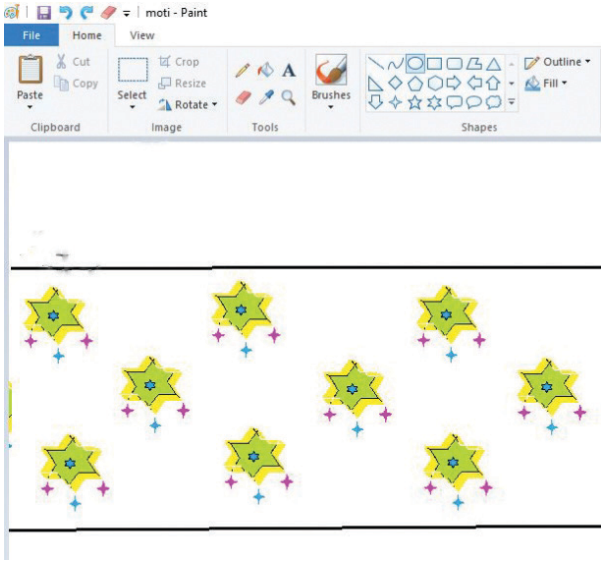


Repeat the motifs in a layout

Step 1: Designed motif can be copied and pasted to create multiple copies of the motifs.



Step 2: Arrange the copied motifs into a Layout.



Conclusion

- Gained knowledge on the functions of various tools of Microsoft Paint
- Understood the technique of designing different types of motifs
- Acquired skills in creating various layout with the designed motif

Video Suggestions:

Title/Purpose	Link
Microsoft Paint Tutorial for Beginners	https://www.youtube.com/watch?v=FB-_FgKLM90

PRACTICAL
05

GARMENT CONSTRUCTION

Objectives:

- To understand the basic measurements required for preparing the patterns
- To prepare pattern for the different garments
- To acquire skills in stitching of various garments

Operation Sequence to be followed:

Body Measurement → **Drafting, Marking & Cutting** → **Stitching** →

5.1 Panel Skirt
5.2 Cut Choli
5.3 T-Shirt
5.4 Salwar
5.5 Kameez
5.6 Pyjama

Tools and equipment required

Activity Title	S. No	Name of the apparatus/ components	Range/Value	Quantity
Body Measurements	1	Measuring tape	Standard	1
Drafting, Marking and Cutting procedure	2	Pattern sheet	Brown colour	4
		French curve	Full size	1
		Armhole curve	Full size	1
		Ruler (60cm)	Wooden	1
		L-scale	Wooden	1
		Pencil	Standard	1

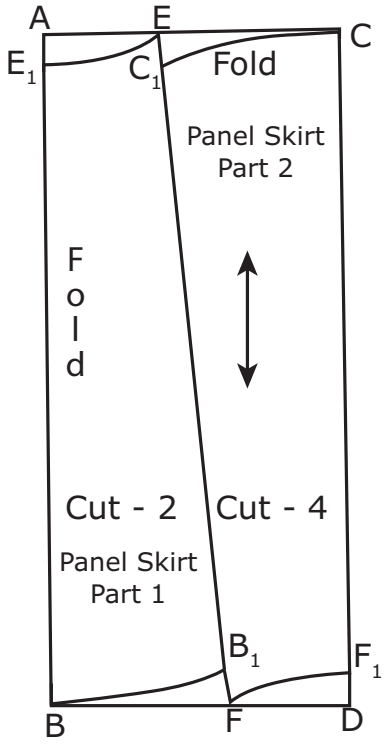
		Cutting table	Standard	1
		Marking chalk	Standard	1
		Fabric cutting scissors	Standard	1
		Paper cutting scissors	Standard	1
		Fabric required (in meters)		
		Panel skirt	Poplin/Cotton	2
		Cut choli with round neck and Plain sleeve	Cotton/Silk/Silk Cotton/Poplin/ Printed fabrics	1
		T-Shirt with one piece collar and tailors placket	Knitted/ Cotton fabric	2
		Salwar with plain pleats	Cotton/Silk/ Poplin/ Printed fabrics	2
		Kameez with plain sleeve	Cotton/Silk cotton/ Poplin/ Printed fabrics	2
		Pyjama with elastic waist band	Poplin/Cotton	3
Stitching procedure and finishing	3	Sewing machine	Industrial/ Domestic	1
		Sewing thread/ Colours based on the purchased materials.	Standard	6
		Thread cutter	Standard	1
		Seam ripper	Standard	1
		Elastic	Standard (Roll elastic for Pyjama)	0.70 cm each

5.1 Panel skirt

Introduction:

Panel skirt is an undergarment worn by women under a skirt, dress or saree. It covers a person from the waist downwards. It is stitched with 2, 4, 6 and 8 panels. Cotton and poplin are the most comfortable fabrics for panel skirts. Formal and semi-formal sarees demand a satin or silk petticoat, especially for sheer ones.

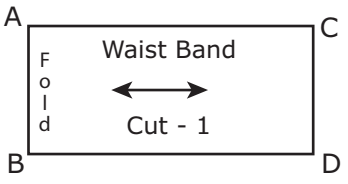
Age Group: 16 Years

Particulars	Measurements	Drafting Method
Waist circumference	88 cm	
Full Skirt Length	95 cm	
Waist Band Width	8 cm	
Panel skirt		

Drafting method (Panel skirt)

SI. No	Particulars	Drafting
1	AB = CD	88 cm (Length)
2	AC = BD	44 cm (1/2 Waist circumference)
3	ABCD	Draw rectangle
4	AE = DF	1/8 Waist circumference + 2 cm extra allowance (13 cm)
5	E-F	Join together
6	A-E_1	1 ½ cm
7	E_1-E	Draw curve line as shown in the figure
8	D-F_1	1 ½ cm
9	F_1-F	Draw curve line as shown in the figure
10	E – C_1	1 ½ cm
11	C_1-C	Draw curve line as shown in the figure
12	F- B_1	1 ½ cm
13	B_1-B	Draw curve line as shown in the figure

Waist Band

S.No	Particulars	Drafting	
1	AB= CD	½ Waist circumference +2cm	
2	AC=BD	8cm	
3	ABCD	Draw rectangle	

Cutting lines

Center piece	Side piece	Waist Band
E1 - E - B1 – B	C1-C-F1-F	ABCD

Components/Parts and cut number

- Centre Piece - 2
- Side Piece - 4
- Waist Band – 1

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw dotted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure - Panel skirt

Step 1: Join the side panels with center panel piece on both front and back sides.

Step 2: Join front and back piece together.

Note: Leave sufficient space (8cm to 10cm) for the waist band opening at one side and join the side seams.

Step 3: Attach the waist band strip to the skirt part on the face side of the skirt by using plain seam.

Step 4: Fold the waist band strip onto the wrong side and make stitch.

Step 5: Fold 2 cm bottom hem allowance and make a stitch.

Step 6: Insert the cord onto the waist band.

Conclusion

- Understood the basic measurements required for pattern drafting panel skirt and how to take these measurements.
- Learnt the drafting pattern for panel skirt.
- Construct a panel skirt with the given measurement.

Simple assessment:

Draw any 3 different garments using panels.

Video Suggestions

S. No	Title/purpose	QR code	Link
1.	Panel skirt		https://youtu.be/YMQ78BqfxZY

Costing sheet:

S.No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost in Rs. (approx.)	Value in the nearby store
1.	Fabric	Cotton	2 meters	60	
2.	Thread	White	1 unit	10	
3.	CMT (Cutting, Making and Trimming)	Standard		50	
Wages and overhead : 25% of Material Cost					
Total Cost to create/service on the product (Rs.)					
Selling price in the market (Rs.)					
Profit (Rs.)					

5.2 Cut Choli

Introduction

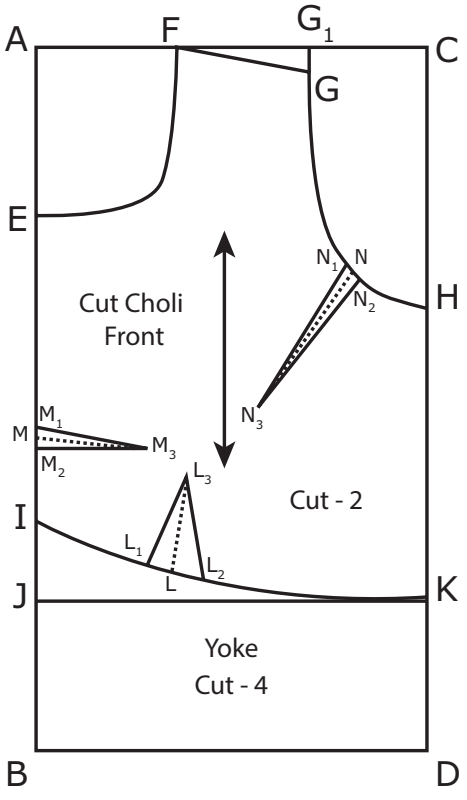
Blouse or Cut Choli is worn by women along with a saree or lehenga. Saree is one of the most preferred attire by women and looks great an the wearer with a perfect matching bouse. Blouse is a fitted garment, often fastened with hooks and eyes. Any type of fabric can be used for stitching a cut choli. Fabric preference varies with the saree type.

Age group - 18 Years

Particulars	Measurements
Full Length	35 cm
Bust Circumference	75 cm
Shoulder Width	32 cm
Waist Circumference	62 cm
Waist band (Yoke)	8 cm
Arm hole	28 cm
Sleeve Length	20 cm
Sleeve girth	26 cm

Cut Choli

Cut Choli Front Bodice



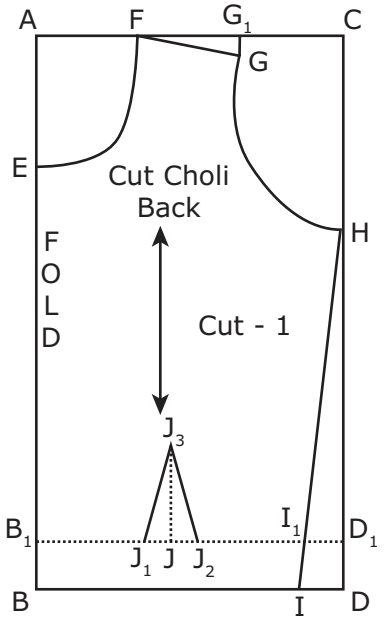
Drafting Method

Front bodice

S.No	Particulars	Drafting
1	AB = CD	Full length (39cm)
2.	AC = BD	1/4 of Bust circumference (19 cm)
3.	ABCD	Draw rectangle
4.	AJ = CK	Full length – Yoke
5	A – E	Front neck depth (10 cm)
6	A – M	1/4th bust +1.5 cm
7	A – F	Neck width (7.5 cm)
8	A - G_1	1/2 the Shoulder width (16 cm)
9	G1 – G	Shoulder slope 1cm
10	F-G	Join the line
11	G-H	1/6 of Bust circumferences (14 cm + 2 1/2 cm)
12	H-N	7.5 cm
13	J-I	2 cm
14	I - K	Draw a curve line as shown in the figure
15	I-L	1/12 bust +1.25cm (Dart)
16	L - L_1	Dart intake 2.5 cm
17	L - L_2	Dart intake 2.5 cm
18	L - L_3	Dart length 7.5 cm
19	L_1, L_3 & L_2	Join
20	M - M_1	Dart intake 1 cm
21	M - M_2	Dart intake 1 cm
22	M - M_3	Dart length 5 cm
23	M1, M_3 & M_2	Join
24	N - N_1	Dart intake 1 cm
25	N - N_2	Dart intake 1 cm
26	N - N_3	Dart length 9 cm
27	N_1, N_3 & N_2	Join

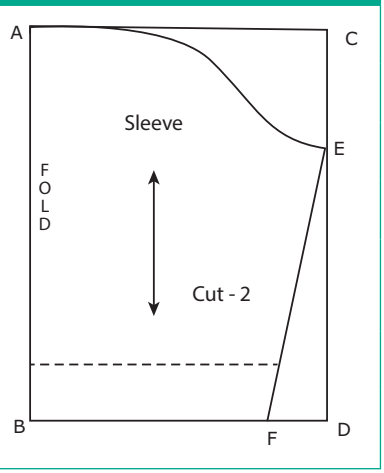
Back bodice

S.NO	Particulars	Drafting
1	A B = C D	Full length + 4 cm
2	A C = B D	1/4 of Bust circumference (19 cm)
3	ABCD	Drawn rectangles
4	A - E	Back neck (10 cm)
5	A - F	Neck width (7.5 cm)
6	A - G_1	1/2 the Shoulder width (16 cm)
7	G_1 - G	1cm shoulder slope
8	F-G	Join the line
9	G - H	1/6 of Bust circumferences + 2.5 cm (14 cm + 2.5 cm)
10	D - I	2.5 cm
11	H - I	Join
12	AB_1= CD_1	Full length (-) 4 cm
13	B_1 D_1	Join
14	I_1	Meeting point Of H_1 and B_1D_1
15	J	Mark mid point of B_1 and I_1 as J
16	J - J_1	Dart intake 1.5 cm
17	J - J_2	Dart intake 1.5 cm
18	J - J_3	Dart length 7.5 cm
19	J_1, J_3 & J_2	Join



Sleeve

S.No	Particulars	Drafting
1	A B = C D	Sleeve length (20 cm)
2	AC = BD	½ armhole circumference (14 cm)
3	ABCD	Draw rectangle
4	C- E	7 cm
5	A – E	Sleeve arm hole (draw curve line as shown in figure)
6	B – F	½ sleeve girth
7	E – F	Join side seam



Cutting lines

Front Side	Back Side	Yoke	Sleeve
E - F - G - H - K – I	E - F - G - H - I –B	I - K - D – B	A - E - F – B

Components/Parts and cut number

- Front Bodice - 2
- Back Bodice - 1
- Yoke- 4
- Sleeve- 2

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw dotted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure – Cut choli

Step 1: Close the darts in the wrong inside of the front bodice.

Step 2: Make a dart on the back bodice.

Note: Do not forget to leave long tails of thread at tip of the dart.

Step 3: Attach facing piece of 2.5 cm width to the bottom hem of the back part leaving 1 cm seam allowance.

Step 4: Turn to the wrong side of the back part and work hemming stitch.

Step 5: Take 3 Layers of fabric pieces for yoke attachment:

Layer 1- 1st yoke piece right side up

Layer 2- Bodice piece right side up

Layer 3- 2nd yoke piece wrong side up

Step 6: Join the hem of yoke leaving 1 cm seam allowance. Turn the front yoke piece to the right side.

Step 7: Join the top edge of the yoke piece to the front bodice pieces for both sides (Front pattern piece fabric edge is sandwiched between the two yoke pieces).

Step 8: Left panel is attached with a binding of 1" width (overlap) and right panel is attached with a facing piece (underlap)

Note: Two-piece placket is used in the front panel

Step 9: Place the shoulder edge of front and back right sides facing and make a plain seam at a distance of 1cm.

Step 10: Attach facing piece of 2 cm width (folded width) to the neckline and stitch leaving 1 cm from neckline edge.

Step 11: Turn the facing piece to the wrong side and secure using hemming stitch.

Step 12: Complete the sleeve edge by attaching facing.

Step 13: Attach the sleeve to arm hole of bodice.

Step 14: Join side seams with a plain seam and over lock the edges.

Step 15: Attach hooks and eye or thread loop in the front placket.

Conclusion

- Understood the basic measurements required for pattern drafting of Cut choli and method of taking measurements.
- Learnt the drafting method for Cut choli and pattern making.
- Construct a Cut choli for the given measurement.

Simple Assessment:

Sketch any 2 different styles of Cut choli design for women.

Video Suggestions:

S. No	Title/purpose	Link	QR code	Credits
1	Cut choli stitching	https://youtu.be/cQinvQAtPNU		Sew with shama

Costing sheet:

S.No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost (approx. Rs.)	Value in the nearby store (Rs.)
1.	Fabric	Cotton	1 meter	40	
2.	Thread	Black	1 Unit	5	
3.	Hook and Eye	White	5 Sets	10	
5.	CMT (Cutting, Making and Trimming)	Standard		120	
				Wages and overhead : 25% of Material Cost	
				Total Cost to create/service on the product (Rs.)	
				Selling price in the market (Rs.)	
				Profit (Rs.)	

5.3 T – Shirt

Introduction:

T-Shirt is a casual wear for all age groups. Traditionally, it has short sleeves and a round neckline, known as a crew neck. T-shirts are generally made of knitted fabric. These come in different styles with or without collars, full or short sleeves, variations in necklines.

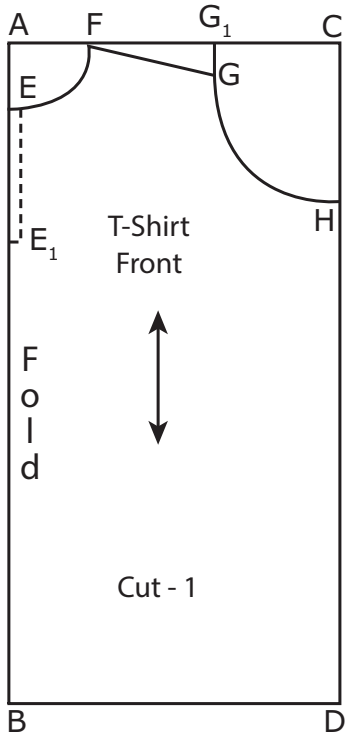
Age group: 15 Years

Particulars	Measurements	T – Shirt
Chest Circumference	65 cm	
Length	45 cm	
Shoulder Width	26 cm	
Arm hole circumference	26 cm	
Sleeve Length	13 cm	
Sleeve girth	24 cm	

Drafting Method

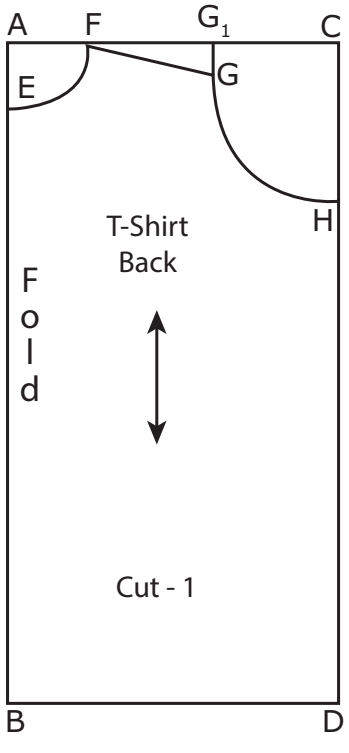
Front bodice

S.No.	Particulars	Drafting
1	AB = CD	Full length (45 cm) + hem allowance (4 cm)
2	AC = BD	1/4 Chest circumference (16 cm) + 3 cm (for ease)
3	ABCD	Draw rectangle
4	A - E	Front neck depth (5 cm)
5	E - E_1	Mark front opening (8 cm)
6	A – F	Neck width (5 cm)
7	A - G_1	1/2 Shoulder width (13 cm)
8	G_1 – G	Square down 1cm from G1 to G (shoulder slope)
9	F-G	Join the line
10	G – H	1/2 Arm hole Circumference (13 cm)



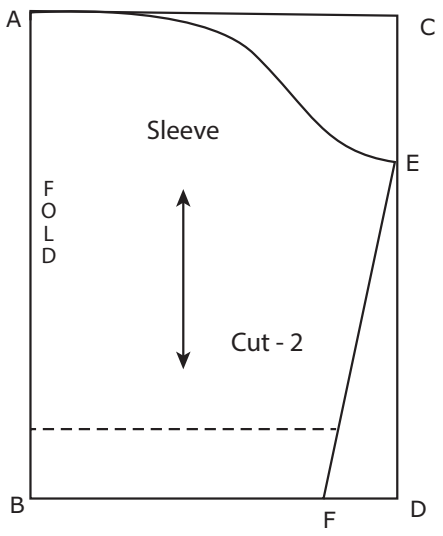
Back bodice

S.No	Particulars	Drafting
1	AB = CD	Length (45 cm) + Hem Allowance (4 cm)
2	AC = BD	1/4 Chest circumference (16 cm) + 3 cm (for ease)
3	ABCD	Draw rectangle
4	A – E	Back neck depth(4 cm)
5	A – F	Neck width (5 cm)
6	A - G_1	1/2 Shoulder width (13 cm)
7	G_1 – G	Square down 1cm from G1 to G shoulder slope
8	F-G	Join the line
9	G – H	1/2 Arm hole Circumference (13 cm) (draw curve line as shown in figure)



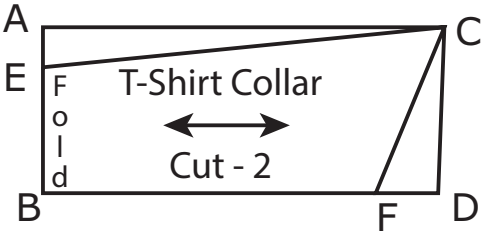
Sleeve

S.No.	Particulars	Drafting
1	AB = CD	Sleeve Length + Hem (13 cm + 3 cm)
2	AC = BD	1/2 Arm hole circumference (13 cm)
3	ABCD	Draw a Rectangle (draw curve line as shown in figure)
4	C – E	7 cm
5	A – E	Sleeve armhole
6	B – F	½ sleeve girth
7	E – F	Join side seam



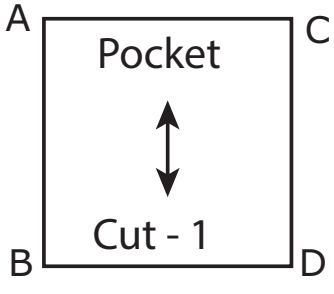
Collar

S.No.	Particulars	Drafting
1	AB = CD	Collar height (8 cm)
2	AC = BD	Collar width (16 cm)
3	ABCD	Draw rectangle
4	D – F	1.5 cm
5	A – E	1 cm
6	E – C	Join
7	C – F	Join

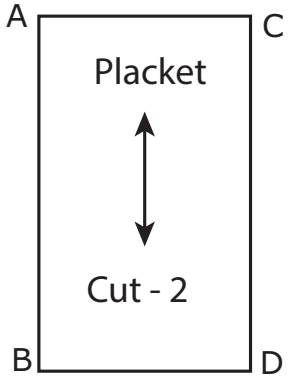


Pocket:

S.No.	Particulars	Drafting
1	AB = CD	Height (12 cm)
2	AC = BD	Width (10 cm)
3	ABCD	Draw rectangle



Placket:

S.No.	Particulars	Drafting	
1	AB = CD	10 cm	
2	AC = BD	5 cm	
3	ABCD	Draw rectangle	

Cutting lines

Front Bodice	Back Bodice	Sleeve	Collar	Pocket	Placket
E - F - G - H - D - B	E - F - G - H - D – B	A - E - F - B	E - C - F - B	A - C - D - B	A - C - D - B

Components/Parts and cut number

- Front Bodice -1
- Back Bodice - 1
- Sleeve - 2
- Collar - 2
- Pocket - 1
- Placket - 2

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw dotted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure – T – Shirt

Step 1: A tailor's placket should be attached to the center front placket opening.

Step 2: Place the shoulder edge right sides facing and make a plain seam at a distance of 1cm and overlock.

Step 3: Join the sides with plain seam and over lock the edges.

Step 4: Fuse the interlining on one piece of collar and place the collar pieces right side together and sew the outer edges.

Step 5: Trim and turn right side out and iron the collar

Step 6: : Attach the collar to the neckline of bodice.

Step 7: Fold 1 cm seam or 2 cm sleeve hem and make an edge stitch.

Step 8: Fold 1 cm seam or 2 cm hem allowance and make an edge stitch.

Conclusion

- Understood the basic measurements required for pattern drafting of T- Shirt and how to take these measurements.
- Became skilled at drafting T- Shirt and prepare patterns.
- Gained skills in constructing T-Shirt with required details, the students stitched the garments successfully.

Video Suggestions:

Title/purpose	Link	QR code	Credits
Drafting, cutting and stitching for T- Shirt	https://youtu.be/mo0gNPtt-Aw?list=RDCMUCW_LvHVgdSU8U1UzckIcKRA		APPEARANCE design studio

Simple Assessment:

Sketch any 3 different styles of T-Shirt.

Costing sheet:

S.No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost (approx. Rs.)	Value in the nearby store (Rs.)
1.	Fabric	Knitted/Cotton	2 meter	80	
2.	Thread	White	1 reel	5	
3.	Interlining	White	0.25cm	25	
4.	Button	Plain white	12	10	
5.	CMT (Cutting, Making and Trimming)	Standard		100	
				Wages and overhead : 25% of Material Cost	
				Total Cost to create/service on the product (Rs.)	
				Selling price in the market (Rs.)	
				Profit (Rs.)	

5.4 Salwar

Introduction:

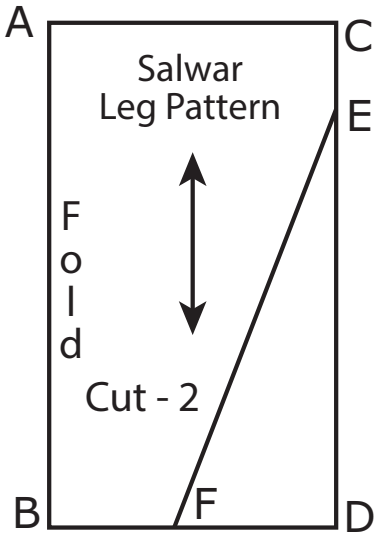
Salwar is the traditional and the most popular dress. It is worn by the Indian women as a lower garment. It appear like trouser. In salwars the legs are wider at the waist line, the legs are conical. Drawstring or elastic belt is used around the waist to hold the salwar in position.

Age group - 15 years

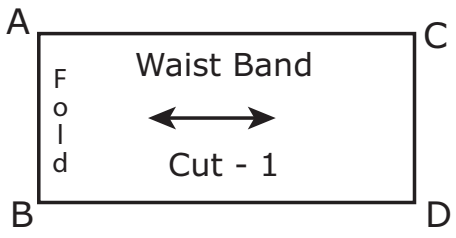
Particulars	Measurements	Salwar
Height	100 cm	
Seat Circumference	80 cm	
Ankle Circumference	16 cm	

Drafting Method

Salwar pattern:

S.No.	Particulars	Drafting	
1	AC = BD	½ seat circumference + 8 cm for pleats	
2	AB = CD	105 cm height	
3	ABCD	Draw rectangle	
4	C – E	13 cm	
5	B – F	½ Ankle + 4 cm seam allowance	
6	E – F	Join	

Waist band

S.No.	Particulars	Drafting	
1	AC = BD	½ Seat circumference	
2	AB = CD	25 cm	
3	ABCD	Draw rectangle	

Cutting lines

Leg Pattern	Waist Band
A – C – E – F – B	A – C – D – B

Components/Parts and cut number

- Waist Band – 1
- Leg Part – 2

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw dotted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure – Salwar

Step 1: Complete the raw edge in the bottom hem for both leg pieces.

Step 2: Join the side seam with plain seam.

Step 3: Over lock the edges.

Note: Front and Back part of the Crotch point should be matched.

Step 4: Join the crotch with a plain seam

Step 5: Over lock the edges

Step 6: Create 3-4 pleats on the back part of the salwar.

Step 7: Create an opening on the center front part of the waist band.

Step 8: Fold the upper edge at least 3.75 inches inside for the casing for waist ties.

Step 9: Stitch along the edge.

Step 10: Take a strip of fabric about 2.5 cm wide, fold the raw edges inside and stitch along the edges, to make a cord atleast 5 – 10 cms more than the waist measurements.

Step 11: Insert the cord into the waist band.

Conclusion

- Understood the basic measurements required for drafting salwar.
- Create pattern for salwar.
- Stitch the salwar for the given measurement.

Video Suggestions:

Title/purpose	Link	QR code	credits
Drafting, cutting and stitching for Salwar	https://youtu.be/PIVVshyEM1g		Sew with shama

Simple Assessment:

Draw any 3 different styles of salwar pattern.

Costing sheet:

S No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost (approx.) (Rs.)	Value in the nearby store (Rs.)
1.	Fabric	Cotton	2.5 meters	100	
2.	Thread	Black/White	1 unit	5	
4.	CMT (Cutting, Making and Trimming)	Standard		50	
				Wages and overhead : 25% of Material Cost (Rs.)	
				Total Cost to create/service on the product (Rs.)	
				Selling price in the market (Rs.)	
				Profit	

5.5 Kameez

The *Kameez* is a long shirt or tunic, usually a woman's wear. It can be worn with salwar, pyjamas, pant or jeans for fashion or comfort. The neckline and sleeve can be shaped according to fashion. The side seams are usually left open from waist or hip that offer great freedom to the wearer to make movements. Any type of fabric can be used for stitching kameez. Variations of kameez include kurtis and short tops.

Age group: 15 years

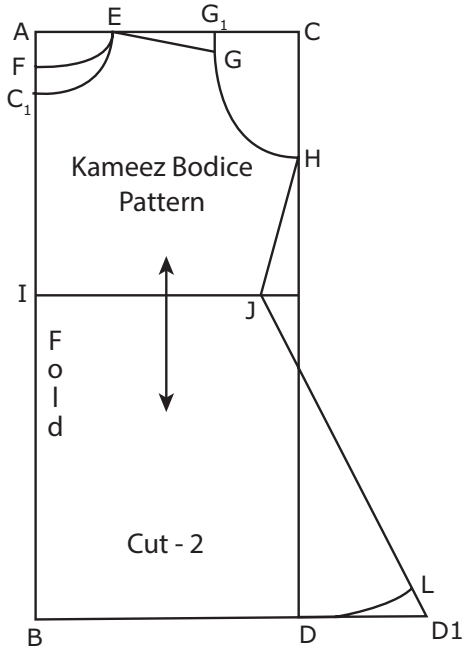
Particulars	Measurements	Kameez
Length of Kameez	76 cm	
Bust Circumference	80 cm	
Arm hole Circumference	35 cm	
Shoulder Width	30 cm	
Waist Circumference	75 cm	
Waist Length	38 cm	
Sleeve Length	20 cm	
Sleeve Girth	30 cm	

Drafting Method

Front and back bodice:

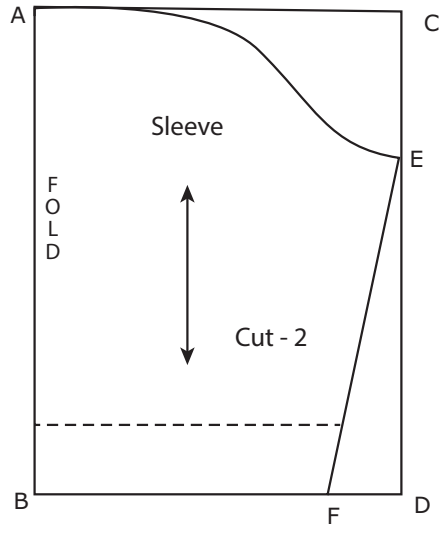
S.No.	Particulars	Drafting
1	AB = CD	Length of Kameez + Hem Allowance (2 cm)
2	AC = BD	1/4 Bust Circumference
3	ABCD	Draw a rectangle
4	A - C_1	Front Neck Depth (8 cm)
5	A - E	Neck Width (7 cm)
6	A - G_1	1/2 Shoulder Width (15 cm)
7	G_1 - G	1 cm shoulder slope
8	E - G	Join the line
9	G - H	1/2 Armhole Circumference (17.5 cm)
10	A - I	Waist length (38 cm)
11	I - J	1/4 waist Circumference (19 cm)+ 2 cm
12	H - J	Join

13	$D - D_1$	10 cm – Extend the line
14	$J - D_1$	Join the line
15	$D_1 - L$	2 cm
16	D - L	Join curve line
17	A - F	Back neck depth (6cm)



Sleeve:

S.NO.	Particulars	Drafting
1	AB = CD	Length of Sleeve (20 cm)
2	AC = BD	½ arm hole circumference (17.5)
3	ABCD	Draw rectangle
4	C – E	7 cm
5	B – F	½ sleeve girth
6	E – F	Join side seam
7	A – E	Slevee arm hole (Draw a curve line as shown in the figure)



Cuttings lines:

Kameez Front	Kameez Back	Sleeve
C1 - E - G - H - J - L - D - B	F - E - G - H - J - L - D - B	A - E - F – B

Components/Parts and cut number

- Front bodice - 1
- Back bodice - 1
- Sleeve – 2

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw dotted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure – Kameez

Step 1: Join shoulder by placing front and back right sides facing, leaving seam allowance of 1 cm.

Step 2: Attach facing piece of ¾ inch (folded width) to the neckline and work a stitch at a distance of ¼ inch from the edge.

Step 3: Turn the seam allowance to the wrong side.

Step 4: Make a stitch on the right side of the neckline edge.

Step 5: Fold the hemline of sleeve by ¼" inside and fold again ¾" inside and sew along the hemline at the edge of first folding.

Step 6: Place the sleeves right side on the top of kameez in such a way that the sleeve center notch and the shoulder joint is kept together

Step 7: Sew along with ½" armhole seam allowance.

Step 8: Turn kameez wrong side out and sew along with 1" side seam allowance as right sides together till the slit marking.

Step 9: Fold at the slit opening ¼" inside and fold ½" again.

Step 10: Edge stitch along the slit opening of both sides.

Step 11: Fold the hemline ½" inside and fold 1" again. Then sew along the edge of first fold on hemline.

Conclusion

- Understood the basic measurements required for pattern drafting kameez.
- Prepare patterns for constructing kameez.
- Stitch kameez for a given measurement

Video Suggestions

Title/purpose	Link	QR code	credits
Kameez cutting in easy method - (Tamil)	https://www.youtube.com/watch?v=SzG8jsxheg0		Nivi Tailor

Simple Assessments

Draw any 3 different styles of kameez

Costing Sheet

S. No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost (approx.) Rs.	Value in the nearby store Rs.
1.	Fabric	Cotton printed	2 meter	80	
2.	Thread	White	1 unit	10	
3.	CMT (Cutting, Making and Trimming)	Standard		50	
			Wages and overhead : 25% of Material Cost		
				Total Cost to create/service on the product (Rs.)	
				Selling price in the market (Rs.)	
				Profit (Rs.)	

5.6 Pyjama

Introduction

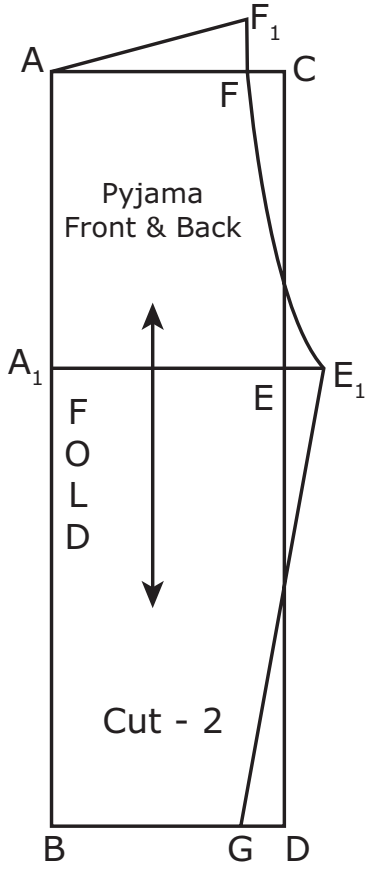
Pyjama is a lower garment generally used by all age groups. Pyjama is worn as casual or night wear garment. It is a loose, straight and light weight trousers fitted with drawstring at the waistbands.

Age group - 5 Years

Particulars	Measurements	Pyjama
Length	56 cm	
Waist Band	8 cm	
Ankle Circumference	20 cm	
Seat Circumference	84 cm	

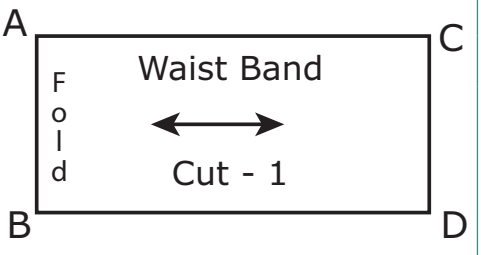
Drafting method

Pyjama:

S.No	Particulars	Drafting	
1	AB = CD	Length + 2 cm (58 cm)	
2	AC = BD	1/4 Seat circumference (21cm)	
3	ABCD	Draw rectangle	
4	$A - A_1 = C - E$	¼ Seat + 7.5 cm	
5	$A_1 - E$	Join line	
6	$E - E_1$	1cm extend right side	
7	B – G	½ ankle circumference + 2 cm	
8	$E_1 - G$	Join line	
9	C – F	2.5 cm	
10	$F - F_1$	1 cm extend upper side	
11	$A - F_1$	Join line	
12	$F_1 - F - E_1$	Join curve line (crotch seam)	

Waist band:

S.No.	Particulars	Drafting
1	AB = CD	8 cm
2	AC = BD	½ waist circumference
3	ABCD	Draw rectangle



Cutting lines

Front and Back
A – F_1 – F – E_1 – G – B

Components/Parts and cut number

- Front - 1 piece
- Back – 1 piece
- Waist band – 1 piece

Marking and cutting

- Place the paper pattern over the fabric and mark using tailors chalk.
- Complete the pattern by marking notches and the pattern information should be written on the pattern using blue colour pencil for back pattern and red for front pattern.
- Care should be taken to draw doted lines to indicate cutting lines and bold lines for sewing.
- Cut the fabric through the marked lines using shears.

Sewing Procedure – Pyjama

Step 1: Join crotch seam with 1 cm seam allowance by using plain seam.

Step 2: Bring the crotch seam to the middle.

Step 3: Sew the inseam or leg seam with 1 cm seam allowance by using plain seam.

Step 4: Turn the pyjama right side out.

Step 5: Fold 1cm and again fold 2 cm, then make a stitch on the hemline.

Step 6: Turn the waist edge to the inside and sew a casing for elastic.

Step 7: Leave 5 cm unstitched to insert the elastic.

Step 8: Insert the elastic through the unstitched space.

Step 9: Sew the elastic edges together and sew the unstitched portion.

Conclusion

- Understood the basic measurements required for pattern drafting pyjama.
- Create patten for pyjama.
- Stitch pyjama for the given measurement.

Video Suggestions:

Title/purpose	Link	QR code	Credits
Drafting & stitching of pyjama (Tamil)	https://youtu.be/sC6Ukortv0Y		Om Sakthi tailoring institute

Simple assessment:

Draw any 3 diffeerent styles of Pyjamas.

Costing sheet:

S.No	Name of the Equipment's/ components required	Range/ Specifications	Quantity	Cost (approx.) (Rs.)	Value in the nearby store (Rs.)
1.	Fabric	Cotton	1.5 meters	60	
2.	Thread	White	1 unit	5	
3.	Elastic	White	0.25cm	10	
4.	CMT (Cutting, Making and Trimming)	Standard		60	
			Wages and overhead : 25% of Material Cost		
				Total Cost to create/service on the product (Rs.)	
				Selling price in the market (Rs.)	
				Profit (Rs.)	

PROJECT

Final Project assigned to the students

Create a Portfolio of your inspired theme.
(Carry out the project based on Chapter 3 - Fashion Portfolio)

The procedures to be followed are given below;

Step 1: Select a theme based on the collection.

Step 2: Create inspiration and mood boards.

Step 3: Choose a client for the collection and prepare a client board.

Step 4: Prepare the colour board by using colours from the inspired theme.

Step 5: Create the fabric and trim board.

Step 7: Create illustration board: Male, Female and Children.

Step 6: Draw the flat sketches of the collection for final presentation. Choose any 2 Designs from the Illustration board.

Step 8: Prepare the fabric rendering board.

Step 9: Create an accessories board.

Step 10: Develop a pattern and construct a final garment.

Step 11: Calculate the cost for the final garment.

Step 12: Photoshoot of final garment.

INDUSTRIAL EXPOSURE

15 marks

1. Visit a entrepreneur in your city, conduct a survey and collect information about the following:
   - Name of the entrepreneur
   - Address of the entrepreneur
   - Types of products produced by the entrepreneur
   - Number of persons working
   - If received bank loans, if yes give details
   - Type of assets in entrepreneur unit
   - Hurdles or problems faced by the entrepreneur
     - Government
     - Personal
     - Marketing
     - Production
   - Steps taken by the entrepreneur to become successful

Model Question Paper

Textiles and Dress Designing - Practicals

50 Marks **Timings – 3 Hours**

1. Panel Skirt (16 Years)

a. Write the instruction for drafting the Panel Skirt with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the Panel Skirt

(i) Join the side panels

(ii) Attach the waist band

(iii) Insert the cord

2. Cut Choli (18 Years)

a. Write the instruction for drafting the Cut Choli with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the Cut Choli

(i) Construct two piece placket in front opening and attach hook and eye

(ii) Modify the neck line as square shape and finish with a fitted facing

3. T-Shirt (15 Years)

a. Write the instruction for drafting the T-Shirt with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the T-Shirt

(i) Complete neckline with tailor's placket

(ii) Attach the collar to the neckline of bodice

(iii) Attach the patch pocket

4. Salwar(15 Years)

a. Write the instruction for drafting the Salwar with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the Salwar

(i) Join the crotch with a plain seam

(ii) Add fullness to the salwar by making 3-4 pleats on the back part of the salwar

(iii) Create an opening on the centre front part of the waist band

(iv) Insert the cord into the waist band.

5. Kameez (15 Years)

a. Write the instruction for drafting the Kameez with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the Kameez

(i) Modify the neck line as "heart or u" shape and finish with a fitted facing.

(ii) Attach the plain sleeve

(iii) Complete the slit opening with edge stitch

6. Pyjama (5 Years)

a. Write the instruction for drafting the Pyjama with suitable figures.

b. Draft and cut the paper pattern

c. Stitch the Pyjama

(i) Join crotch seam by using plain seam

(ii) Sew the inseam or leg seam

(iii) Insert the elastic

Higher Secondary – Class XII
Textiles and Dress Designing Theory & Practical
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This book has been printed on 80 G.S.M.
Elegant Maplitho paper.

Printed by offset at: