

1. INTRODUCTION TO CLOTHING

The record's of man's use of Textiles, dates back thousands of years before the birth of Christ. Our knowledge of the early development in textiles is very meagre as they are not evident through proper records. Textiles were first developed as a means for carrying food and as mats in shelter. Only in later stages it is used as clothing.

1.1 INTRODUCTION:

When early people realised they needed more than their own hair and skin to protect them from the weather, they looked around to see what was available. People lived in a cold climate, saw animals with skins that kept them warm. They hunted these animals for food and used the fur to cover their body.

1.2 EARLY DEVELOPMENT OF SEWING AND FABRIC:

Once they started to hunt they used the skin of animals as clothes. This skin when continuously used becomes harder and made difficult for them to hunt. For this purpose he started to treat the skin to preserve its softness. Later the bones of animals were used as needle and nerves were used as thread to stitch the hides.



Fibre



Yarn



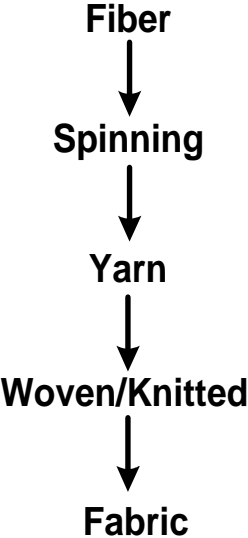
Fabric

Ancient people used Grasses, reeds, leaves and stems to cover their body. He also learned to spin the fiber, convert it into yarn and these yarns are interlaced to form a cloth. Flax and wool were the first of the fiber to be used because they were easier to twist into yarn than cotton. They also used the hair of animals as bed, in due course, these hair tangled with each other and formed as a fabric. This method is only followed while making felt cloth.

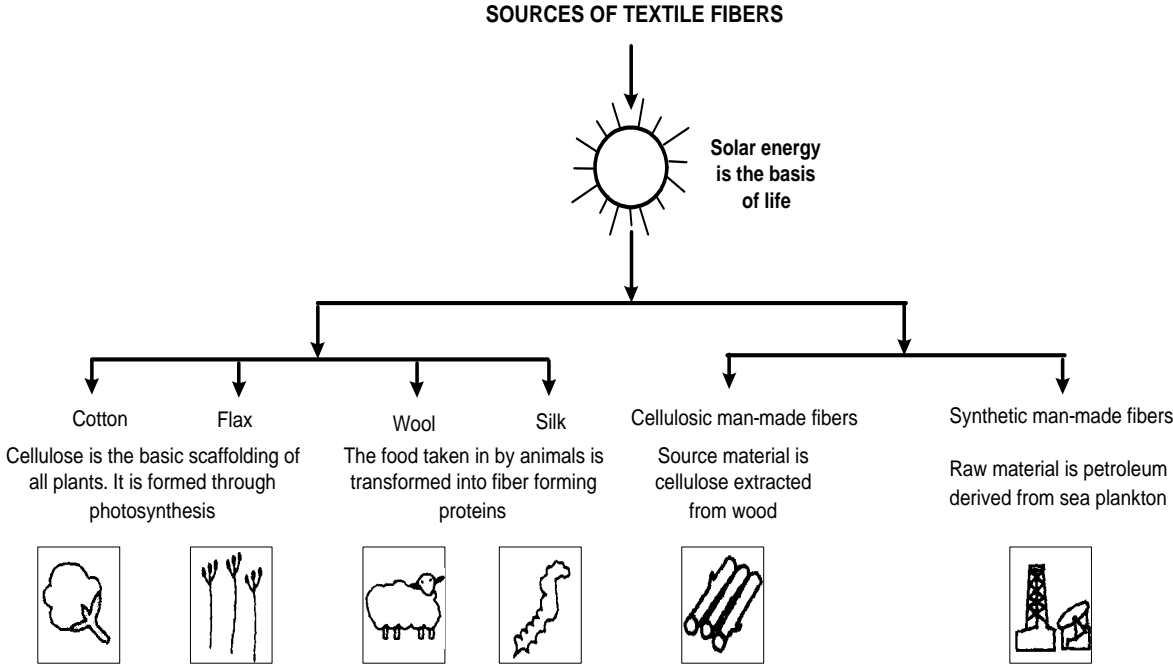
After thousands of years of wandering, people learned that they could live in one place with other humans and grow what they needed. This is known as an agrarian society. People learned how to raise certain animals for the meat and the skins. They learned to grow certain plants for food. People no longer had to spend all their time hunting and farming.

People learned how to spin bits of plants, reeds, horse hair, and bark into one continuous strand, or yarn. Then they discovered how to take these long pieces of yarn and weave them into fabric, just like they wove the grasses. People began to look around for other fibers they could use to make yarn. The cotton, wool, silk, and flax that they found

are still the most common natural fibers today. Other fibers, such as alpaca from llamas and angora from rabbits, were discovered, but, even today, these fibers are too scarce and expensive to be widely used.



For thousands of years the four natural fibers used by men are flax, wool, silk and cotton. Man made fibers were introduced only at the beginning of the 20th century. From ancient times to the middle of the 18th century. Spinning and weaving were done by hand.



Progress in this area culminated in the industrial revolution, which was the start of the factory system and mass production. From Ancient times colours have been used in fabrics. Dyestuff from plants and insects were used until the synthetic dyes were discovered.

1.3 PURPOSE OF CLOTHING:

Clothing is used to cover the body, to make you feel more attractive, and to communicate with others. People wear clothes for many different reasons. Some of these reasons are physical. You wear clothes for comfort and protection. Others are for psychological and social reasons. Clothes give you self-confidence and express your personality. Clothes also help you identify with other people.

All people have basic human needs. Meeting these needs provides satisfaction and enjoyment in life. Clothing helps to meet some of these needs. Knowing something about the role of clothing helps you to understand yourself and others better. Clothing is a complex but fascinating part of everyone's life. Therefore clothes are worn for:

1. Protection:

Our skin is uncovered and exposed. We can be easily affected by the elements-rain, snow, wind, cold, and heat. We can be harmed or injured on the job or while participating in sports. In some cases, we need to protect us with our clothing. Clothing aids to your comfort. It absorbs perspiration, prevents sudden chills, and acts as a buffer between your body and accidental burns, scratches, and rough surfaces. The right garments can insulate your body against extremely hot or extremely cold temperatures.

People who live in severely cold climates, such as the Eskimos, keep warm by wearing pants and parkas with fur linings. The fur traps the warm air from their bodies and creates a life-saving insulating layer of warmth. Desert nomads keep the harmful hot sun from dehydrating their bodies by covering up with long flowing robes and headdresses. Their clothing actually keeps them cooler.



Protection

2. Safety:

Clothing also serves to protect your skin from harm or injury. Some sports and occupations require protective clothing for safety reasons. Football players wear helmets and protective padding to help prevent injury during rough play. Some people's work requires them to be in dangerous or hazardous conditions. Clothing can offer protection. Some items are even labeled with the term "safety" to identify them from regular day-to-day clothes and accessories.



Safety

Fire-fighters wear asbestos clothing in hazardous situations. Police officers wear bulletproof vests. Road workers wear florescent orange vests so that drivers can see them easily and prevent accidents.

3. Sanitation:

Special clothing and accessories are often worn for sanitation reasons. People who work in factories that produce food and medical products wear sanitary clothing, face masks, and hair covering. This precaution prevents contamination of the products by germs. In operating rooms, doctors and nurses wear special disposable sanitary uniforms, gloves, and face masks.



Sanitation

4. Modesty:

Modesty refers to *what people feel is the proper way for clothing to cover the body*. Different groups of people may have different standards of modesty. For example Clothes that a woman might wear to a fancy party would probably be unacceptable at work the next.



Identification

5. Identification:

Clothing can also identify people as members of a group. Certain types of clothing, colors, and accessories have become representative of certain groups, activities, and occupations. Or by simply dressing alike, people can show that they belong to the same group. Eg. Air Crews, Air hostess, Doctors, Pilots, etc.

6. Uniforms:

A uniform is one of the easiest ways to identify group members. Uniforms can provide instant recognition or create a special image for the group. Members of the police force, fire department, and military wear uniforms so that they can be recognized quickly and easily for public safety. Athletic teams wear different colors to identify their team and to tell them apart from their opponents.

People who work in service occupations, such as restaurant workers, airline personnel, and hotel staff also wear special uniform. These uniforms help to identify the worker to their customers, as well as create an image for the company.



Uniforms

7. Styles and Colors:

Some occupations require a unique style of dress. Judges wear the traditional black robe. Ministers, priests, and other clergy members may wear special clothing for conducting religious services. The style of the clothing often dates back many centuries to show visually that what they are doing is linked to the past. Many people wear special styles and colors of clothing for special occasions in their lives. Graduates may wear long robes and mortarboard hats with tassels.

8. Insignias:

Insignias are badges or emblems that show membership in a group. Patches or emblems can be worn on jackets or blazer pockets. A school letter with a sports pin can be worn on a jacket or sweater to indicate participation in athletics.



9. Status:

Kings and queens wear crowns to set them apart from the rest of their subjects. Their crowns indicate their status, or position or rank within a group. Clothes and other accessories are used by people to show their level of importance. They may also be used to give the wearer a sense of feeling important. Status symbols are clothes or other items that offer a sense of status for the ordinary person. Usually these items are more expensive or the latest in design. For some people, status symbols can be fur coats, expensive jewelry, or designer clothes.

10. Decoration:

People decorate themselves to enhance their appearance. They wear clothes, jewelry, and cosmetics in hopes of improving their looks and attracting favorable attention. Adornment, or decoration, also helps people to express their uniqueness and creativity. Clothing and accessories can be used to improve appearance in different ways. Clothing can also be decorated to make it special and unique.

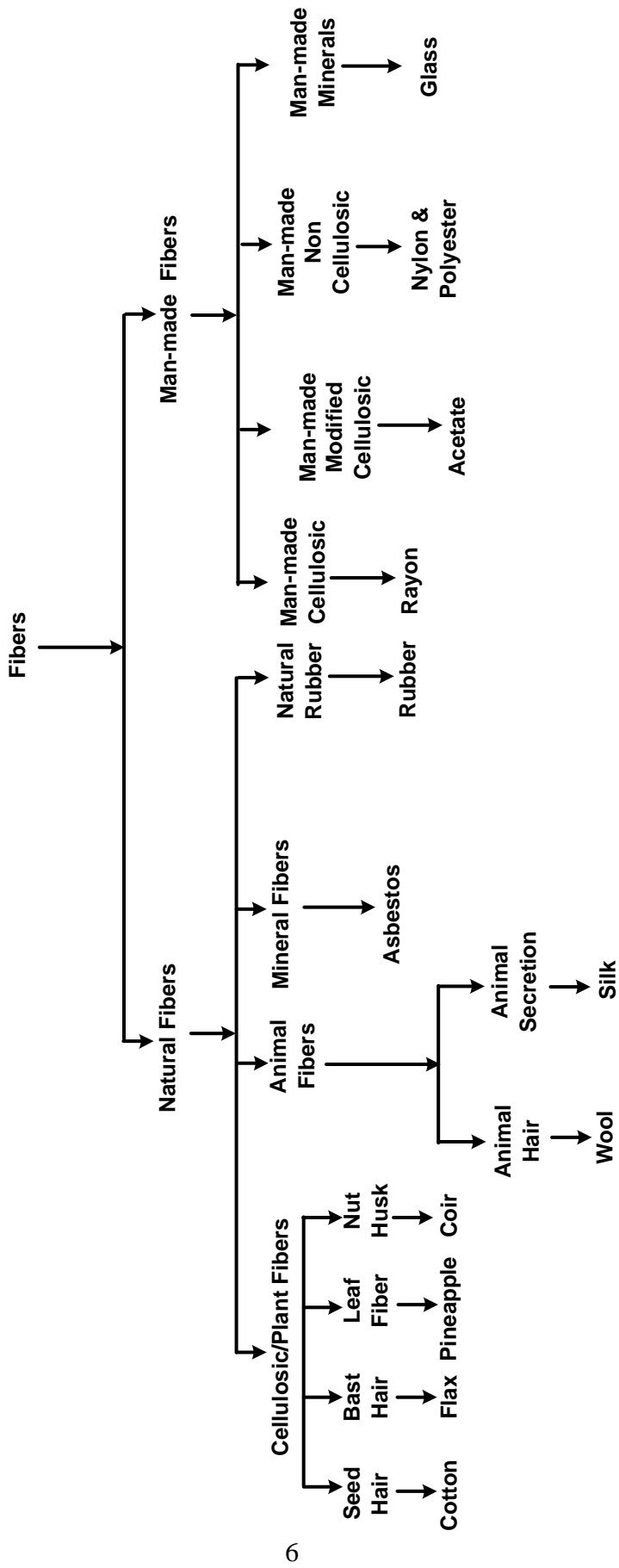


Cave men painted over their bodies

1.4 CLASSIFICATION OF FIBERS:

Fibres are the fundamental units used in fabrication of textile yarns and fabrics. It is an individual, fine, hair like substance. Fibers usually are grouped and Twisted together into a continuous strand called yarns. Fibers may be from natural sources or they may be man-made. The details of these fibers are discussed in the following chapters.

FIBER CLASSIFICATION



Questions:

PART – I

Objective questions:

1. Clothes are mainly used to
(a) cover the body (b) attractive
(c) comfort and protection (d) identity
2. Eskimos use
(a) helmets (b) bullet proofs
(c) robes (d) fur
3. Insignias means
(a) decoration (b) badges
(c) uniforms (d) fur
4. Football players wear
(a) asbestos clothing (b) fur
(c) protective padding (d) robes
5. Uniforms are worn by
(a) Athletic teams (b) Kings
(c) Queens (d) Eskimos

Answer in one or two words:

1. Define "Clothing".
2. Give the clothing of Eskimos.
3. How does nomades dress?
4. Define "Safety in clothing".
5. Define "Insignias".
6. Give a note on the dresses of ancient people.
7. What are the fibres used by ancient people?
8. How do early people dyed their fabric?
9. What is agrarian society?

PART – II

Answer in a paragraph:

1. How will you justify the use of clothing as protection?
2. Give short notes on styles and colors in clothing?
3. Why clothes are decorated?
4. How clothes help in identification?
5. Give short notes on modesty in clothing?

PART – III

Answer in a page:

1. Brief out on safety in clothing.
2. Explain how clothing helps in protection.
3. Brief out on uniforms.
4. Explain ancient clothing.
5. How sewing was developed?

PART – IV

Answer in a page:

1. Define and classify fibers.
2. Explain in detail on purpose of clothing.

Answers for objective questions:

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

2. FIBER PRODUCTION—NATURAL FIBERS

2.1 INTRODUCTION:

The source of Natural fibers are from plants, animals and mineral. Since these are available naturally, it is called as natural fibers.

2.2 PLANT FIBERS:

Plant fibers are composed of cellulose and therefore are classified as natural cellulosic fibers. The important raw material to produce fabrics are fibers especially cotton and silk. First let us see the preparation of cotton fibers.

2.2.1 Cotton:

The word cotton is derived from the Arabic word qoton or qutun, which means a plant found in conquered land. Cotton is fiber that grows from the surrounding surface of seeds in the pods, or balls of a bushy mallow plant. It is composed basically of a substance called cellulose.

Principal Origin :	Natural	Chemical Type :	Cellulosic
Generic Name :	Seed hair	Common Name :	Cotton

a. History:

Cotton is still the fiber used mostly in the world. People around the world mostly use cotton as the main fiber. They prefer garment made from cotton than any other fibers. More over cotton is one of the best fiber suitable for our climate. The main raw material used for cotton fabric is cotton pod. Ancient records shows that garments made out of cotton were used by Indians also.

Greek Philosophers refers that Indians were best in growing, spinning and weaving pure cotton fabric between 3000 BC-1500AD. Marco Polo on his voyage to our country states that the world's finest cotton fabrics were made from India. Cotton fabrics from India, are fine and of outstanding quality. Archeological findings at Mohenja-Daro suggest that the cotton plant was already domesticated and being used for making textiles over 5000 years ago.

b. Growth and Production:

Cotton is a member of the Mallow family. Its height ranges from 25 cm to over 2 m, depending upon variety, climate and agronomy. It is normally grown as an annual shrub.

(1) Preparation of Land:

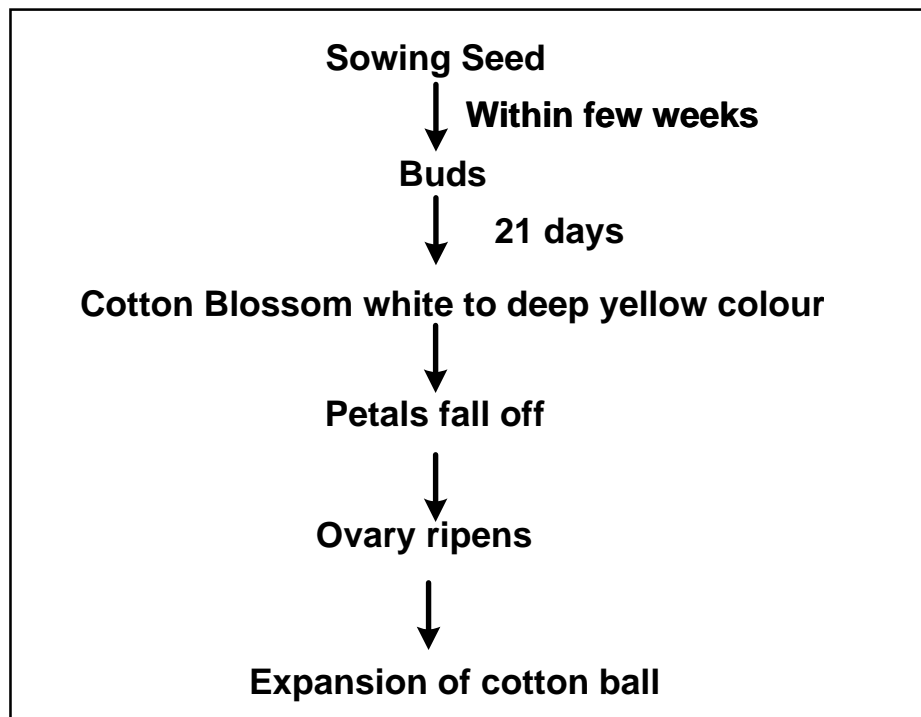
The cleared land is ploughed and harrowed to breakup large lumps and remove ridges. Small furrows are opened and at the same time, the seeds are dropped in one at

a time, generally with fertilizer being put in the furrow at the same time. Generally cotton is planted in February in the more southerly regions but it may be as late as June in the northernmost sections of the cotton belt. When the plants have grown to a height of 5 to 7 inches, they are generally thinned out so that there are not more than 2 or 3 plants per hill, or so that the plants are about 9 to 14" apart in rows. This is usually done by hand. Within a few weeks after the plant has emerged, the first buds appear. This consists of three triangular strapped leaflets or bracts, and the flower buds. It is at this stage when the plant is about to bear its blossom and seed, that it is most susceptible to insect damage. The principal enemy to cotton is the ball weevil. Other parts are aphids, worms, spider, mites and a number of other small insects.

(2) Maturing of the Ball:

About 21 days after the buds are first seen, the cotton blossom appears. This is at first a creamy white to a deep yellow color. Later it becomes pink and eventually dark red. It lasts about 3 days, after which the petals fall off and the ovary ripens to form a pod which we know as the cotton ball.

Next fibers push out from the coating of the seed, causing the ball to expand until it is nearly one inch in diameter and half again as long. Different varieties of cotton matures at



Growth of cotton

different rates; usually it takes between 45 and 65 days from blossom to the open ball. The growing season, fertilizer, degree of cultivation and amount of moisture - all these factors may affect the maturing of cotton crops.

(3) Harvesting:

With the first frost, the cotton plant normally sheds its leaves, but the balls have matured and are opened often several weeks before the first frost. When the cotton crop is defoliated all the balls are more readily exposed to the sun, and the maturity is much more uniform. Harvesting is either by hand or by picking machines.



Harvesting

(4) Ginning:

If the newly harvested seed cotton is wet, then it may have to be dried, using warm air, before it can be stored in large piles to await ginning. In many countries, drying is an integral part of the ginning process. "Ginning" is the separation of fibers from the seeds. It is done by special machines. The separated fibers called lint, have a staple length of between 15 and 50 mm depending on the variety. On many types of seed, there are some very short fibers, called linters. They are made of cellulose and they find many uses, including the production of man-made fibers. The seeds can also be utilised for the production of edible oil.

100 kg of clean seed-cotton yields : 35 kg of fiber 62 kg seed 3 kg of waste

The lint passes on the conveyor belt to a baling press, where it is compressed and packaged into the standard bales of 500 pounds in weight.

(5) Utilisation:

Cotton fibers are made into staple fiber yarns either by ring spinning or rotor spinning.

c. Properties of Cotton:

Lustre	:	Low
Tenacity / Strength	:	Medium
Elastic Recovery	:	Low
Elongation	:	7%
Resiliency	:	low

Density	:	1.54 g/cm ³
Moisture absorption	:	8.5%
Dimensional Stability	:	Good.
Acids	:	Damages, Weakens fiber
Alkalies	:	Resistant (mercerization)
Effect of sunlight	:	Weakens fiber slowly.
Insects	:	Silverfish damages fiber.
To flame	:	Burns readily.
Shape	:	Fairly uniform in width, 12 - 20 μ, length varies from ½ to 2½ inches.

d. International Cotton Emblem:

This emblem serves clearly to identify textiles made from pure cotton and implies good quality. It may not be applied to fiber blends.

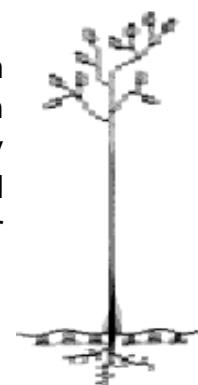


Cotton Emblem

2.2.2 Flax (Linen):

The word flax is derived from Old English “flax”. Linen is the term applied to the yarn spun from flax fibres and to the cloth or fabric woven from this yarn, flax fibers are held together under the stem’s bark principally by a gummy substance (pectin) from the body of flax plant. It is composed basically of substance cellulose. It is a natural, cellulosic, bast, multicellular fiber.

Principal Origin : Natural	Chemical Type : Cellulosic
Generic Name : Bast fiber	Common Name : Flax.



Flax Plant

a. History:

Linen has been known in civilised societies for thousands of years. Flax was already being cultivated systematically by ancient Egyptians, Babylonians and other civilisation. The rich people of Greece used only linen material. The priests used linen material for their dress while performing holy and custom deeds.

Linen was specially popular in middle ages. A common fabric of that period was a combination of linen and wool, called “linsey-woolsey”.

In India from the time of Buddha Linen material was considered to be expensive. Before 2500 BC, the carving in the graveyard, show the preparation of Linen fibre from the flax



Flax Plant

plant was pictographically depicted and it was found in the year 1887 by archeological expects.

Fine quality linens still retain the reputation of luxuriousness and expensiveness. Manufacture of fiber into fabric requires unusual care throughout each process to retain the strength and beauty of the fiber.

b. Growth and Production:

1. Cultivation:

The flax plant requires deep, rich, well plowed soil and a cool, damp climate. Prematurely warm weather affects the growth and the quality of the fiber. As soil in which flax is grown must be enriched for six years before it will yield a good harvest, only one crop in seven years can be raised on specified portion of land. The flax seeds are sown by hand in April or May. In three months the plants become straight, slender stalks from 2 to 4 feet in height, with tapering leaves with small blue, purple or white flowers. The plant with the blue flower yields the fine fiber. The others produce coarse but strong fiber. After flowering mature plant develops seed capsules in the size of peas. The seeds are about 2 mm long and are very rich in oil.

2. Harvesting:

By the end of August, the flax turns a brownish color, which indicates that the plant is about to mature, it is ready for harvesting. There must be no delay at this stage; otherwise the fiber will lose its prized luster and soft texture. The plants are pulled out of the ground either by hand or efficiently by machine. If the stalk is cut, the sap is lost; this loss affects the quality of the fiber, the stalk must be kept intact and the tapered ends of the fiber must be preserved so that a smooth yarn may be spun. The stalks are tied in bundles, called beets in preparation for extraction of the fiber.

3. Preparation of fiber:

(a) Rippling:

The seeds and the leaves are removed from the stems of the flax plant by passing the stalk through coarse combs. This process is called "Rippling".

(b) Retting:

The bundles of plants are then steeped in water so that the tissue or woody bark surrounding the hairlike flax fiber will decompose, thus loosening the gum that binds the fiber to the stem. The decomposition is called retting.

Retting only loosens the woody bark. If flax is not retted enough, the removal of the stalk without injury to the delicate fiber is difficult. If flax is over-retted the fiber is weakened. The retting operation, as well as other processes for producing linen fabric, therefore, requires great care. Retting can be done via different methods.

1. Dew retting:

The flax straw is spread on the grass and is exposed to the atmosphere for 3 to 4 weeks. This method produces strong dark flax gray in color.

2. Pool or damp retting:

It takes less time than dew retting (10-15 days). As stagnant pools of water are used this method sometimes causes over-retting, which is responsible for brittle and weak flax fibers. Pool retting darkens the flax giving it a bluish grey colour.

3. Stream retting:

This method for producing high quality flax fiber was used before but now is outmoded.

4. Tank or VAT retting:

The flax is immersed in wooden vats of warm water at temperature. Ranging from 25-30°C which hastens the decomposition of the woody bark. The flax is removed from the vats and passed between rollers to crush the decomposed bark as clean water flushes away the pectin or gum and other impurities. Linen produced by this method is more susceptible to mildew.

5. Chemical retting:

Chemical retting can shorten the retting process but chemicals will affect the strength and color of the flax fiber. Soda ash, oxalic acid are the chemicals used.

(c) Drying:

These fibers (flax stalks) are then dried by means of warm air ovens.

(d) Breaking:

The stalk becomes partially separated from the fiber when the wet plants are placed in the fields to dry. When the decomposed woody tissue is dry, it is crushed by being passed through fluted iron rollers. This breaking operation reduces the stalk to small pieces of bark called sheaves.

(e) Scutching:

The removal of woody parts from fibers is scutching. The scutching machine removes the broken sheaves by means of rotating wooden paddles, thus finally releasing the flax fiber from the stalk.

(f) Hackling (combing):

The simple combing process known as hackling straightens the flax fibers, separates tows from lines and arrange lines in parallel form.

(g) Processing:

The line tow is spun into yarns using the linen process.

c. Properties of Linen:

Shape	:	Width varies. Diameter is varies from a few inches to 22 inches or more; average length after processing is 10 to 15 inches
Luster	:	Medium to high
Elastic Recovery	:	Low elongation
Resiliency	:	Poor
Density	:	1.5
Moisture absorption	:	Good
Dimensional Stability	:	Good
Acids	:	Good to cool, dilute. acids; low or poor to hot dilute. Poor to concentrated either hot or cold
Alkalies	:	High resistance.
Sunlight	:	Good
Insects	:	Good
To Flame	:	Burns readily

2.3 ANIMAL FIBERS:

Natural protein fibers are obtained from animal sources like hair and other secretion, fibers include covering from such animals as sheep, mohair goat, cashmere goat and camel. Secretions are obtained from the larva, or worm stage, of the silkworm, which spins the cocoon from which silk fibers are obtained and from the spider which spins fine fibers in making its web. There are some properties of hair fibers and secretions which are quite similar and on the other hand there are properties which are totally different.

2.3.1 Silk:

In old English, silk was sioloc. The name is thought to have originated from the Greek “Seres”, meaning the people from Eastern Asia, namely the Chinese.

Silk is very fine strand of fiber that is a solidified protein secretion produced by certain caterpillars to encase themselves in the form of cocoon.

Principal Origin : Natural	Chemical Type : Proteinaceous
Generic Name : Secretion of caterpillar	Common Name : Silk

a. History:

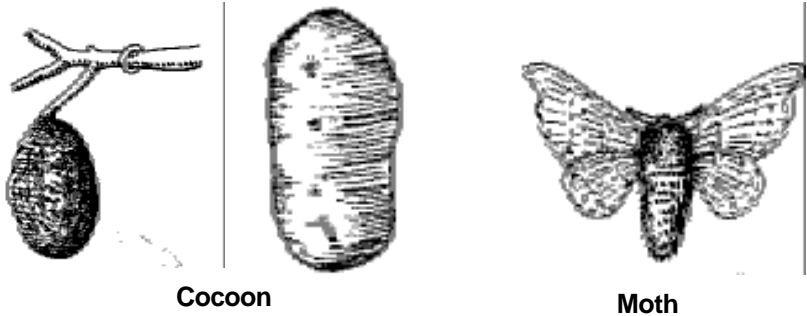
The possibility of making cloth from the filament that the silkworm spins into a cocoon was first discovered in China about 2600 B.C. Legends tells us that a cocoon accidentally

dropped into a cup of tea that a Chinese Princess was having in her garden. The hot liquid softened and loosened the fiber, which the princess pulled and drew away from the cocoon as a continuous strand. Another story cites Empress Si-ling-chi as the first producer of silk fiber, from which she made a silk robe for her husband. From antiquity until the more recent establishment of the Chinese Republic, she was venerated as the Goddess of the Silkworm.

The Chinese who first cultivated the silkworm and developed a silk industry endeavored to keep the source of the raw material secret. Their silk fabrics were highly priced. Caravans carried silk into the Near East where they were traded for hundreds of years. About three thousand years after its original discovery the secret was stolen out of China.

b. Sericulture (Growth and Production):

Sericulture, the production of the worms, their development and the spinning of cocoon is largely a home industry. In the modern scientific industry the tiny eggs or seeds are deposited by the carefully bred female moth on cards or strips of cloth. The cards are



Cocoon

Moth

stored in racks in a cool dry place until the incubation of a new crop of silkworms is desired. The cards are distributed to the peasants and the eggs are incubated by wild warmth: the



Butterfly

Silk worm

eggs may be covered with blanket, or the cards may be worn under the clothing and the tiny ants or silkworms or hatches. The young ants are provided with shredded, fresh, tender mulberry leaves (*morus alba*). The leaves to which the worms cling are lifted to the feeding

trays. The weak worms are discarded. The worms are kept in a room at a uniform temperature, they are fed five or six times a day, the trays are kept clean.

The ants are initially about 3 mm long. During this growth the worms sheds its skin four times at about 5-days intervals and after the fourth shedding it develops for about 10 days more. The fully grown worm is 8 to 9 cm in length and has increased its weight by 1000 fold to 5 gms.

The fully developed worm has a total life period of approximately one month. It first learns to eat and begin to seek something on which to spin its cocoon. This worm is then transferred to a wooden frame containing twigs or straws, on which the cocoon is spun. To spin this cocoon the worm spins a net and then forms a shell around his body. The worm swings its head in a figure formation and expels fluid from two sacs in its body. The two strands are excreted from minute openings or spinnerets, close together in the lower jaw. The fluid solidifies when in contact with the air. The two filaments known as fibroin are cemented together by a glue known as sericin. The sericin is excreted from two glands. The worm makes more than one movement of its head each second and be heard at work even after the cocoon has become so thick that the worm cannot be seen. It takes two or three days to complete a cocoon. The worm then changes into the 'Pupa' or 'Chrysalis'. The tangle of loose silk with which the silk worm is originally secured its position in the straw, is called 'Floss' or 'Blaze'.

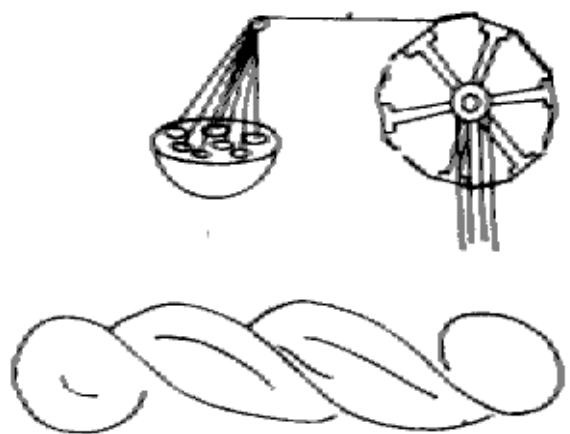
In about two weeks, the moth will develop if the chrysalis is permitted to live. The moth escapes through the bottom of the cocoon and breaks the silk strands in the several layers in making its escape. An alkaline solution secreted by the moth allows it to break the strands more easily. It is customary to permit the development of only enough moths for breeding and egg-laying, because the broken cocoons are of less value than those having long, unbroken filaments. Life cycle is terminated at this point by process known as 'Stoving' or 'Stifling'.

c. Processing of Silk:

In order to produce unpierced cocoon the chrysalis is killed by heat in dry air, more rarely by hot water or steam. The cocoons are weighed; the female moths being heavier, can thus be selected and allowed to escape. The moths live only a few days, during which they mate and lay eggs. It is estimated that nearly 3000 cocoons are required to make a yard of silk fabric. Silkworms are subject to many diseases. The most important of these is 'pebrine'. The worms are damaged by changes in room temperature and by moisture in their food. These factors influence the quality of silk produced. Wild silk is that produced from other types of moths, which have not lent themselves to domestication. These cocoons must be sought in the trees and many of them have already been pierced when found. Wild silk is less uniform but is coarser and somewhat stronger than the cultivated variety. The most common wild silk is that from the tussah or tussar silkworm of Asia. This worm feeds on mulberry, oak and other trees. The term is generally applied to all wild silks, but strictly speaking tussah is an Indian silkworm.

1. Softening the sericin:

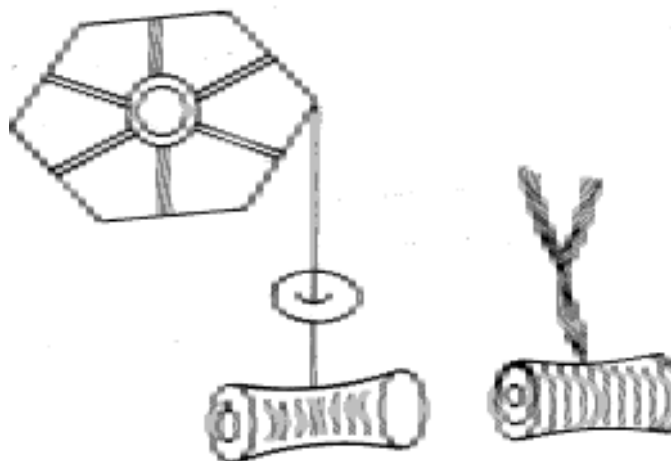
After the cocoons have been sorted, they are put through a series of hot and cold immersions, as the sericin must be softened to permit the unwinding of the filament as one continuous thread. Raw silk consists of about 80% fibroin and 20% sericin. At this time, only about 1% of the sericin is removed, because this silk gum is a needed protection during the further handling of delicate filament.



Softening of silk

2. Reeling the Filament:

The process of unwinding the filament from the cocoon is called reeling. The care and skill used in reeling operation prevents defects in the raw silk. As the filament of a single cocoon is too fine for commercial use, 3 to 10 strands are usually reeled at a time to produce the desired diameter of raw silk thread. The cocoons float in H_2O , bobbing up and down, as the filaments are drawn upward through porcelain eyelets and are rapidly wound on wheels or drums while the operator watches to detect flaws. The sericin acts as



Reeling of silk

an adhesive. It aids in holding several filaments together while they are combined to form the single thread. The remaining part of filament is used as valuable raw material for the

manufacture of spun silk. The silk filaments are reeled into skeins, which are packed in small bundles called books.

3. Throwing:

“Reeled silk is” a term applied to the raw silk strand that is formed by combining several filaments from separate cocoons. Reeled silk is transformed into silk yarns - also called silk thread-by a process known as “throwing”. The raw silk skeins are sorted according to size, color, and length or quantity, then soaked in warm water with soap or oil. This softening of the sericin aids in handling the thread. After mechanical drying, the skeins are placed on light reels from which the silk is wound on bobbins. During this winding operation, single strands may be given any desired amount of twist. If two or more yarns are to be doubled, they are twisted again in the same direction or in a reverse direction depending on the kind of thread to be made.

4. Degumming:

Thrown silk yarns still contain some sericin that must be removed in another soap bath to bring out the natural luster and the soft feel of the silk. As much as 25% of the weight is lost by the degumming process. When gum has been removed, the silk fiber or fabric is a creamy white color, beautifully lustrous and luxuriantly soft. It takes place after throwing for preparing yarn for dyeing. A small amount of sericin is sometimes left in the yarn or in the fabric to give the finished product added strength or a dull finish.

5. Weighing:

The amount of weight that silk loses in the degumming process is an appreciable factor in manufacturing costs because the manufacturer buys silk by weight. The weighing of silk fabric with metallic substances to make up for the weight lost by degumming is an accepted practice in the silk industry. Weighted silk, however loses the natural elasticity of the silk fiber and is subject to deterioration when exposed to sunlight, perspiration and dry cleaning.

6. Noil Silk:

The shorter waste fibers in the form of comber noils from spun silk processing are spun into coarser, irregular, neppy yarns using the woollen spinning system. Also known as Bourette Silk.

Degummed Cultivated Silk	Weighted Cultivated Silk	Wild Silk
Wrinkles little, fine lustre fine and smooth Types: spun silk, noil silk	Full, heavy, wrinkleless, durable and has strong lustre	Coarser, heavier than cultivated silk, darker

c. Properties of silk:

Shape	:	The fiber is long from 1,000 to 1,300 years.
Luster	:	High
Elastic recovery	:	Good
Elongation	:	Good
Resiliency	:	Medium
Density	:	1.25 - 1.34 g/cm ³ .
Moisture absorption	:	Good
Dimensional stability	:	Good
Acids	:	Damage
Alkalies	:	Strong alkalies damage fiber;
Sunlight	:	Prolonged exposure causes fiber breakdown
Insects	:	Destroyed by carpet beetles
To flame	:	Burns with a sputtering flame.

2.3.2 Wool:

The word wool was wull in old English. Wool is the fiber from the fleece of domesticated sheep.

Principal Origin	:	Natural	Chemical type	:	Proteinaceous
Generic name	:	Animal hair	Common name	:	Wool

a. History:

When wild sheep were killed by primitive people for food they used the pelts as body coverings. It is believed that ancient shepherd in the first century A.D. discovered that Merino sheep could be bred to improve the fleece. Soft wool is developed by breeding different species of animals. It provides warmth and physical comfort. These quality combined with soft resiliency make wool desirable for apparel as well as for such household uses as rugs and blankets. The quality of wool fiber is determined by the breeding, climate, food, general care and health of sheep. Cold weather produces a hardier and heavier fiber. Excessive moisture dries out natural grease. Insufficient or poor food retards growth.

b. Processing:

To produce good quality of wool, sheep are prevented against disease by chemicals and are fed nutritional diets. Wool can be sheared from the living animal or pulled from the hide after the animal has been slaughtered for its meat or it is dead due to some disease or something. The sheared wool is called fleece or clip wool. Fibers taken from the slaughtered animal hide are called pulled wool. It is not as good as clipped wool. The shearing of clipped wool can be done manually or chemically. In chemical shearing the animal is fed a special chemical, which causes the wool to become loose from the skin, or

fall away and it can then be brushed together and removed without mechanical shearing. Pulled wool can be removed by treating with a depilatory that loosens the fibers and permits them to be pulled away from skin without damaging the hide or it can be loosened by the action of bacteria on the root end of the fiber. Pulled wool when used is usually mixed with fleece wool before processing into yarns and fabrics.



Different types of wool from various animals

c. Classification for wool:

There are about 40 breeds of sheep and more than 200 which are crossbred. Wool producing sheep may be classified into four groupings according to the Wool Quality.

1. Merino wool:

Merino sheep produces best wool. It is found in Spain. The staple is relatively short. Ranging from 1 to 5 inches but the fiber is strong, fine and elastic and has good working properties. It has greatest amount of crimp and has maximum number of scales. Used for best wool clothing.

2. Class-two wools:

This variety is not less than a very good quality wool. Its fiber is 2 to 8 inches in length, has a large number of scales per inch and has good crimp. The fibers are strong, fine and elastic and have good working properties. Found in England, Scotland and Ireland.

3. Class-three wools:

The fibers are from 4 to 18 inches long and are coarsened have few scales and less crimp than merino and class-two wool. Smoother and more lustrous. Good enough for clothing. Originated in U.K.

4. Class-four wools:

This class refers to half-breeds. Fiber length ranges from 1 to 16 inches, coarse, hairlike have relatively few scales and little crimp and are smooth and lustrous. Mainly used for carpets, rugs and inexpensive low-grade clothing.

d. Classification by Fleece:

Wool shorn from young lambs differs in quality from that of older sheep. Also, fleeces differ according to whether they come from live or dead sheep, which necessitates standards for the classification of fleeces.

1. Lamb's wool:

The first fleece sheared from a lamb about six to eight months old is known as lamb's wool and or fleece or first clip wool. This wool is of very-very fine quality. The fibers are extremely soft.

2. Hogget Wool:

Wool from 12 to 14 month old sheep for the first time. The fiber is fine, soft, resilient and mature. Good strength and is used for warps.

3. Pulled Wool:

Wool from slaughtered animal and is of inferior quality as quality of wool is not as good and roots of fibers are generally damaged.

4. Dead Wool:

Wool from dead animal which is inferior in grade.

5. Taglocks:

The torn, ragged or discolored parts of a fleece are known as taglocks.

6. Recycled wool:

Old woolen stuff is broken to make woolen fibers and shred them to yarns again.

e. Manufacturing Process:

Long and short fleeces are separated. Superior wool comes from the sides and shoulders, where it grows longer, finer and softer, and is treated as one fleece; wool from the head, chest, belly and shanks is treated as second fleece. The wool is packed in bags or bales. The raw wool is called grease wool because it has natural oils of sheep. It is washed and the grease is used in the pharmaceutical industries. Wool is then sorted which is the process of breaking up an individual fleece into its different qualities. Recycled wool fibers are obtained by separately reducing the unused and used material to a fibrous mass by a picking and shredding process called garneting. This is then treated with acids and the process is called carbonizing and the process is called scouring. The wool is then dried leaving 12 to 16% of the moisture. As the wool is unmanageable after scouring, the fiber is usually treated with various oils, including animal, vegetable, and mineral or a blend of these to keep it from becoming brittle and to lubricate it for spinning. The wool is then dyed if required and blended.



Fleecing of wool

f. Properties of wool:

Shape	:	Length varies from 1½" to 15" has scales on its surface.
Luster	:	Medium
Elongation	:	Good
Resiliency	:	Excellent
Density	:	1.30 – 1.32 g/ccm
Moisture absorption	:	Good
Dimensional stability	:	Subject to felting and relaxation shrinkage.
Resistance to acids	:	Good
Resistance to alkalies	:	Low; many alkalies destroy the fiber.
Sunlight	:	Prolonged exposure deteriorates fiber
Insects	:	Damaged by moths and carpet Beetles.
To flame	:	Burns slowly when in direct flame, is considered to be self extinguishing.

Questions:

PART – I

Objective questions:

1. Cotton is stronger when it is wet. This is because of
(a) crystalline fiber (b) hydrophilic in nature
(c) cellulose layer (d) all the above
2. Cotton plant is
(a) lengthy (b) shallow (c) bushy (d) hard
3. Cotton buds blossoms in days.
(a) 21 days. (b) 23 days. (c) 20 days. (d) 24 days.
4. The elasticity of cotton is
(a) 8% (b) 9% (c) 7% (d) 6%
5. This fibre is strong and lustrous.
(a) cotton (b) silk (c) linen (d) wool
6. The silk fiber is invented by
(a) Egyptian (b) Japanese (c) Indian (d) Chinese

Answer in one or two words:

1. Which is the fundamental item for making textiles?
2. Name any two natural fiber.

3. What do you call the method of removing seeds from dried cotton?
4. What is the temperature needed for the cotton plantation?
5. To which plant variety does linen belong to?
6. What do you call the fabric made from the combination of linen and cotton?
7. Name the process by which the leaves and seeds are removed from the flax plant
8. In which type of soil cotton is cultivated.

PART – II

Answer in a paragraph:

1. Explain retting process of linen.
2. Explain sorting of silk.
3. What is degumming?
4. Classify and explain hair fibres.
5. Write about the properties of wool.
6. Write about the physical properties of silk.
7. Explain the process of silk reeling.

PART – III

Answer in one page:

1. Explain the invention of silk fiber.
2. Explain the properties of cotton.
3. Write about the properties of silk.
4. Write on processing of wool.
5. Write about the properties of wool.

PART – IV

Answer in detail:

1. Explain about cotton.
2. Explain about linen.
3. Explain about silk.
4. Explain about wool.

Answers for objective questions:

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

3. FIBER PRODUCTION—MAN-MADE FIBERS

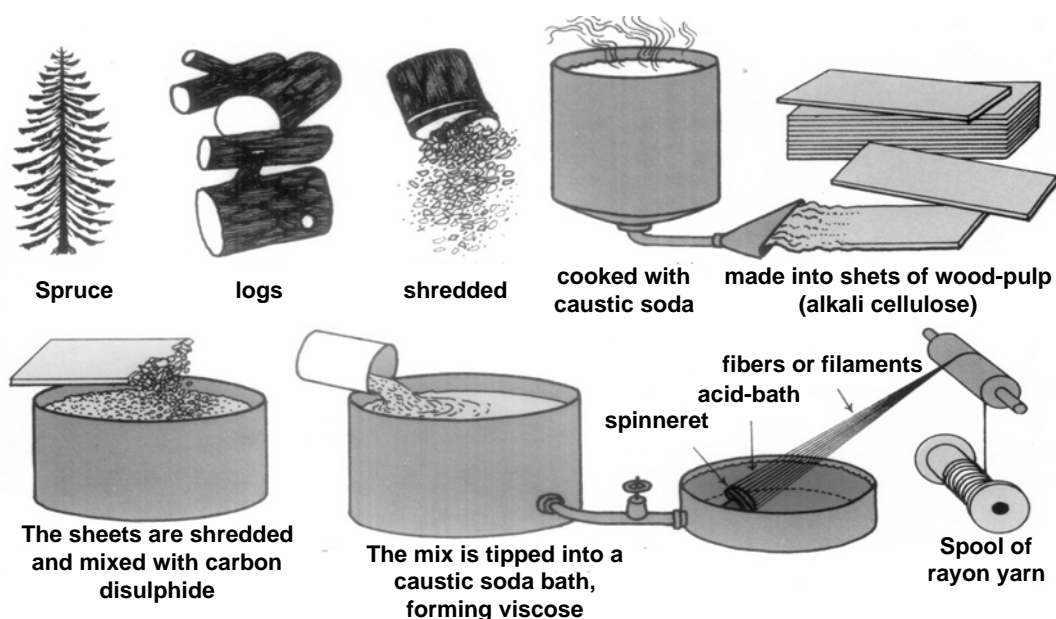
3.1 INTRODUCTION:

A scientist named Hooke in seventeenth century suggested that if proper liquid were squirted through a small aperture and allowed to congeal a fiber can be produced.

3.2 RAYON:

Rayon was the first fiber to be produced commercially. By the passage of time increasing number of new fibers came into existence. A generic name is the name of a family of fibers all having similar chemical composition. All man-made fiber spinning processes are based on three general steps.

1. Preparing a viscous solution or syrup dope.
2. Extruding this solution through spinneret to form a fiber.
3. Solidifying the fiber by coagulation, evaporation or cooling.



Manufacturing process of rayon

The raw material can be made by mixing or dissolving natural fibers with some chemicals where they are called “regenerated fibers” or just with the mixing of the chemicals. This solution is referred to as the spinning solution or dope. ‘Extrusion’ is the forcing or pumping of spinning solution through spinneret holes. A spinneret is a small thimble like nozzle. Each hole in the spinneret forms one fiber. Filament fibers are fibers extruded from spinnerets which together make filament yarn. Filament Tow is an untwisted rope of thousands of fibers.

3.2 .1 Spinning methods:

Spinning is done by three different methods in case of man-made fibers.

1. Wet Spinning:

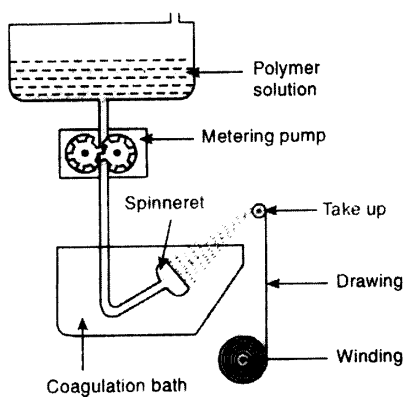
Examples: Acrylic, Rayon, Spandex.

2. Dry Spinning:

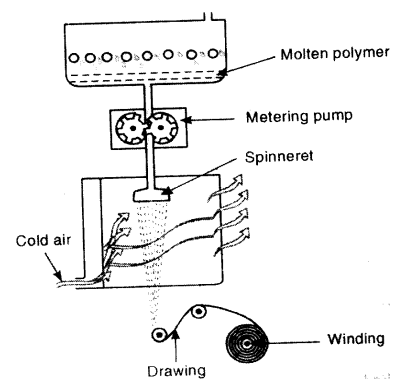
Examples: Acetate, Acrylic, Mod-acrylic, spandex, triacetate, vinyon.

3. Melt Spinning:

Examples: Nylon, Olefin, Polyester, Saran.

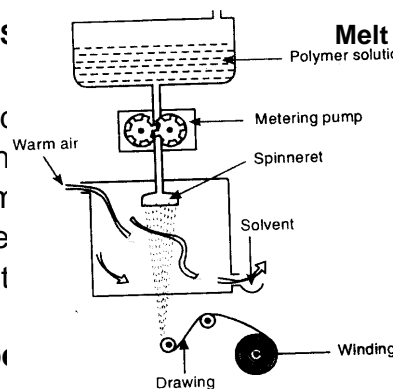


Wet Spinning



Melt Spinning

Dry :



After the filaments have been extruded through rollers having different speeds. Drawing can be combined into a tow and then chopped and spun into yarns, either alone or as blends with other fibers.

drawn out between the rollers. The filaments may be drawn out between the spinneret size, depending on the drawing conditions. The filaments may be drawn out between the spinneret size, depending on the drawing conditions. The filaments may be drawn out between the spinneret size, depending on the drawing conditions.

3.2 .2 Rayon-Regenerated cellulosic fiber

Rayon is a man-made cellulosic fiber in which the starting material is wood pulp or cotton linters which is physically changed. During the early history of man-made fibers, the term rayon was used to indicate any type of manufactured fiber that was based on cellulose, but now it is called man-made cellulosic fiber. Rayon received its name in 1925, before that it had been called artificial silk but because of its cellulosic content, it greatly resembles cotton in its chemical properties. Also known as viscose / polynosic.

3.2 .3 Manufacturing Process:

By using different chemicals and manufacturing techniques, two basic types of rayon were developed. They were viscose rayon and cuprammonium rayon. Viscose rayon can have more names like standard viscose, regular viscose and high wet modulus rayon,

depending on the changes made to get different qualities. Schweitzer in 1857 dissolved in an alkaline copper solution. In 1890, Despeisse developed a method to make a filament. The method was frequently modified until now it is capable of producing the finest diameter of any of the rayons.

1. Cotton linters afford the greatest purity and are the preferred source cellulose. These fibers are cleansed by cooking in a mild caustic alkali and bleached with chlorine.
2. The purified alpha-cellulose is washed, dried and treated with basic copper sulphate and ammonia.
3. The viscose solution is forced through spinnerets into water, which removes much of the copper and ammonia.
4. The filaments are passed through a mild sulfuric acid bath to coagulate them and to remove the copper.
5. The skeins are washed and rinsed.
6. The yarns are sorted according to denier.

3.2 .4 Properties of Rayon:

Shape	:	Controlled by manufacturer. Diameter varies from 12 to 40 microns.
Luster	:	Vary from dull to bright.
Strength	:	2.4-3.0
Elongation	:	19-24%
Elasticity	:	82%
Density	:	1.5 for all types of rayon.
Moisture	:	10.7 to 16%
Dimensional stability	:	Poor for all types of Rayon.
Resistance to acids	:	Generally not good but under some conditions it is acceptable
Alkalies	:	Generally not good but under some conditions it is acceptable.
Sunlight	:	Average
Insects	:	Silverfish damage all types of cellulosic fibers.
To heat	:	Extended exposure will eventually degrade the fiber.

3.3 ACETATE AND TRIACETATE:

Acetate, which is properly called cellulose acetate (chemically di-acetate or secondary acetate) was first made by Paul Schutzenberger in 1869. The first use of this substance

was as a coating on cotton fabric or as a film similar to cellophane or plastic wrap. As a coating the substance was applied to fabric used in early aeroplanes. Triacetate fibers were developed along with regular acetate. However, manufacture of triacetate into fiber form was delayed until safe solvents became available in sufficient quantity to make production economically profitable. Both Acetate and triacetate continue to be respected fibers for selected types of fabrics however their use has continued to decline over the years.

3.3.1 Manufacturing Process:

Acetate	Triacetate
1. Purified cellulose from wood pulp or cotton linters.	1. Same as acetate.
2. Mixed with glacial acetic acid, acetic anhydride and a catalyst.	2. Same as acetate.
3. Aged 20 hours-partial hydrolysis occurs.	3. No aging. Solution is ripened. No hydrolysis.
4. Precipitated as acid resin flakes.	4. Same as acetate.
5. Flakes dissolved in acetone.	5. Flakes dissolved in methylene chloride.
6. Solution is filtered.	6. Same as acetate.
7. Spinning solution extruded in column of warm air solvent recovered	7. Same as acetate.
8. Filaments are stretched a bit and wound onto beams, cones, or bobbins ready for use.	8. Same as acetate.

The manufacturing processes are listed in the accompanying chart, which indicates the two major differences in production. Triacetate is produced in both processes, but to make acetate, the solution is hydrolyzed (treated with water and aged) which causes some hydroxyl groups to reform. Triacetate is dissolved in a different solvent and acetate in a different solution.

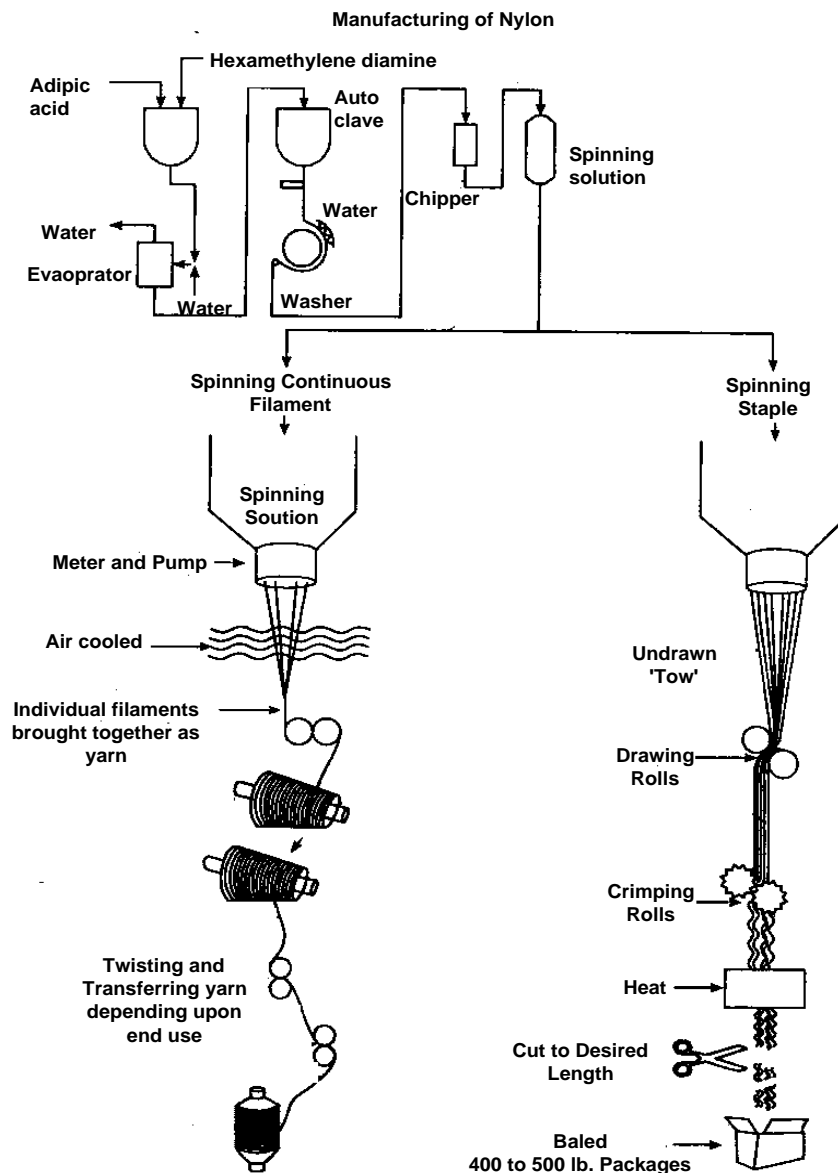
3.3.2 Properties of Acetate and Triacetate:

Shape	: Shape can be controlled by the manufacturer-therefore uniform in observed appearance.
Luster	: Vary from dull to bright.
Elastic Recovery	: Good

- Resiliency : Low (acetate) Good (Triacetate)
- Dimensional stability: Good (for both)
- Resistance to Acids : Both fibers have fair resistance to dilute acids and poor to concentrated acids.
- Alkalis : Good to dilute and both are destroyed in concentrated alkalis.
- To flame : Both fibers burn easily and quickly.

3.4 NYLON:

Nylon was the first synthetic fiber. In 1928 the Dupont company decided to establish



a fundamental research program. If anything was discovered it would be good for the company - a means of diversification. It was noticed that when a glass rod was taken out

of one of the polyester stills the solution adhering to it stretched out into a solid filament. The filament could be stretched ever further and it did not go back to its original length. This stimulated the group to concentrate on textile fibers. The term nylon was chosen for the fiber and it was called the miracle fiber for several years. The first nylon was referred to as type 6,6. The numbers derive from the fact that each of the two chemicals used in making this type of nylon has six carbon atoms. Nylon type 6, 10 was developed at the same time and it is composed of one chemical with six carbon atoms per molecule and ten carbon atoms per molecule for the second chemical. Nylon 6, 6 was considered desirable for apparel and selected home furnishings; nylon 6, 10 was used in making brushes, and similar items. In many countries nylon is identified by term "Polyamide".

3.4.1 Manufacturing:

Nylon 6, 6 is a linear condensation polymer made from hexamethylene diamine and adipic acid. Specific amounts of the two chemicals are combined in solution to form nylon salt. This salt is purified, polymerized, extruded in ribbon form, and chipped into small flakes or pellets. These flakes or pellets are melted and extruded through a spinneret into cool air and the nylon filaments are formed.

The polymer chips are melted by heat in an autoclave and pumped to the spinneret. The hot syrupy solution is pumped through the spinneret. It emerges in strands which can be stretched like warm taffy. The size of the fiber is determined by the size of the holes and the speed with which the fiber is withdrawn from the spinneret. The fibers are cooled by air blown across them. By the drawing process either filament or staple fibers are prepared.

3.4.2 Properties of Nylon:

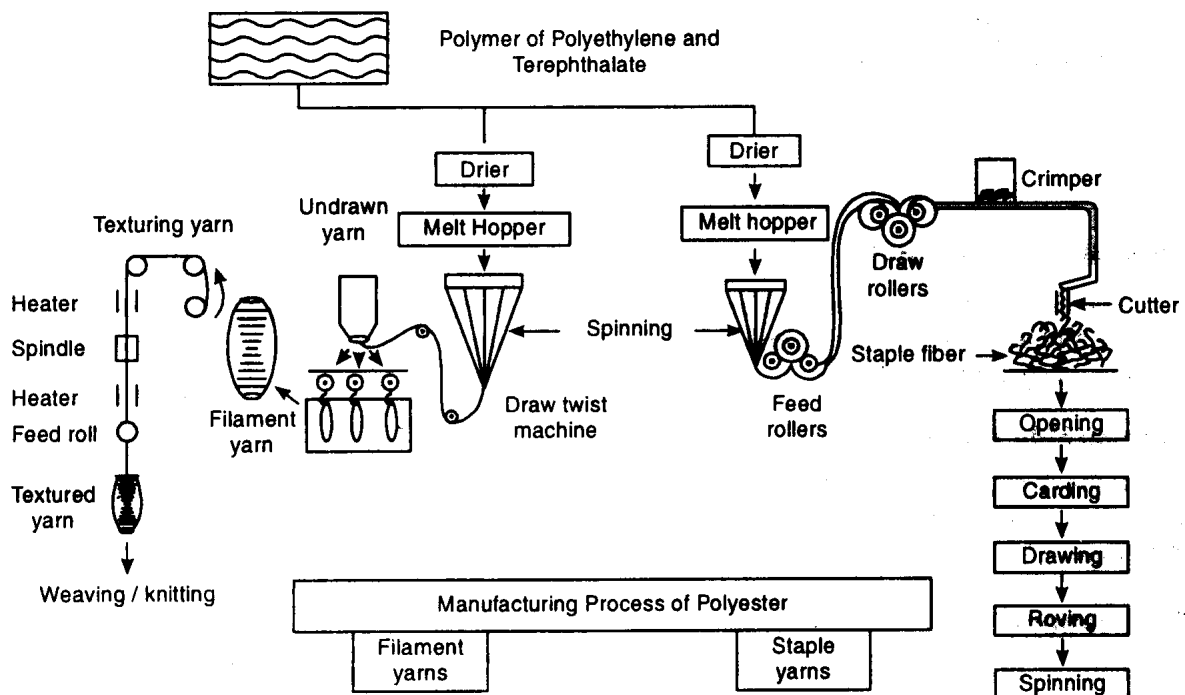
Shape	:	Shape is controlled by the manufacturer, filaments are uniform and long.
Luster	:	Bright to Dull
Elastic Recovery	:	100%
Elongation	:	Good
Resiliency	:	Good
Density	:	1.1 g / ccm
Moisture absorption	:	8%
Dimensional stability	:	Excellent
Acids	:	resistance is poor
Alkalies	:	Good resistance
Sun light	:	Generally affects
Insects	:	Normally damages
To flame	:	Self extinguishing

3.5 POLYESTER:

Polyester is sometimes referred to as the “workhorse” fiber of the industry. The filament form of the fiber has been said to be the most versatile fiber and the staple form has been called the “big mixer” because it can be blended with so many other fibers, contributing its good properties to the blend without destroying the desirable properties of the other fiber. Its versatility in blending is one of the unique advantage of polyester. The polyester have probably undergone more research and development work than any other fiber. One of the important physical changes has been that of changing from the standard round shape to a trilobal cross-section that gives the fiber silk-like properties. A chemical modification, high tenacity staple, was developed for use in durable press fabrics. The strength of the polyester reinforces the cotton fibers, which are weakened by the finishing process.

3.5.1 Manufacturing:

Polyesters are made by reacting a dihydric alcohol with a dicarboxylic acid. The generic definition was modified in 1973 so that no specific acid is identified; thus the



definition can cover a variety of polyesters. As the acid and alcohol are polymerized, they are extruded from the polymerizing vessel in the form of a ribbon. This ribbon is cut into small chips; the chips are diced and conveyed to a hopper from which they are fed to the melt spinning tank. The hot solution is forced through spinnerets, and solidifies into fiber form on contact with cool air. It is stretched while hot, the stretching contributes strength to the fiber and controls elongation characteristics. The greater the amount of molecular orientation obtained during this strengthening step, the stronger the fiber and the lower the elongation.

3.5.2 Properties of Polyester:

Shape	: Controlled by Manufacturers.
Luster	: Controlled from semibright to dull.
Elastic Recovery	: Varies
Elongation	: Varies by type
Resiliency	: excellent
Density	: 1.38 g/cm
Moisture absorption	: very low
Dimensional stability	: Excellent
Resistance to acids	: Strong acids destroy fiber, weak acids have little or no effect.
Alkalies	: moderate
Sunlight	: resistance is excellent
Insects	: Excellent
To flame	: will burn, but slowly and melting fibers tend to drop off, preventing further burning.

Questions:

PART – I

Objective questions:

- Synthetic yarns are introduced in this century.
(a) 10th (b) 20th (c) 16th (d) 19th
- Artificial silk is
(a) rayon (b) polyester (c) acrylic (d) acetate
- Nylon is a fabric whose filaments are prepared from
(a) melt spinning (b) dry spinning (c) wet spinning (d) blow spinning
- The main difference between acetate and triacetate is
(a) ageing (b) acetone/methylene chloride
(c) hydrolysis (d) all of these
- Polyester is referred as
(a) dupont (b) work horse (c) cellulose acetate (d) acrylic

Answer in one or two words:

1. Name any two synthetic fibers.
2. What are the reagents that react to form polyester?
3. Name the process by which nylon is manufactured.
4. How Acetate is properly called?
5. Name the three different methods by which spinning is done.

PART – II

Answer in a paragraph:

1. Give the properties of nylon.
2. How will you manufacture acetate?
3. Explain man-made fibers.
4. Give the properties of polyester.
5. Give the flow diagram of manufacturing process of nylon 6,6.

PART – III

Answer in one page:

1. Explain the manufacturing of rayon.
2. How is tri acetate manufactured?
3. Draw the manufacturing process of polyester.

PART – IV

Answer in detail:

1. Discuss on man-made fibers.
2. Explain about wool.
3. Explain on manufacturing of nylon.
4. Explain on manufacturing of polyester.

Answer for objective type questions:

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

4. YARN PRODUCTION

4.1 INTRODUCTION:

To convert textile fibers into fabrics some type of fiber arrangement is required. Probably the most common method is to convert fibers into yarns, which are then constructed into fabrics. Yarns are essential for knitted, woven or knotted structures and for many braided ones.

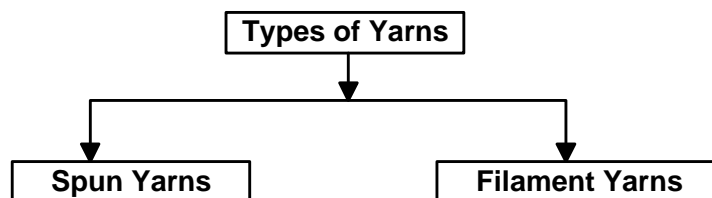
'Yarn' is defined by the American Society for Testing and Materials (ASTM) as "A generic term for a continuous strand of textile fiber, filament, or material suitable for knitting, weaving to form a textile fabric. Yarn occurs in the following forms.

4.1.1 Yarn forms:

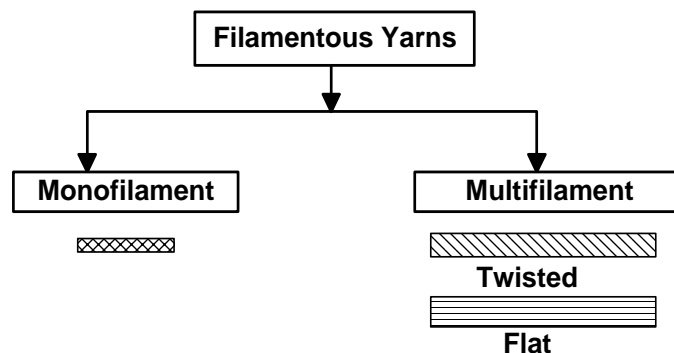
- (a) A number of fibers twisted together.
- (b) A number of filaments laid together without twist.
- (c) A number of filaments laid together with more or less twist.
- (d) A single mono filament. e.g. Silk

4.2 TYPES OF YARNS:

Yarns can be made either from short staple length fibers or from filament fibers. There are two types of yarns, i.e., spun yarns and filamentous yarns.



If filaments are used to make yarns they may be either multifilament or monofilament .



Mono filaments are filament yarns composed of one single filament.

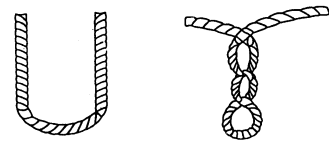
Multi filaments are composed of many filaments.

Characteristics of Spun Yarns and Filament Yarns

Spun Yarn	Filament Yarn
1. Yarns made from short length fibers and the fabrics are like cotton and wool.	1. Yarns made from long length filament fibers and fabrics are like silk.
2. Short fibers twisted into continuous strand, has protruding ends 1. Dull, fuzzy look 2. Lint 3. Subject to pilling 4. Soil readily 5. Warm (not slippery) 6. Loft and bulk depend on size and twist 7. Do not snag readily 8. Stretch depends on amount of twist.	2. Long continuous, smooth, closely packed strand. 1. Smooth, lustrous 2. Don not lint 3. Do not pill readily 4. Shed soil 5. Cool, slick 6. Little loft or bulk 7. Snagging depends on fabric construction 8. Stretch depends on amount of twist
3. Are absorbent	3. Absorbency depends on fiber content
4. Size often expressed in yarn number	4. Size in denier
5. Various amount of twist used	5. Usually very low or very high twist
6. Most complex manufacturing process	6. Least complicated manufacturing process

a. Balanced Yarns:

Smooth fabrics are made from balanced yarns.



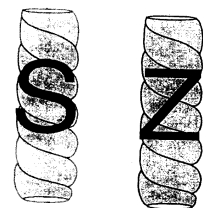
Balanced & Unbalanced Yarns

b. Unbalanced Yarns:

Crepe and textured surface may be created from unbalanced yarns.


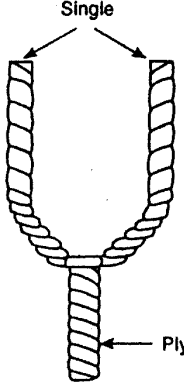
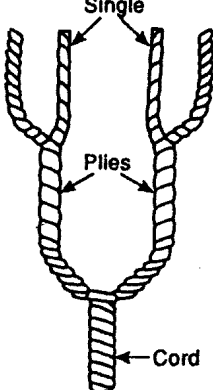
4.3 DIRECTION OF TWIST:

In addition to the amount of twist in a yarn, the direction of the twist is also designated. There are two types of yarn twist S and Z.



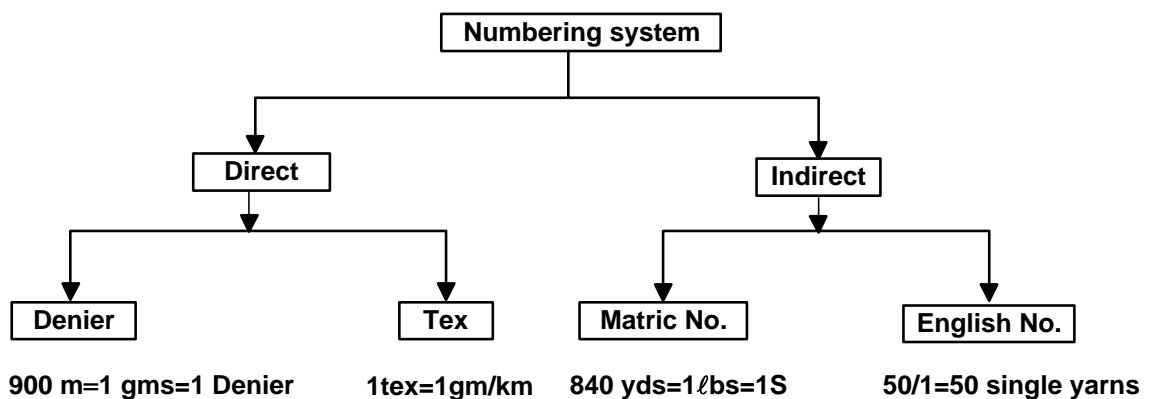
Direction of twist

Single, Ply and Cord Yarns

Single Yarn	Ply Yarn	Cord Yarn
A single yarn is made directly from fibers.	A ply yarn is made by second twisting operation which combines two or more singles. Each part of the yarn called a ply. The twist is inserted by a machine called "twister. The ply yarn is also known as folded yarn.	Cord yarns are composed of two or more ply yarns combined for is simple cord yarns, the singles used to make the ply yarns and the ply yarns used to make the cord are simple yarns.
		

4.4 Yarn Numbering System:

Yarn numbering systems are therefore used to express a relationship between a unit length and weight of yarns. There are two main numbering system in use.



4.5 YARN MANUFACTURING SYSTEM:

The twisting process by which fibers are formed into a yarn is referred to as spinning. Spinning includes all the processes required to prepare and clean the fibers from the opening of the bale to the twisting of the yarn in its preparation for the textile loom.

1. Opening and Picking:

In order to produce a uniform product, the fibers from numerous bales be blended, or thoroughly mixed together, and from this composite, the final yarns will be produced . The masses of fibres from these numerous bales will be fed into a machine called a blending feeder. As these masses of fiber are loosened and thoroughly mixed, some remaining heavy impurities such as dirt, remnants of seeds, leaves or stems, are removed by a line of machine known respectively as pickers, breakers, intermediates and finishers each in succession being a somewhat more refined cleaner of the raw fibres. From these machines, the fabric emerges as a lap, a loose, formless roll.

2. Carding:

The lap is unrolled and drawn onto a revolving cylinder covered with fine hooks or wide bristles. These wide bristles pull the fibers in one direction, separate those which are individually tangled together and form them into a thin film. This process is known as carding. The thin film is drawn into a funnel shaped opening which molds it into a round rope like strand approximately an inch in diameter; this is called the sliver.

3. Combing:

The comber is a refining device by which the paralleling and straightening of the individual fibers is carried to a more exact degree. The longer fibers are again formed into a sliver, known as the comb sliver.

4. Drawing:

In the drawing operation, further blending is accomplished by working together several slivers and drawing or pulling them out in the drawing frame without twisting but reducing the several slivers to a single one about the same diameter as each of the components.

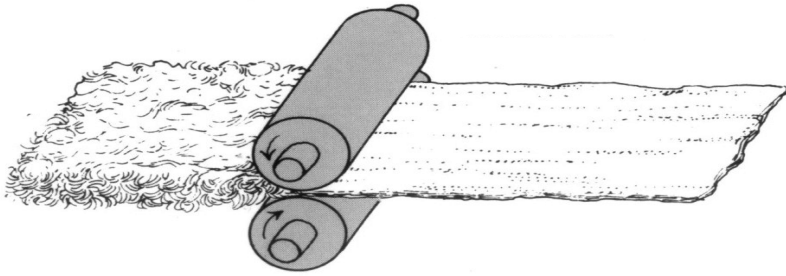
5. Roving:

The combined or condensed combed sliver is taken to the slubber of a series of machines called roving frames.

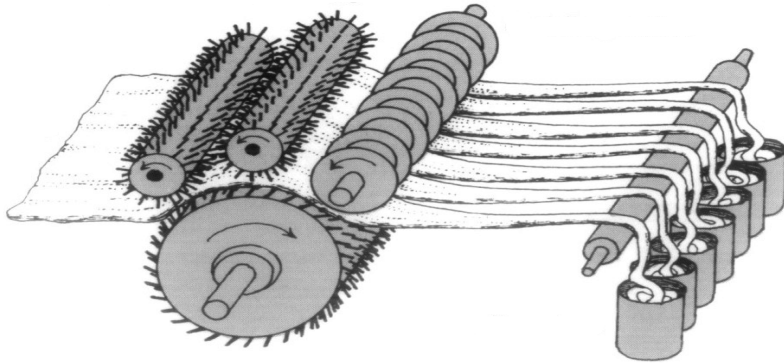
6. Spinning:

Spinning is a continuation of the roving and on the spinning frame many spools containing the roving pass through the ring spinning mechanism which further draws and twists to a yarn of the required size and twist and winds it on bobbins preparatory to the weaving operation.

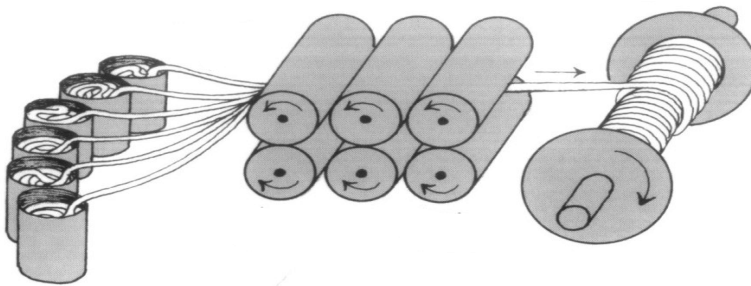
Yarn Manufacturing



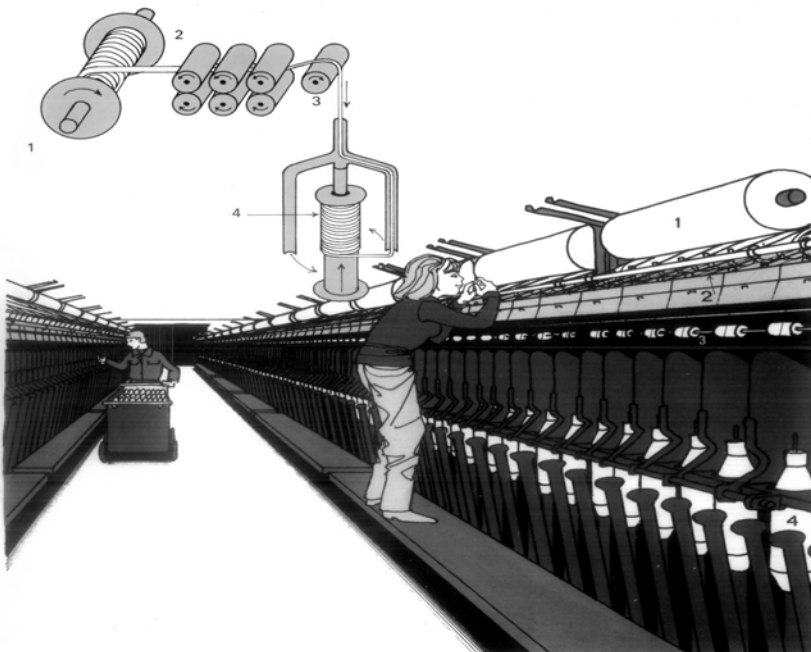
Lap formation



Sliver formation



Roving



Spinning

Spinning Systems for Different Types of Fibers

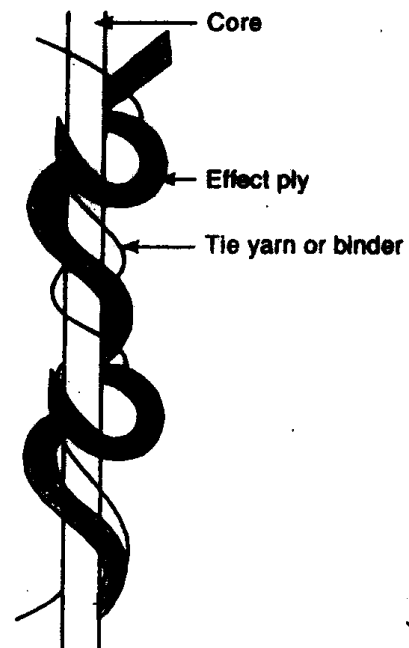
Group	Fiber Type	Spinning System	Fiber length
Short staple system	Cotton	Cotton system	10-25 mm
	Man-made fibers (cotton type)	(ring spinning)	20-50 mm
	Mainly cotton	Rotor spinning Condenser spinning (similar to woollen system)	10-100 mm
Long staple system	Wool	Woollen system	18-60 mm
	Man-made fibers (wool type)		60-120 mm
Bast fiber systems	Flax	Flax system	Upto 1000 mm
	Hemp	Hemp system	
	Jute	Jute system	
Silk systems	Silk	Spun silk (schappe)	upto 250 mm
		Noil silk (bourette)	upto 60 mm
Man-made fiber systems	Man-made fibers	Converter	Continuous
		Direct spinning	

4.6 TYPES OF YARNS:

1. Textured Yarns:

“Textured” is a general term for any continuous filament yarn whose smooth straight fibers have been displaced from their closely packed, parallel position by the introduction of some form of crimp, curl, loop or coil.

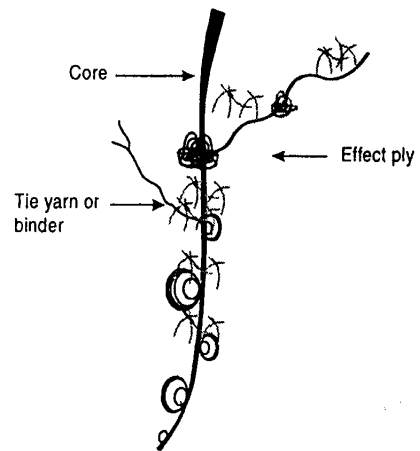
Textured yarns can be made from either filament fibers or staple fibers cut from filaments that have been given a textured configuration of some type. The majority of textured yarns are made from filament fibers. Texturizing occurs following the spinning of the fiber material through the spinneret. It may be done immediately following fiber formation and be a part of a continuous operation or it may be done some time after the filaments have been made. There are three types of textured yarns. 1. Bulk textured yarns 2. Stretch textured yarns 3. ‘Set-modified stretch textured yarns.



2. Novelty Yarns:

Novelty yarns are made primarily for their appearance. They differ from simple yarns that their structure is characterized by irregularities. ASTM defines a fancy yarn as a yarn that differs significantly from the normal appearance of single or plied yarns due to the presence of irregularities deliberately produced during its formation.

In single yarn the irregularities may be due to the inclusion of knots, loops, curls, slubs and the like. In plied yarns the irregularities may be due to a variable delivery of one or more of its components or to twisting together dissimilar single yarns.



The term fancy, complex and novelty are considered synonymous. As noted from the definition most fancy yarns are either single or plied. There can be endless variety of novelty yarns. A typical novelty yarn has three basic parts: 1. The ground or foundation or core. 2. The fancy or effect 3. The binder.

a. Facts about novelty yarns:

1. Novelty yarns are usually ply yarns, but they are not used to add strength to the fabric.
2. If novelty yarns are used in one direction only, they are usually in the filling direction. They “go further” and are subject to less strain and are easy to vary for design purpose.
3. Novelty yarns add interest to plain weave fabrics at lower cost. Novelty yarn effects are permanent.
4. Novelty yarns that are loose and bulky give crease resistance to a fabric but they make the fabric spongy and hard to sew.
5. The durability of novelty yarn fabrics is dependent on the size of the novelty effect, how well the novelty effect is held in the yarn and on the firmness of the weave on the fabric. Generally speaking, the smaller the novelty effect, the more durable the fabric is, since the yarns are less affected by abrasion and do not tend to catch and pull out so readily.

b. Different types of Novelty Yarns:

1. Slub yarns 2. Flock yarns 3. Spiral yarns 4. Ratine yarn 5. Boucle yarn 6. Nub/spot/knot or knob yarns 7. Seed or splash yarn 8. Chenille yarn 9. Metallic yarns

4.7 PROPERTIES OF SEWING THREADS:

The performance of textile fabrics and clothing is strongly influenced by the properties of the yarns from which they are made. Sewing threads require certain yarn properties.

Regularity	Smooth fabrics should be sewn only with very regular yarns. In spun yarns, this is achieved by repeated doubling and drafting, and by combing out the short fibers.
Strength	Yarn strength depends on the quality of the fibres, the yarn regularity and the twist. Folding increases the strength.
Hardness/Twist	The twist density affects the hardness of a yarn and hence the handle and the appearance of textiles.
Extensibility/ Elasticity	Extensibility and elasticity are very important during yarn processing and utilisation. They are determined mainly by the fibre type and the spinning system.

Characteristics of Sewing threads

Yarn type	Characteristics	Applications
Cotton	Usually high quality, combed, ring spun, bleached, dyed, singed, mercerized and lubricated. Typically 7.4–84 tex	Almost any sewings on cotton fabrics.
Silk	Doubled and folded silk filament yarns; dyed and lubricated. 14–80 tex.	Fancy button holes
Polyester	Spun polyester folded yarns; heat set, dyed and lubricated. 7–33 tex.	Sewings on almost any fabric.
Textured yarns	Textured multifilament yarns; dyed and lubricated. 18–80 tex	Covering seams and cut fabric edges.

Questions:

PART – I

Objective questions:

- Spun yarns are
 (a) smooth (b) lustrous (c) dull (d) cool
- Filamentous yarns are
 (a) smooth (b) dull (c) soft (d) short

3. Textured yarns are
 (a) straight (b) warm (c) continuous (d) spun
4. Novelty yarns are usually
 (a) Boucle yarn (b) Textured yarn (c) Ply yarn (d) Card yarn
5. Spinning of yarn means
 (a) Denier (b) Twisting (c) Tex (d) Pulling

Answer in one or two words:

1. Define yarn.
2. What are the types of yarns?
3. What are the types of yarn twist?
4. Define balanced and unbalanced yarn.
5. For what purposes yarns are used?

PART – II

Answer in a paragraph:

1. Classify filamentous yarns.
2. Bring out on yarn numbering system.
3. What are textured yarns?
4. Explain blends and mixtures.
5. Give facts about novelty yarns.

PART – III

Answer in a page:

1. Differentiate spun and filamentous yarn.
2. Brief out on single, ply and card yarns.
3. Explain the yarns properties.

PART – IV

Answer in detail:

1. Explain the yarn manufacturing system.

Answers for objective questions:

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

5. FABRIC PRODUCTION

5.1 INTRODUCTION:

Weaving is the name given to the interlacing of two sets of yarns, warp and weft at right angles and the fabric thus formed is woven fabric. The warp yarns are those yarns which lie in the length direction of a fabric while it is being woven.

The weft or filling yarns are those which, during weaving are introduced between the warp yarns, across the width direction of the fabric. The warp are also known as ends and wefts as picks. The lengthwise edge of the fabric is called selvage (Self + Edge) Grain indicates a direction parallel to either the warp or filling yarn. The direction not parallel to either of these yarns is called off grain. Woven fabric will elongate most in a direction that is 45° to both sets of yarns and this direction is called Bias.

Difference Between Warp and Weft

Warp	Weft
1. Most Garments are cut in lengthwise direction.	1. Some garment details such as collars are cut in this grain for decoration
2. These are parallel to the selvedge	2. Weft are perpendicular to selvedge
3. Yarns are finer in warp-wise direction as they have higher twist as warps have to go through lots of processing.	3. Yarns may be thicker or finer with medium twist
4. Filamentous yarns are preferred as warps	4. Spun yarns are used
5. Yarns are stronger	5. Weaker yarns can also be used
6. Twist is more and yarns per inch is also more	6. Twist and yarns per inch is less.
7. Ply are preferred for warps.	7. Singles can be used.
8. Stretchability is low	8. Stretchability is high
9. Plain yarns are more preferred.	9. Novelty yarns and textured yarns can be used.

5.2 WEAVING:

1. Basic Weaving Operation:

The machine used for weaving fabrics is a loom. Before weaving yarns intended for warp must pass through such operations as spooling, wrapping and slashing to prepare them to withstand the strain of weaving process. These processes do not improve quality of yarns.

a. Spooling:

Yarn is wound on large spools, or cones which are placed on a rack called a creel from this yarns are wound on warp beam, which is similar to huge spool.

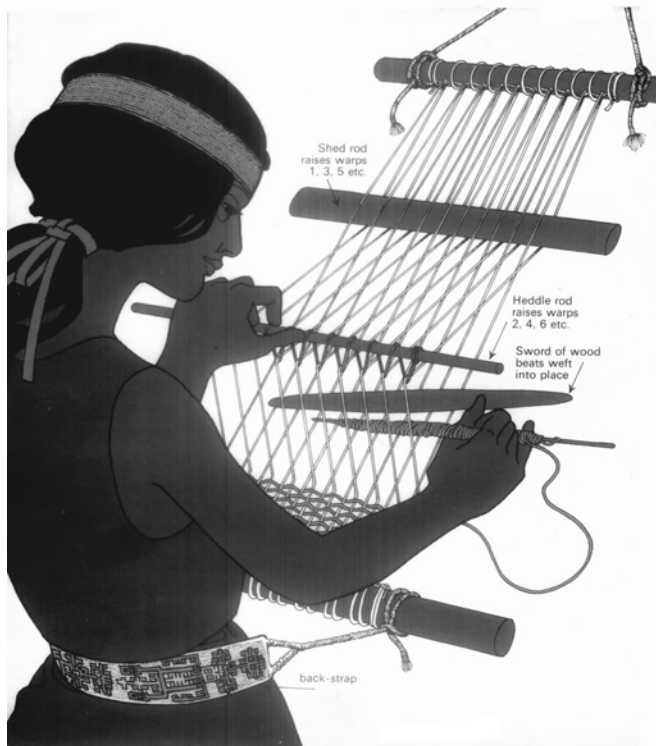
b. Starching:

These yarns are unwound to be put through a slashing or sizing bath. The slasher machine covers every yarn with a coating to prevent breaking during weaving process.

c. Wrapping:

The sized yarns are then wound on a final warp beam and are ready for the loom. The warp beam prepared now is then mounted on looms.

Before the invention of conventional loom, back strap loom was in existence. Later on, the conventional loom replaced the back strap loom which is now-a-days not in use. The above given preparatory procedures were not followed in the back strap loom since the fabric was prepared manually. On conventional loom, the warp beam is mounted at the back and warp yarns are conveyed to a cylinder called cloth roll, which is at the front of the loom and on which fabric is rolled as it is constructed.



Back Strap Loom

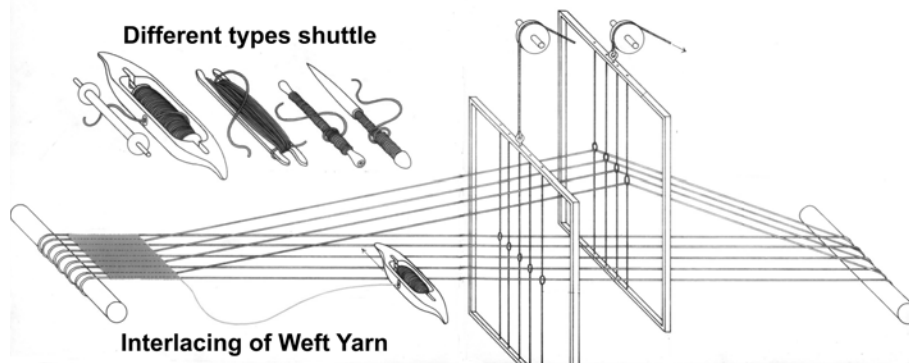
The warp beam holds the length-wise yarns and is located at the back of the loom. This beam is controlled so that it releases yarn to the loom as it is needed. The Heddles are wires or metal strips with an eye located in the center through which the warp ends are threaded. The harness is the frame that holds the Heddles in position. Each loom has atleast two harnessess. A majority of looms for regular fabrics have four to twelve harnessess and some looms may have as many as thirty-two. Harnessess can be raised or lowered to produce the shed through which the filling yarn is passed and thus controls the pattern of weave. The shuttle move back and forth in the shed created, passing the filling

yarns between the warp yarns. The reed is a comb like device that helps to pack the filling yarns into position in the woven fabric.

The opening in the reed through which the warp yarns are threaded are called Dents. This maintain the warp yarns in a systematic relation and prevents yarns from tangling

during weaving process. The cloth beam is located at the front of the loom and holds the completed fabric. So we can say a basic loom consists of: 1. Warp beam 2. Heddles and harness 3. Shuttle 4. Reed 5. Cloth beam

Now-a-days highly sophisticated looms are available which may have devices other

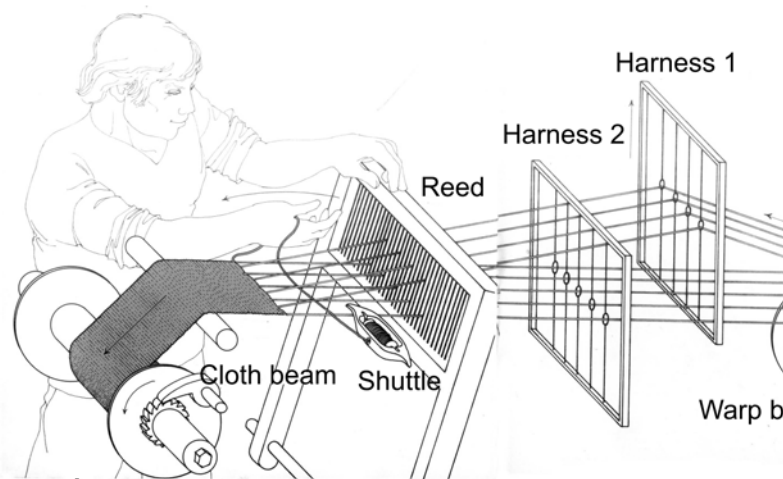


than these but all the looms no matter how specialized they are, have some basic operations which are fundamental and are performed in sequence and are constantly repeated.

2. Basic Loom Operations:

a. Shedding:

It is raising and lowering of warp yarns by the harnesses to make an opening for the weft yarns to pass through.



Basic loom operations

b. Picking:

It is the actual process of placing the weft yarns in the shed. This is done using a device known as 'shuttle'. It has a metal strip in which bobbin or pin is inserted.

c. Beating:

Sometimes called beating in or beating up, consists of evenly packing the filling yarns into position in the fabric. It gives a compact construction to the fabric.

d. Taking up and letting off:

It involves taking up the newly manufactured fabric onto the cloth beam and letting off or releasing yarn from the warp beam. The operation maintains uniform distance and tension from warp beam to harness to completed cloth.

Weaving is a major method of fabric construction. The technique probably became known before spinning. Spinning developed when people discovered that the raw material could be improved before they were woven. In the course of time, rude looms were made, which were simple and hand-operated, fabrics produced on such looms are also known as hand loom fabrics where every thing is done by hands. The modern power loom used in the textile industry today essentially performs the same operation as the simple hand operated loom. The fabric produced on power looms is made comparatively faster and has few defects in comparison to hand looms.

Based on the picking operations looms are divided into various categories. The two major ones are based upon the method of filling insertion. Looms that uses shuttle are called conventional shuttle or fly shuttle looms. Shuttle looms have very compact selvedge. It is the oldest and versatile method of weaving so most different kinds of fabrics can be obtained. Very large wooden shuttle is used and every time it passes through warp yarns it causes abrasion and the productivity may go down because of the low strength of yarns. The broken yarns show fabric defects. Shuttle looms are very noisy and PPM (Picks Per Minute—How many wefts laid in one minute) is 110 to 225.

On the other hand looms that uses other devices to bring the filling yarn through the shed are called shuttleless looms. The source of the yarn for shuttleless looms are cones placed at the sides of the loom. Shuttle-less looms gives very high productivity at the same time they are less noisy when compared to shuttle-looms. They also have high productivity and fewer fabric faults.

There are different types of looms other than conventional looms such as:

1. Single Projectile on Missile Loom
2. Multiple Projectile System
3. Rapier Loom
4. Jet Looms

3. Selvedges:

A selvedge is defined as length-wise edge of the fabric. Found on both ends of the fabric usually $\frac{1}{4}$ to $\frac{1}{2}$ inches broad.

Main purpose of selvedge is to hold warps and wefts together. It prevents fabric from ravelling. In machine loom a separate operation is required to finish the edges. Selvedge is usually much more compact than rest of the fabric. There are more warp yarns in the area of selvedge. 1. Mostly ply is used for selvedge. 2. Twist is more in selvedge. 3. Suppose body fabric is in a weak weave then the selvedge is stronger than the rest of the fabric. 4. Selvedge will depend on end use of fabric secondly on economy of production.

Different types of selvages:

1. Plain selvedge
2. Tape selvedge
3. Split selvedge
4. Fringe selvedge
5. Fused selvedge
6. Adhesive finished selvedge

4. Thread Count:

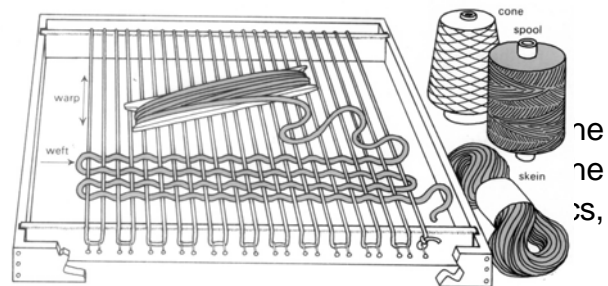
Thread count or fabric count is determined by counting the number of warp (Ends) and wefts (picks) per square inch of fabric. Higher the thread count more compact will the fabric be; so it will be more strong and durable. A fabric with high thread count will be more costly. It is denoted by $X \times Y$, eg., 50×30 . Compact fabric shrinks less. Based on thread count there exists balanced and unbalanced constructions. When number of warp yarns are equal or nearly equal to the number of weft yarns, the construction is balanced and when the difference between the number of warp and weft yarns will be very large than that construction will be an unbalanced construction.

Durability of fabric depends on the following factors:

1. Natural fibers or man-made fibers.
2. Kind and quality (staple or filament)
3. Strength and twist of yarn
4. Single, ply, cord, decorative or uniform yarns.
5. Compactness of construction or thread count.
6. Kind of weave.

5. Basic Weave Structures:

The manner in which groups of warp y insertion of the filling yarn determines the pa kind of fabric produced. Weave patterns can adding to their usefulness and also to their a



There are three basic weaves. They are plain weave, twill weave and satin weave. All other weaves are a variation or a combination of these weaves. Basket weave and Rib weave are two variations of plain weave. In the same manner twill weave can also have number of variations, e.g., warp faced twill, weft faced twill, even twill, uneven twill, pointed twill, herring bone twill, gabardine, corkscrew and so on.

Graph paper (or pointed paper) is used to show the weaves or the order in which the yarns interlace in a fabric. It is used by textile designers to portray their designs or to analyse fabric weaves. Each vertical row of squares represents a warp yarn and each horizontal row of squares represents a filling yarn. A warp yarn crossing over a fillings

Representation of Plain Weave

usually shown by marking in the square called a 'raiser'. A blank square over the warp called 'sinker'.

The weave diagram does not show the number of yarns per inch between warp and filling. The yarn size and type are also not indicated. The completed design shows the interlacing from the face side of the cloth. Most weaves are analysed from the face side.

a. Plain weave:

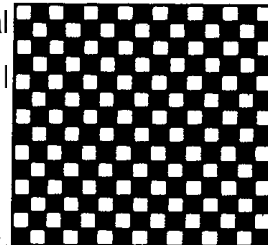
A plain weave is a weave where each filling passes alternately over and under each warp in a square pattern. The interlacing is opposite in neighbouring cells. The repeat is over two ends and two picks.

Plain Weave

Properties of Plain weave:

Plain Weave

1. Both sides are reversible until fabric is painted or printed from right side.
2. Fabrics have high abrasion resistance.
3. No yarn slippage.
4. There is no distinct design unless yarns have contrasting colors or thickness.
5. Easily produced; maximum yardage; inexpensive. Medium to dull lusture.
6. Adaptable for printing and other finishing process.
7. More durable. No floats. Medium drapability.
8. In old notation method, denoted by 'P'. Examples: Cheese cloth, Cretonne, Percalé, voile.



b. Satin weave:

A satin weave is a weave where four (or more) start with warp floats in interrupted diagonal. Interlacings are never adjacent to one another. Satin repeat over atleast 5 ends and 5 picks but the warp ends interlace only once per repeat.

Properties of Satin weave:

1. Right and wrong sides look quite different.
2. Very low abrasion resistance.
3. It has interrupted diagonal discernible with magnifying glass.
4. It is more expensive. Excellent lusture.
5. Less durable.
6. Excellent Drapability.
7. Denoted by 'S'. Examples: Satin, Slipper satin, Creepe back satin.

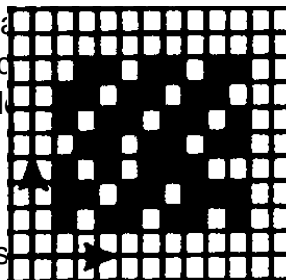
c. Twill weave:

A weave characterized by diagonal lines on the face of the fabric. The weft or warp yarns interlace with more than one warp yarn but never more than 4 warp yarns. On each successive line weft moves the design one step to the right or the left forming the diagonal. Whatever the direction of the diagonal on the face of the fabric the direction is opposite on reverse. The diagonal can vary from a low 14° angle called reclining twill to a 75° angle called a step twill. The most common is 45° and is regular or medium twill, steeper the twill stronger the fabric is likely to be. A 2 x 1 twill weave will be one where warp will go over 2 warp and under 1 weft. Suppose you have 4/2 weave, then it means that you will have 4 + 2 = 6 harnesses, (i.e) the repeat will have 6 boxes horizontally and 6 boxes vertically.

Twill Weave

Properties of Twill weave:

1. Twill weave is one of the strongest weaves.
2. It has fairly good drape.
3. More tightly woven.
4. A twill weave does not get dirt easily but once it gets dirt it becomes really difficult to clean them.
5. It has good wrinkle resistance.
6. Finer yarns with high twist are used in construction of twill weaves.
7. Denim is an uneven warp faced twill weave in white and warps are in blue so denim is blue on one side and white on the other side.
8. Other variations of twill weave include herringbone, Gabardine, Corkscrew twill and so on.



6. Surface figured weaves:

Many decorative and patterned fabrics are made by inserting extra warp and/or filling yarns during the fabric construction process. When extra warp yarns are used, they are wound on to an additional warp beam and threaded into separate heddles so that they can be controlled—depending on the complexity of the pattern, either by the dobby or the Jacquard attachment. Looms used for such constructions must have numerous harnesses or individual yarn control, in order to have sufficient warp control for the design to be formed. Controls for such fabrics permit great design flexibility, the use of several colors in the filling direction as well as the warp which may be strung with several different colors of yarn etc and the use of various types of yarns provides methods for producing figure weaves in selected or spot areas of a fabric. The main types of fabric made through the use of additional yarns are lappet, swivel and spot.

a. Lappet weave:

Lappet is a fabric in which figure is achieved by introducing extra warp threads into a base fabric that is normally plain.

b. Swivel weave:

A fabric in which figure is achieved by the introduction of additional weft threads into a base fabric to produce spot effects.

c. Spot weave:

Spot designs can be made with either warp or extra filling yarns. The yarns are inserted the entire length or width of the fabric in predetermined areas.

d. Leno weave:

The leno weave may be called the doup weave or the gauze weave.

e. Pile weave:

The word pile comes from the Latin word for hair or fur. To obtain the hairlike or furlike surface, woven pile fabrics are made with three sets of yarns—a regular set of warp yarns (called warp ground yarns), a regular set of filling yarns (called filling ground yarns) and an extra set of either warp or filling yarns to form the pile surface (called pile yarns).

f. Double-cloth weave:

Double weaves are those in which at least two sets of filling yarns and two sets of warp yarns are interlaced so that the interlacing moves between the sets at various points.

g. Dobby weave:

Dobby weave is a patterned weave used to construct designs that cannot be produced by the plain, twill or satin weaves.

Dobby fabrics have small figures, such as dots, Geometric designs and small floral patterns, woven into the fabric. These decorative weaves are made with small patterns that repeat frequently.

h. Jacquard attachment:

Jacquard fabrics, frequently called Jacquard weaves, are large figured designs that depend on considerable flexibility in the control of the warp yarns to form sheds for placing filling yarns in the fabric.

5.3 KNITTING:

Knitting is the second most important method used in fabric construction. In 1589, Rever and William Lee, English men invented the first knitting machine. Today the modern machine is based on the same general principles established by William Lee.

Knitting is the construction of the fabric by forming the yarn into loops which hang upon the other. This fabric may be constructed by a single yarn or by a group of yarns running lengthwise. Another definition of knitting is as follows—Knitting is a cloth of interlocking

loops from one or more yarns or from a series of yarns. The construction of a knitted fabric is evaluated by the number of stitches or loops that can be counted in any square inch. This vertical rows of loops stitches in the knit fabric are known as wales and the horizontal rows of loops are known as courses. Knitted loops are usually referred to as stitches when they are pulled through another loop. The number of stitches in warp and weft direction, in a square inch of knitted fabric is referred to as count. The fineness of the fabric given by the number of stitches/needles per unit width on the machine is Gauge. The higher the gauge number the finer the fabric will be. The number of slots or grooves per inch in any given knitting machine is fixed; different machines have different quantities of slots. This number is called the cut of the machine.

The size of the loop and the fineness of the yarn determine the density of course and wales. The number of wales determine the width of the fabric, the number of courses determine its length; their product determines the weight.

5.3.1 Machine knitting:

Machine knitting consists of forming loops of yarn with the aid of the thin pointed needles or shafts. As new loops are formed they are drawn through those previously shaped. This interlooping produces knit fabric. Knitting requires four basic components; (a) Yarn source, (b) Knitting elements, (c) Fabric take down and (d) Fabric collection.

a. Yarn source:

The yarn source for weft knitting may be located above the knitting area or on large creels at the side. If at the sides, the yarns are carried to the top of the knitting machine and then fed down to the knitting area.

b. Knitting elements:

Actual knitting elements include needles, the sinkers, needle bed or frame and the yarn carriers.

c. Fabric take down:

It is a device to pull the formed fabric towards the base of the machine.

d. Fabric collection:

A roll of some kind on which the completed fabric is collected.

5.3.2 Knitting Needles:

Ever since the invention of the mechanical knitting loom, knitting needles have been at the heart of the process.

5.4 NON-WOVEN:

Non-wovens are defined as fabric structures produced directly from fibers by bonding or entangling the fibers or filaments by mechanical, thermal or chemical means. Use of

adhesive heat, fusion or entanglement of the fiber may be carried out. The input material for non-wovens are 1. Any fibers 2. Some kinds of Bonding Agent. 3. Any Auxiliary agent (added for special effects, e.g., surface texture, etc.)

Non-wovens may be categorized into 1. Durables 2. Non-durables or Disposables 3. Semi-Durables.

Durables are those which are manufactured for intention of longer use, e.g., furnishing, carpets (Numdhas), carpet backing. Mostly nylon, polyester and rayon, etc., are used.

Disposables are those that are intended to use only for a limited application. Throw away after use. It should not be very expensive. Cost of manufacture and material in this case should not be too high, e.g., Diapers, Tissue paper, surgeons gloves, gowns, filters, etc. Rayon is the fiber which is most commonly used. Semi Durables are used to make products as table mats. Can be used more than one time.

Non-wovens	Wovens
1. Made directly from fibers	Yarn are made out of fibers which are then interwoven to form the fabric
2. Variation can be made by using different ways of bonding fibers together.	Variations can be made by using plain, novelty or textured yarns and may be by weaving them in different ways.
3. They show good to excellent resilience.	Normal resilience
4. Good shock absorbers.	They are not until the woven structure is quite thick.
5. Easy to shape	Not easy to shape
6. Will not ravel	Ravel most in case of man-mades
7. Edges need not finish	Edges needs to be finished
8. Sound absorbent	Are not sound absorbent
9. Have good insulation properties with resultant warmth	Only in few cases as worsteds
10. Will not tear	Will tear
11. Breaking load is low	Breaking load is high as compared with some general thickness and weight
12. Holes cannot be mended very satisfactorily	Can be mended
13. There is little or no elastic recovery nor elongation in felt fabrics	They have fair to good elastic recovery and elongation
14. Should be laundered carefully. Should not be subjected to pulling or twisting.	Depends on what kind of fiber, yarn and weave used for the construction

2. Application of Non-wovens:

Non-woven fabrics appear in a wide variety of products for apparel, home-furnishings, business, industry and specialized applications such as aerospace. The list of products made from non-woven fabrics is long and growing each year. Some typical end-use items include diapers, handkerchiefs, shirts, dresses, apparel interfacings, bandages, curtains, decontamination clothing, garment bags, industrial apparel, lampshades, map backing, napkins, place mats, ribbons, upholstery backing, window shades, hospital gowns, hospital sheets and many more.

Durable non-wovens have wide applications. these include apparel, such as for caps, interlinings and interfacings home furnishings, such as for draperies furniture, upholstery, mattress padding, and carpet backing, industrial uses, such as filters, insulation and roadbed stablization sheetings.

Disposable non-wovens are essentially made for one time use; such as dust cloths, may be laundered and reused a few times. General applications include diapers, sanitary napkins, surgical and industrial masks, bandages and towels.

3. Types of Non-wovens:

There are many types of non-woven but basically two types of non-wovens are very common: (a) Felts (b) Bonded fabrics

a. Felts:

Felts as defined by ASTM are: "A structure build up by the interlocking of fibers by a suitable combination of mechanical work, chemical action, moisture and heat without spinning, weaving or knitting." They may consist of one or more classes of fibers (main fiber type is wool).

b. Bonded fabrics:

Bonded fabrics constitue a larger area of non-wovens and this word is used as a constituent of non-wovens.

Questions:

PART – I

Objective questions:

1. Warp yarns are
(a) weaker (b) stronger (c) single yarn (d) textured yarns
2. Weft yarns are
(a) parallel to selvedge (b) stronger
(c) perpendicular to selvedge (d) plain yarns

3. Basic loom consists of
 (a) shuttle (b) comb (c) spools (d) cones
4. Satin weave fabrics are
 (a) durable (b) cheap (c) dull (d) expensive
5. Non-woven fabrics are
 (a) easy to shape (b) can be mended (c) tear easily (d) edges ravel

Answer in one or two words:

1. Define warp.
2. Define weft.
3. What are selvages?
4. Define knitting.
5. Define non-woven.

PART – II

Answer in a paragraph:

1. Differentiate warp and weft.
2. Explain weaving.
3. What are the basic weaving operations?
4. Explain thread count.
5. Give short notes on selvages.

PART – III

Answer in a page:

1. Explain the basic loom operations.
2. Brief out on looms and its types.
3. Explain Dobby and Jacquard attachments.
4. Explain Machine Knitting.
5. What are the different types of non-woven fabrics?

PART – IV

Answer in detail:

1. Explain plain, satin, twill and its properties.
2. Differentiate wovens and non-wovens.

Answers for objective questions:

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

6. TOOLS FOR CLOTHING CONSTRUCTION

6.1 INTRODUCTION:

Well selected sewing equipments are essential for making a garment of good appearance. These are usually available at each and every home, as these tools are helpful for women in Garment making. Tools for clothing construction can be classified as

- | | | |
|-------------------|-------------------|------------------|
| 1. Measuring tool | 2. Drafting tool | 3. Marking tool |
| 4. Cutting tool | 5. Stitching tool | 6. Pressing tool |

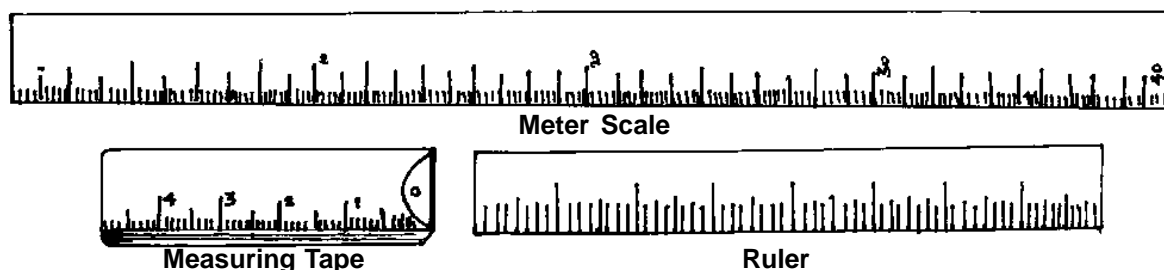
6.2 MEASURING TOOL:

Measuring tools are needed for taking body measurements and transferring it into paper patterns. Some of the measuring tools are

- | | | |
|-------------------|----------------|----------|
| 1. Measuring Tape | 2. Meter scale | 3. Ruler |
|-------------------|----------------|----------|

1. Measuring Tape:

Measuring Tape is one of the important tool for sewing. This is commercially available in different models. With the use of this one can take their own body measurement or measure from a garment for stitching a new garment and to check the measurement of the garment to be sewing in between stitching. Wrinkles must be removed when measuring from a stitched garment. Note that the tape must not get twisted while measuring. The model or person to be measured must not bend while taking measurement. Select a firm, good quality tape which will not stretch after use. It is usually about ½" wide and 60" long.



Some of the measuring tapes have centimeter markings along one edge. Properly measured garment usually fits better.

2. Meter scale:

Meter scale are made of wooden, plastic or metal. They are useful for checking fabric width when fixing pattern pieces on material and for drawing long seam lines on fabric or paper.

3. Ruler:

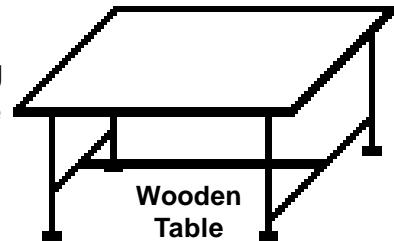
A ruler is useful for measuring small distances as tucks, hems, facing, etc. on patterns, for drawings lines and marking dots.

6.3 DRAFTING TOOL:

These tools are helpful to fix the pattern, draw, draft and cut the pattern as well as fabric. The following tools will be of use. Some of the drafting tools are 1. Wooden Table 2. Brown sheet 3. Dress Model 4. Bell pin 5. Pin Cushions.

1. Wooden Table:

This should be of convenient height and size for drafting and cutting fabric. 3 feet width and 5 feet length is a desirable size of the table and the height can be about 2.5 feet.



2. Brown Sheet:

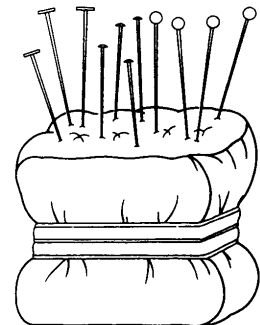
It is better to draft paper pattern on a Brown sheet with correct body measurement than drafting and cutting directly on the fabric. The pattern is pinned over the fabric, marked and then stitched after cutting, which will prevent wastage of fabric. Hence for drafting such pattern brown sheet is necessary.

3. Dress Model:

The measurement of the Model Dress must be same as the measurement of the wearer for whom the dress should be made. Instead of taking measurement from the model or person, the dress which suits well and fits correctly can be used as a aid for measurements.

4. Bell pin:

Use of pins for basting and fixing of pattern pieces to the fabric makes work easier, quicker and more accurate. Select sharp thin medium lengthy pins that will not leave pin marks, on all types of fabrics. For silk, satin and other flimsy, slippery fabrics patterns must be pinned to the fabric before cutting.



Bell Pins & Pin Cushion

5. Pin cushions:

These are available in many different styles; some have an elastic or plastic band so they can be worn around one's wrist. Always use a pin cushion to hold the pins while work. This will prevent the frustration of spilling a whole box of pins on the table or floor, and the possibility of swallowing a pin.

6.4 MARKING TOOL:

Marking tools helps to mark the details of patterns such as seam lines, cut lines, darts, pleats etc. Marking tools are

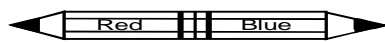
1. Color Pencil (Red & Blue)
2. Marking chalk
3. Tracing Wheel

1. Color Pencil (Red & Blue):

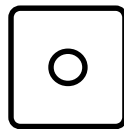
While drafting pattern on a newspaper, Red & Blue Pencil is necessary. The stitching line is marked using blue pencil and cutting line is marked using Red Pencil.

2. Marking chalk:

This is also called as Tailor's Chalk. As color pencil, this is also used for marking seam lines and other pattern details on fabrics as an aid in stitching. This is available in assorted colors in rectangular and triangular shapes. This can be selected according to the fabric color. The edges can be sharpened for drawing straight and curved lines easily.



Color Pencil



Marking chalk



Tracing Wheel

3. Tracing Wheel:

This is a sharp toothed wheel used with dress maker's carbon to transfer pattern markings from pattern to cloth. Select a wheel with firm sharp points. Test it to make sure that it does not bend. While cutting garment of similar pattern, place one over the other and mark all the patterns at a time using tracing wheel. This can be used when bulk orders are taken.

6.5 CUTTING TOOLS:

These tools are helpful to cut out the pattern from paper, to cut the fabrics and thread. The cutting tool which are commonly used are.

1. Scissors
2. Shears
3. Pinking shears
4. Seam Ripper
5. Thread Clipper
6. Embroidery scissors

1. Scissors:

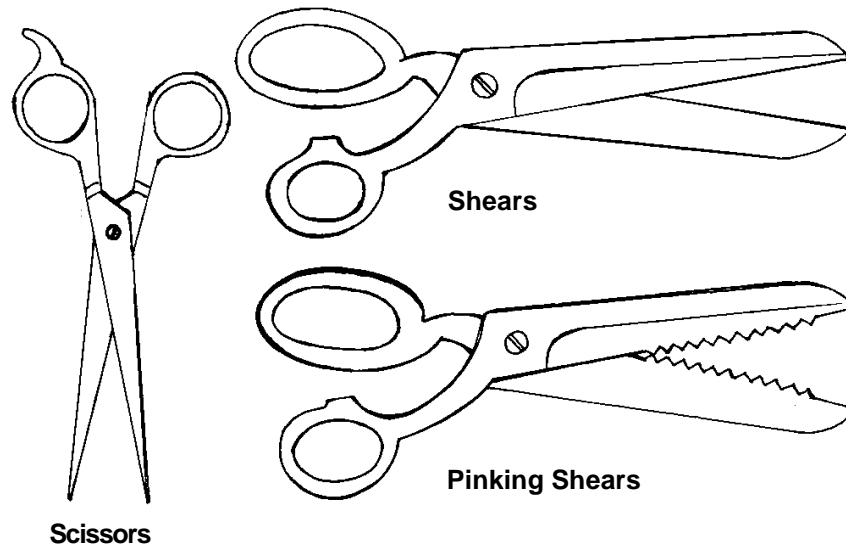
These have round handles and the blades are usually 6" or less than 6 inches. They are designed mainly for snipping threads and trimming seams. However, scissors with 5 inch blade can be used by beginners for cutting fabric as well.

2. Shears:

For cutting fabric, shears are more satisfactory than scissors. Shears differ from scissors, in which shears have one small ring handle for the thumb and a large ring handle for the second, third and fourth fingers. They also have longer blades (8" to 12"). It is better to select bent handled shears made of high quality steel and having blades joined with a bolt or screw rather than a rivet. Take good care of your shears and use them only for cutting fabric. Do not drop them or leave them out to rust or cut any other item.

3. Pinking Shears:

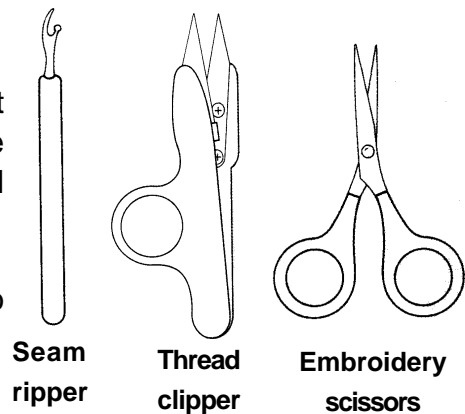
Select a light weight pinking shear. These are useful for finishing the edges of seams and other raw edges of fabric. They produce a notched (zigzag) cutting line which prevents raveling of woven fabrics. Pinking gives a neat appearance to the inside of garments.



4. Seam Ripper:

This is pen-shaped gadget with a small blade at one end for removing stitches. Use the blade to lift the thread away from the fabric before cutting. Be careful not to cut the fabric.

5. Thread Clipper: This has spring-action blades to clip thread ends or stitching.



6. Embroidery scissors:

These are small scissors, only 3" to 4" (7.5-10 cm) long, with very pointed blades. Use embroidery scissors for detail work such as cutting buttonholes and ripping stitches.

6.6 STITCHING TOOLS:

Stitching tools are those which are used for hand sewing and machine Sewing. The most commonly used sewing tools are.

1. Fabric
2. Needles
3. Thread
4. Thimble
5. Needle threader
6. Bodkin
7. Loop turner

1. Fabric:

While choosing Fabric, select a good quality fabric, which will be easy to stitch. Knowledge of various types of fabric, their cost & width of fabric, is necessary for good sewing.

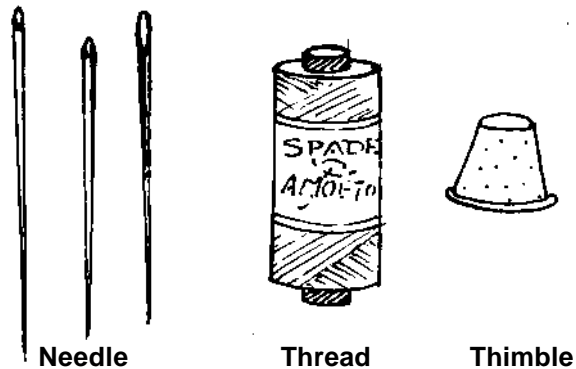
2. Needles:

The best quality needles are always essential for good sewing. Points must be sharp, smooth and well polished for quick sewing. Select needle according to type of stitches. Usually there are 3 types of needle. They are:

1. Long needles used for darning. Size no.6 or no.7.
2. Ordinary needle used for stitching normal stitches and for tacking. Size no.8 or no.9.
3. Embroidery Needle with a long and oval hole. The points may be sharp or blunt depending upon the stitch. Store the needles carefully in a rust proof paper to prevent from rust .

3. Thread:

For sewing, select thread from spool or reel of good quality from a reliable brand, matching to fabric in color and size. Various types of threads like cotton, silk, Terylene and nylon threads are available in the market.

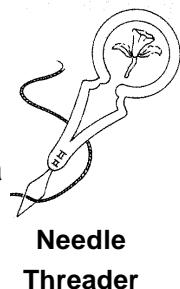


4. Thimble:

This is worn on the middle finger to protect the finger from pricking and to aid in doing hand sewing quickly. These are made out of plastic and metal. Select a non-rust, light weight thimble.

5. Needle threader:

This is a small device with a thin metal wire that helps you thread a needle



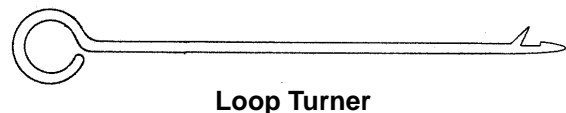
6. Bodkin:

This gadget resembles a large, blunt needle and is used to pull cord, elastic, tape, or ribbon through castings.



7. Loop turner:

This tool is a long metal rod with a hook at one end used to turn bias tubing right side out.



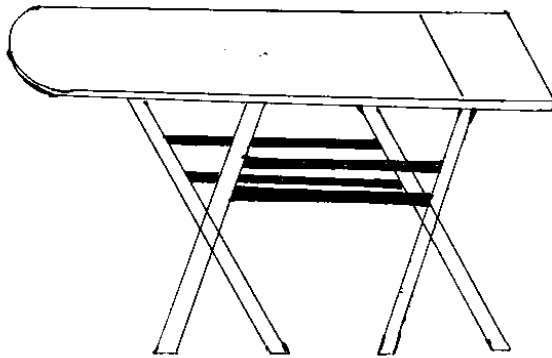
6.7 PRESSING TOOLS:

Pressing is essential for neat sewing and also for enhancing the appearance of finished garment. Some of the pressing tools are.

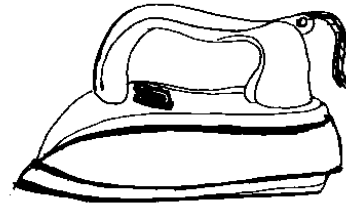
1. Iron box
2. Ironing board
3. Press cloth
4. Sleeve board
5. Seam roll

1. Iron box:

Iron box made of steel with Teflon coating along with adjustable regulators are usually best. Fabric should be free from creases while cutting. Pressing helps to remove creases, if present. Keep an automatic handy iron box for pressing fabric before cutting, during construction and after the garment is completed.



Ironing Board



Iron Box

2. Ironing board:

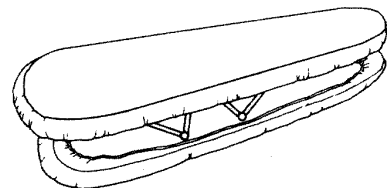
This should be of convenient height and should be well padded. One may use an ordinary table covered with sheet and blanket for this purpose. Ironing board are commercially available in various models.

3. Press Cloth:

Fabrics used as press cloth should be color fast and should be washed or boiled to remove starch.

4. Sleeve board:

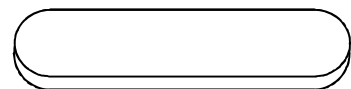
This item is a small ironing board about 20" (.5 m) long used to press narrow areas, such as sleeves, which cannot fit over the end of a regular ironing board.



Sleeve board

5. Seam roll:

This item is a long, firm tubular cushion used to press long seams and small curved areas. A seamline can be pressed without having the imprint of the seam allowances showing through on the right side of the fabric.



Seam roll

A bag with compartments for keeping the things is essential. Arrange the contents in such a way that there is a place for everything.

Questions:

PART – I

Objective questions:

- The important tool in taking body measurement.
(a) Scale (b) Measuring Tape (c) Tracing wheel (d) Thread
- While drawing patterns, the tool which helps to draw long lines is
(a) Metre scale (b) Needle (c) Scissor (d) All the above
- A length of measuring tape is.
(a) 40" (b) 120" (c) 90" (d) 60"
- The tool which helps to keep the fabric and pattern together in place without slipping while marking is
(a) Machine Needle (b) Bell Pin (c) Hand Needle (d) Pin Cushion
- To prevent the fingers from needle pricking we must use this tool.
(a) Needle (b) Scissor (c) Thimble (d) Thread
- The red colour pencil helps to mark.
(a) Stitching line (b) Cutting line (c) Darts (d) All the above
- Tracing wheel, if used along with this tool, makes the marking more prominent.
(a) Carbon Sheet (b) Tailors Chalk (c) Pins (d) Pin Cushion
- Shear is used for cutting.
(a) Paper (b) Thread (c) Both paper and Thread (d) Fabric alone
- Tools can be, stored in this.
(a) Pin cushion (b) Thimble (c) Storage Box (d) All the above
- The size of the drafting table must be.
(a) 3' x 2' (b) 1 meter x 2 metre (c) 5' x 3' (d) 30" x 40"

Answer in one or two words:

- Name the tools used for marking.
- What is pinking shear?
- What is Scissor?
- Write few words on Iron box.
- Write the uses of color pencil.

PART – II

Answer in a paragraph:

1. Explain the tools used for measuring.
2. Write a note on marking chalk and tracing wheel.
3. While choosing needle and thread how will you select it. Explain its types.
4. Write the difference between shear and scissor.
5. Explain on pressing tool.

PART – III

Answer in one page:

1. Write notes on drafting tool with diagram.
2. Explain on cutting tool with diagram.
3. Explain on stitching tool with diagram
4. Write notes on marking tools with diagram.
5. Write notes on measuring tools with diagram.

PART – IV

Answer in detail:

1. Explain in detail on different types of tools used for sewing with diagram.

Answers for objective questions:

1. (b) 2. (a) 3. (d) 4. (b) 5. (c) 6. (b) 7. (a) 8. (d) 9. (c) 10. (a)

7. BASIC STITCHES

7.1. INTRODUCTION:

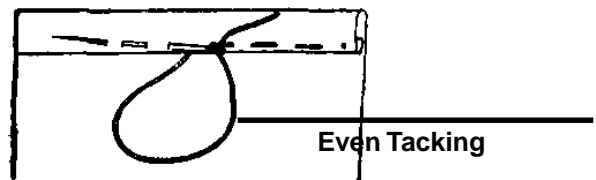
A knowledge of various types of stitches is necessary for the beginners before starting to sew on the original garment. It is better to practice these stitches on a small piece of fabric prior to stitching on the original garment. Keep the hands clean before stitching, so that the new clothes will not spoil. Sit in a comfortable position while sewing and make a note that the light falls from the left side of the person during day time and at night, the light falls from the top. Basic stitches are divided into constructive & decorative stitches. Constructive stitches are further divided into Temporary & permanent stitches.

7.2. TEMPORARY STITCHES:

Tacking or basting is a temporary stitch used for holding two or more layers of fabric together before a permanent stitch is made. Usually the stitch is worked from right to left, starting with a knot in a contrasting color thread, so that it can be easily removed. There are several types of tacking stitches, four of them are 1. Even tacking 2. Uneven tacking 3. Diagonal tacking 4. Tailor's tacking

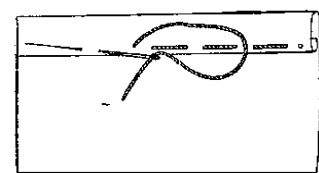
1. Even Tacking :

Use a thin needle and start the stitch with a knot. The stitches are of equal length about $\frac{1}{4}$ " on both sides of the material. Many number of longer stitches can be made in a short time. This is used for tacking seams & other parts of the garment that must be held securely.



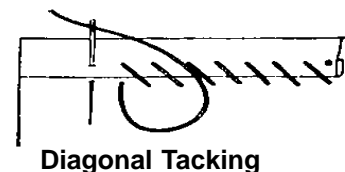
2. Uneven Tacking:

In this, the stitches on the upper side is $\frac{1}{2}$ " or at least twice that on the under side ($\frac{1}{4}$ "). This stitches can be used for longer folds & seams. This is comparatively stronger than even tacking. Use this type of tacking as a guideline or where there is little or no strain.



3. Diagonal Tacking:

While attaching two or more layer of fabrics this type of stitch is made about $\frac{1}{4}$ " apart before making machine stitch. Work stitches through the material at right angles to the fabric edge so that a diagonal or slanting stitch is made on the upper side and a vertical stitch is made on the under side.

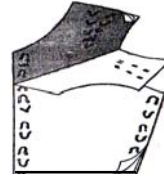


4. Tailor's Tacking:

Start tacking using double thread of contrasting color, so that they can be easily seen. Tack through double layer of fabric along the seam lines using even stitches of 1/2" length apart, leave them as loop without pulling it tight. After completing, raise the upper



Tailor Tacking



Tailor Tacking over pattern

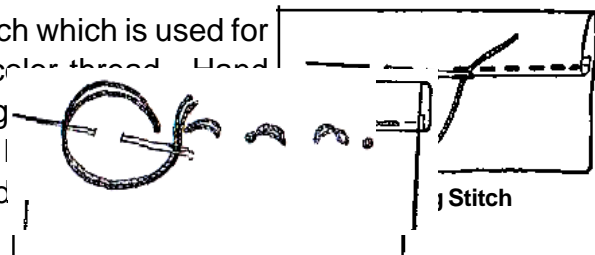
layer of fabric slightly and clip the thread between the layers. So that the thread tuft, will remain on both the layers of fabric and remain as a guide line. This is especially used for marking details between patterns such as dart markings and pleat markings.

7.3. PERMANENT STITCHES:

These stitches are made permanent on the fabric and need not be removed later like Temporary stitches. Some of permanent stitches are 1. Running stitch 2. Back stitch 3. Run and back stitch 4. Hemming stitch 5. Whipping stitch.

1. Running Stitch:

This is the simplest form of hand stitch which is used for permanent sewing stitched using same color thread. Hand made seams, darning, gathering and finishing with this stitch. It is similar to even basting, much smaller, straight, fine and evenly spaced easy and can be worked fast.



2. Back stitch:

The back stitch is strong and sometimes substituted for machine stitch. It takes much time. Care must be taken while stitching, since stitching is done on the right side of the fabric. On the wrong side of the fabric the stitch is similar to stem stitch. Stitches should be about 1/8" long on the right side. To make the back stitch, push needle up through the material at a point on the stitching line about 1/8" from its right end. Take a stitch inserting the needle 1/8" back of the thread at the beginning of the stitching line and bringing it out an equal distance in the front of the thread. Repeat this way, keeping stitches uniform in size and fairly firm.

Back Stitch

3. Run and back or Combination stitch:

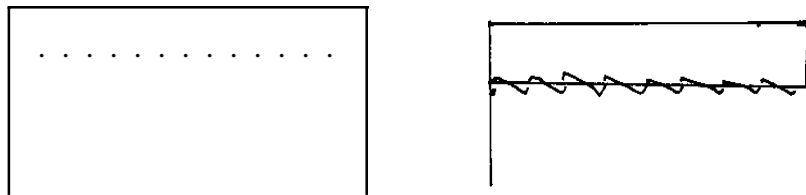
This stitch is similar to back stitch. This is used whose back stitch is not compulsory. A back stitch and

Combination Stitch

two running stitches are combined and used for working plain seam done by hand. This stitch is faster than back stitch and stronger than the running stitch.

4. Hemming stitch:

This is used to finish the raw edge of the garment usually referred as the hem. Hemming must be fine, evenly spaced and must be inconspicuous from the right side of the garment. Start the hem with a tiny knot and finish with the same. Hemming must be as invisible as possible on the right side. Of the garment do slanting stitch on wrong side, close enough to hold the hem securely, picking one or two yarns of the fabric. Usually this stitch is seen in all types of garments. Improperly hemmed garment may show problem as:



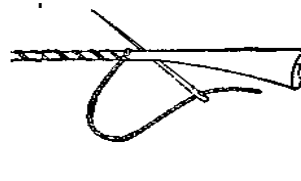
Hemming stitch

1. Stitches straightly formed
2. Puckered hem
3. Stitches not evenly spaced
4. Knot prominently shown on right side
5. Attached thread shown on right side

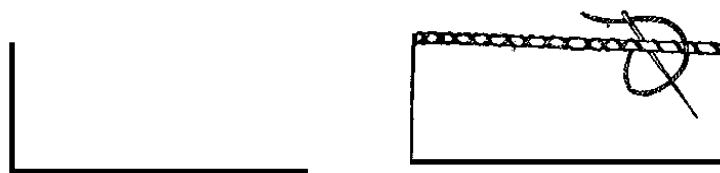
This stitch is used for finishing sleeve edges, handkerchief, skirt, hemline, neckline edges, piping, pillow covers and other edge:

5. Whipping stitch:

This stitch is used to finish raw edges wear. The other name for this stitch is over slanting stitches taking stitches over the rolled fabric edge with needle in a straight position.



leaves, collar of kid's . Whipping produces



Whipping Stitch

Do stitching from right hand side of the fabric till the left end. After completing, start from the left end, inserting the needle on the same point where the stitch is already formed. Continue the same way from the left to right end. The finished fabric gives continuous 'X' shape stitches. On both the sides stitches appear similar in shape.

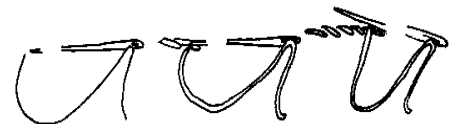
7.4. DECORATIVE STITCHES:

Embroidery is one of the decorative stitches. Embroidery is the art of working ornamental designs on cloth, leathers, etc., with decorative stitches. There are different kinds of embroidery which are known by special names such as cut work, drawn thread

work, appliqué, smocking etc. For successful embroidery work, it is essential to learn the basic stitches, acquire the ability to choose the right type of stitches, designs, color combinations suited to the type of fabric, the purpose and use the garment or article on which the embroidery is to be made.

1. Stem Stitch:

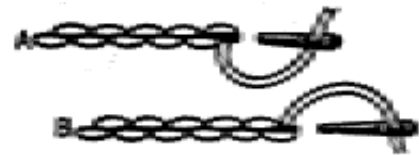
This is a line stitch used for outlining designs, especially stems and leaves. It can also be used for filling small designs by working several lines side by side. Work should be done from the bottom upwards each time taking a stitch almost vertically down, but with a slight slant. While working the stitches thread should be held down with your thumb away from the stitching line.



Stem Stitch

2. Cable Stitch:

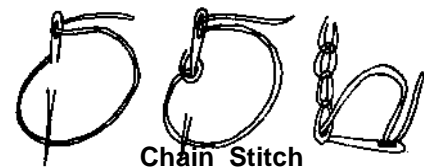
This stitch is worked from left to right. Bring the thread through on the line of the design. Insert the needle a little to the line and bring the needle out to the left midway between the length of the stitch, with the thread below the needle. Work the next stitch in the same way but with the thread above the needle. Continue in this way, alternating the position of the thread. This stitch may also be worked on evenweave fabric.



Cable Stitch

3. Chain Stitch:

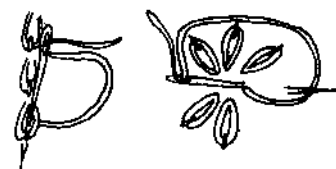
This is done side by side to fill large shapes or can be used to work single lines. Work the stitches towards you starting from the top of the line. Bring the thread out to the right side of fabric. Insert needle in fabric at the same point, holding the thread down with your left thumb. Bring the needle point out a short distance ahead and pull it through, keeping the working thread under the needle. The result is a loop. In starting the next stitch remember to insert the needle just inside the loop.



Chain Stitch

4. Lazy daisy stitch:

This is an elongated chain stitch used to work petals of small flowers and small leaves. Bring the thread out on the right side near the base of one petal. Take a long stitch of the length of the petal and pull the needle through fabric, looping the threads under the needle. To hold the end of the loop in place insert the needle down over the thread which forms the loop. Bring out the needle again near the base of the next petal and repeat the same procedure as given above.



Lazy Daisy Stitch

5. Magic chain stitch:

This stitch is worked in the same way as chain stitch, but having two contrasting threads in the needle at the same time. When making the loops, pass one color under the needle point and let the other color lie on top. Pull through both threads. Work the next loop with the other color under the needle.



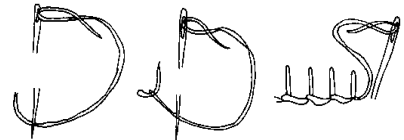
6. Straight stitch: This is a single spaced stitches worked either in a regular or irregular manner. Sometimes the stitches are of varying size. The stitches should be neither too loose nor too long. This stitch may also be worked on even weave fabric. This is also called as single satin stitch.



Straight Stitch

7. Blanket stitch:

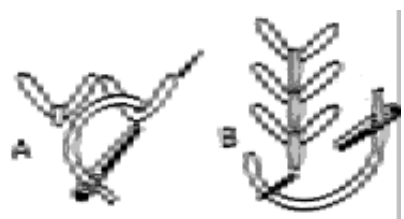
This stitch is used as an edging for blanket and other articles or as part of a design for which the blanket stitch makes the border. It is also used in cut work and applique work. It is worked between a pair of lines (usually parallel). The work should be done from left to right, stitching towards you. Bring thread out on the lower line, insert needle in position on upper line and take a downward stitch with the thread under the needle point. Draw out the thread. Stitches may be of the same size at regular distances apart or grouped and spaced according to the effect desired. To make scalloped edge using blanket stitches, outline two rows of scallops with running stitch and work blanket stitches between the two rows. Trim fabric away close to scallops after the work is completed.



Blanket Stitch

8. Fly stitch:

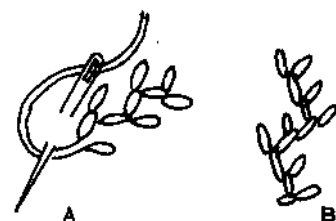
Bring the thread through at the top left, hold it down with the left thumb, insert the needle to the right on the same level, a little distance from where the thread first emerged and take a small stitch downwards to the centre with the thread below the needle. Pull through and insert the needle again below the stitch at the centre and bring it through in position for the next stitch. This stitch may be worked in single or in horizontal rows or vertically in two rows.



Fly Stitch

9. Feather stitch:

The working of this stitch is similar to that of the blanket stitch, but the stitches slant towards a centre line from either side. First mark a line lightly to indicate the centre line. Working from top to bottom, bring needle out at the beginning of the marked line. Hold the thread down along the centre line. Starting from the right of the line take a stitch with the needle slanting downwards, and bring it out on or near the

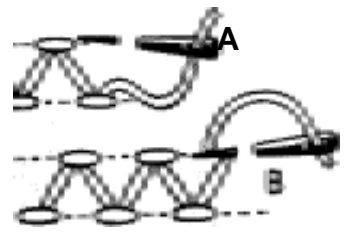


Feather Stitch

centre line with a thread held under. Pull the needle through, and take the next stitch from the left of the line with the needle slanting down and to the right. Continue working stitches alternately on the right and left, keeping them evenly spaced and of equal length and slant. Make double or triple feather stitch by making two or three slanting stitches on one side and then a similar number on the other side.

10. Chevron stitch:

This stitch is worked between double line. Bring the thread through on the lower line at the left side, insert the needle a little to the right on the same line and take a small stitch to the left emerging half-way between the stitch being made. Next, insert the needle on the upper line a little to the right and take a small stitch to the left. Insert the needle again on the same line a little to the right and take a small stitch to the left, emerging at centre as at B. Work in this way alternately on the upper and lower lines. This stitch may also be worked on evenweave fabric.



Chevron

11. Seed stitch:

This simple filling stitch is composed of small straight stitches of equal length placed at random over the surface. This stitch is used to fill small spaces.



Seed Stitch

12. Couching:

Lay a thread along the line of the design and with another thread, tie it down at even intervals with a small stitch into the fabric. The tying stitch can be of contrasting color to the laid thread if desired.



Couching

13. Fish bone stitch:

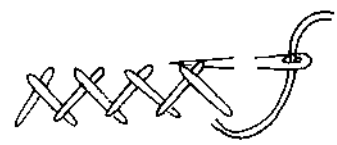
This stitch is useful for filling small shapes. Bring the thread through A and mark a small straight stitch along the centre line of the shape. Bring the thread through again at B and make a sloping stitch across the central line at the base of first stitch. Bring the thread through at C and make a similar sloping stitch to overlap the previous stitch. Continue working alternately on each side until the shape is filled.



Fishbone Stitch

14. Herringbone stitch:

This is used as a decorative stitch as well as for finishing hems and raw edges of seams. Stitches are worked from left to right along two parallel lines. Bring out the thread at the bottom left hand corner of the work. Insert the needle on the top line at a point farther to the right and take a short stitch through fabric from right to left so as to get a slanting stitch. Now take a short stitch through fabric from right to left on lower line to get another slanting stitch crossing the first one at point little

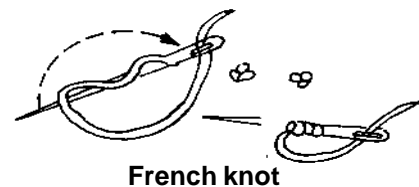


Herringbone Stitch

below the top line. Take care to make stitches of even length at regular distances apart. On the wrong side two rows of running stitches are seen. When worked closely this stitch can be used to do shadow work.

15. French Knot:

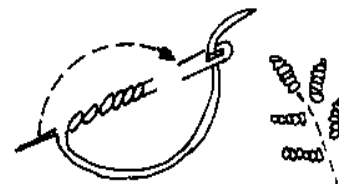
This resembles a knot and is usually applied to the centre of a flower. Bring out the thread to the right side at the point where the knot is to be worked. Hold the thread tight with left thumb and wind three to four times around the needle. Now holding the thread firm, insert needle in fabric close to where it first emerged. Pull thread to wrong side and bring out the needle to the point where the next knot is to be worked.



French knot

16. Bullion stitch:

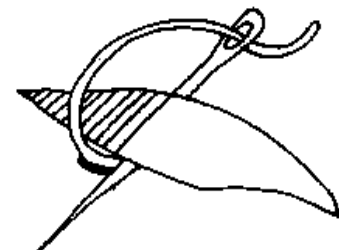
Bring the thread out on the surface of the cloth and insert the needle a short distance away from that point according to the length of stitch required. Bring the needle up through the first point and wind the thread round the needle for a distance equal to the length of the stitch. Hold left thumb on the coiled thread and pull out the needle through it. Now insert the needle at the end of the knot. This is mainly used for embroidering roses.



Bullion knot

17. Satin stitch:

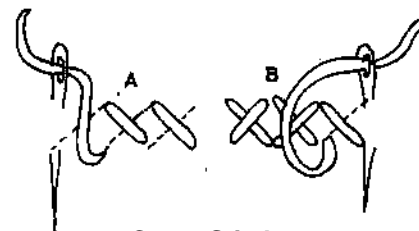
This is a filling stitch used to cover regular or irregular shaped spaces. Bring the needle out at the starting point on the right side and take a stitch carrying the thread across the design and bringing the needle back very close to the starting point. Continue in this manner keeping the stitches even and very close together. When a raised effect is desired pad the space to be covered with small running stitches worked perpendicular to the direction in which the satin stitches are to be applied.



Satin Stitch

18. Cross Stitch:

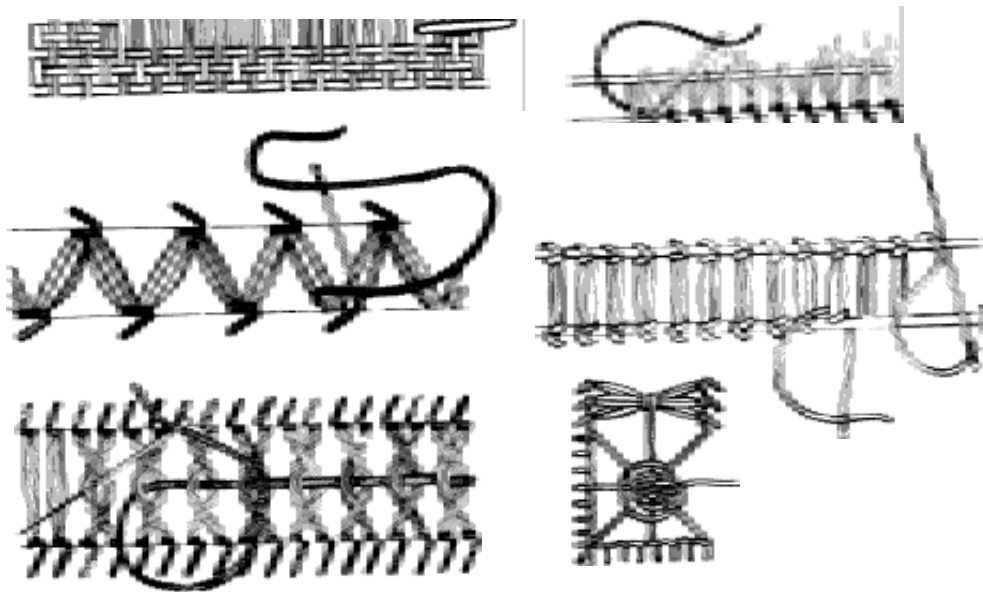
This stitch is also called as counted thread embroidery work because this embroidery is done over a counted thread fabric (fabric made out of basket weave, also called as matty cloth). Make a row of slanting stitch through the holes seen in the fabric. Complete this way the whole design and work on the opposite direction by stitching over the already made stitch. Various geometrical designs can be done through this embroidery. Six strand of thread should be used for this stitch. Satin stitch can also be used for this.



Cross Stitch

19. Hem stitching:

This is a simple stitch used in drawn thread work. It is worked from left to right on the wrong side of the fabric usually above a hem. First, draw out the required number of threads above the hem marking and tack the hem close to the first pulled-out thread. Bring needle out through the hem at the left edge. Then pick up the desired number of threads on needle, passing needle from right to left under the threads and bringing it up. Insert the needle under the hem just to the right of the threads you have encircled and bring it up. Pull the sewing thread tight around the drawn threads. Again pick up another group of threads and continue stitching until the row of hem stitching is completed. This is a single hem



Hem Stitch and its variations

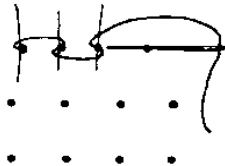
stitching. To do double hem stitching turn the work around and repeat hem stitching along the other edge, grouping together the same threads as before. Variations of the hem stitch can be made by grouping threads in different ways.

20. Smocking:

This is an attractive method of distributing fullness at necklines, yoke lines and sleeves of children's dresses. The amount of material required for smocking is two to three times the width of the finished article. To do smocking, the first step is to mark on the fabric several rows of evenly spaced dots about $\frac{1}{4}$ ". The dots in the different rows should come directly under each other. This can be done by the use of transfers with dots available in shops or by using a home-made cardboard gauge pricked with small holes at the intervals required. The card can be moved along on the fabric until all the dots are marked by inserting a pencil point through the holes.

To gather or pleat the material, work basting stitches picking up a few threads of the fabrics under each dot. On finishing the basting of each row cut the thread, leaving a loose end. On dotted or checked materials, this basting stitch can be worked without

marking dots. The threads are pulled up to gather the material into evenly spaced pleats. The decorative smocking stitches are then worked on the right side of the fabric on top of



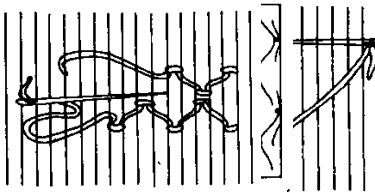
Smocking and its variations

the pleats. Gathering threads are removed after smocking is done. The commonly used smocking stitches are : Out-line stitch, cable stitch, wave stitch, diamond or chevron stitch and honey-comb stitch.

7.5 TRADITIONAL EMBROIDERY:

Indians are world famous for their magnificent workmanship and produce the most beautiful handspun and handwoven textiles, yet preserved and exhibited in many of the known Indian as well as Western museums. Many visitors, poets, travellers, tourists appreciated the textile and embroidery of India.

It is observed from the ancient time, through bodily decoration and ornamenting and it was one of the sources of inspiration for art and animal kingdom available geographically.



Decorate himself with embroidered 'Nature' motifs of floral, bird

Each State in the country is unique by itself as far as textiles and its variegated designs are concerned. The traditional embroidery of each state has the influence of not only the foreign countries like Persia, China, Iran etc., but also the neighbouring state too. Though, this being the fact, the Statewise embroideries are unique and not a duplication of others. This is mainly because of the difference in the mode of people, the availability of indigenously manufactured textile material, ground fabric, influence of ecology, custom, festival, deity, occupation, skill, likes and flare for various motifs, technique of stitchery, threads and so on. However, it can be said that the local people are totally responsible and are the pioneers of their unique embroidery.

Traditional embroideries of some of the States are Kasuti of Karnataka Kantha of Bengal, Chikankari of Lucknow, Kashida of Kashmir, Chamba rumal of Himachal Pradesh, Pulkari of Punjab. The detailed explanation of the Kasuti, Kantha and Chikankarai are given below.

1. Kasuti of Karnataka:

Kasuti is a world famous embroidery of Karnataka. 'Kai' means hand, and 'suti' means cotton thread. Hence Kasuti means hand work made of cotton thread.

History:

The women expressed their artistic urge by embroidering delicate piece of colourful art, the Kasuti. This art was passed from person to person and generation to generation. During leisure time the grandmothers used to teach Kasuti to their grandchildren, daughter-in-law and neighbours.

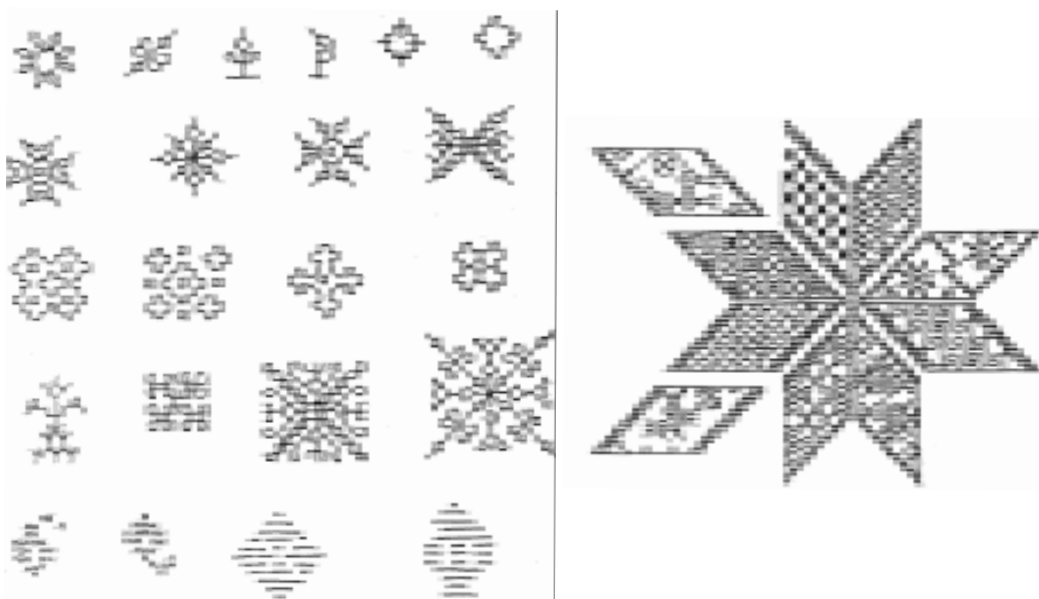
In olden days it was a custom that the bride had to possess a black silk sari called 'chandra kali sari' with Kasuti work on it. As a matter of fact traditionally this embroidery is done on saris and blouses. The blouse (choli) on which Kasuti with match color motifs and borders worn with this sari is known as "Khan". The border of sari will be with Negi and Murgi stitches.

Thread:

Silk thread is used in olden days. Now instead of silk yarns, mercerised cotton threads with guaranteed color fastness are used. Two to four strands are used for fine and coarse work respectively. This may vary according to the type of material motif and stitch employed.

Motifs:

The motifs used in Kasuti are taken from mythological stories, architectural motifs like gopuras, shiva linga, nandi palanquines etc. are used. Apart from these various types



of creepers, foliage, flowers, animals and birds are used.

Stitches:

Stitches are always worked in vertical, horizontal and diagonal manner. The common four types of stitches used in Kasuti are Gavanti, murgi, negi and menthi.

Speciality of Kasuti stitches:

1. The designs are never traced.
2. Embroidery starts without knitting threads, but with a tiny back stitch.

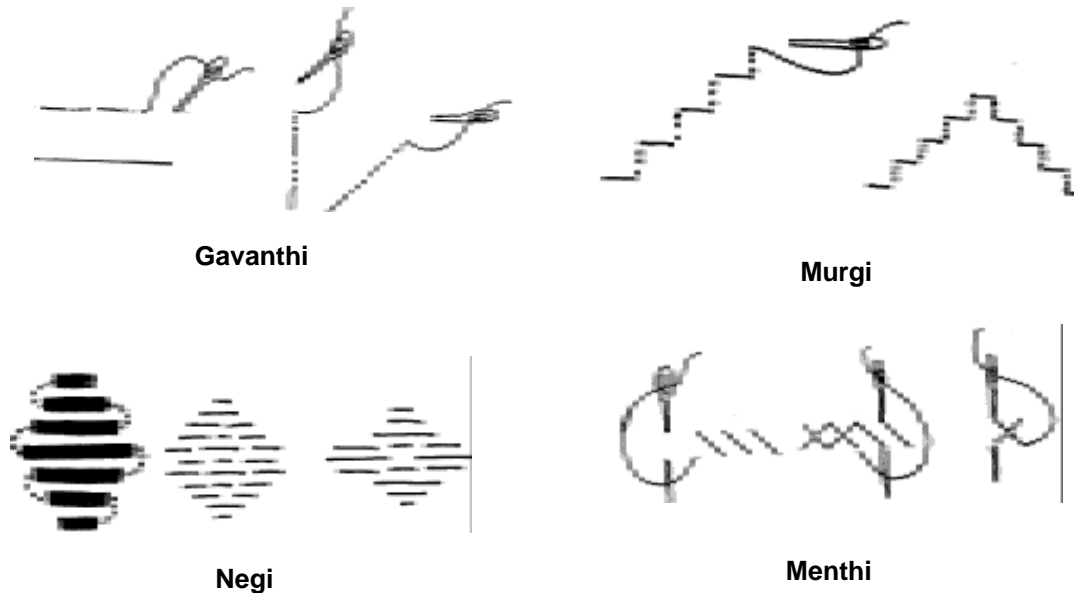
Types of stitches:

a. Gavanthi:

This is a simple more common stitch derived from the Kannada word—Gantu means 'knot'. It is a double running stitch, in which the first running stitch is filled by the second one worked exactly opposite to the first one. Gavanthi may be worked in horizontal, vertical or diagonal directions.

b. Murgi:

This is a zigzag running stitch which appears like staircase. It is same as Gavanti stitch but works in a stepwise manner. The work in both Gavanti and Murgi stitches is neat and tidy, where the design appears same on right and wrong side of the material. However, the stitches should be of uniform size. Designs are produced by grouping the tiny designs on regular intervals and sequences.



c. Negi:

This is another stitch in Kasuti. Negi in Kannada means 'to weave' i.e. Negi design has an overall effect of a woven design. Negi is nothing but ordinary running or darning stitch. It is worked in long and short straight lines or floats and therefore the design does not appear identical on either sides of the cloth.

d. Menthi:

This stitch is an ordinary cross stitch. Menthi in Kannada means 'Fenugreek Seed'. This cross stitch usually appears heavy as it is used for filling purpose. This stitch requires more length of thread than the other three stitches. Similar to Negi, even this stitch does not give same appearance on either sides of the cloth. It can be seen in Ikat sarees.

2. Chikankari of Lucknow:

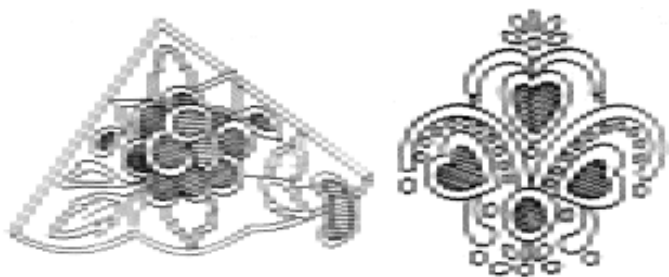
Chikan work is otherwise called as 'shadow work', white work or white embroidery. The charm of this type of embroidery is very attractive and delicate style enhanced through the use of single color with simplicity miniature pattern and unbelievable evenness. This embroidery is basically done with white thread on a muslin background. Hence the name 'white embroidery'. On narrow strips of cloth, this embroidery gives fine and delicate lacy effect.

Material:

Chikankari though done on the white muslin background now is done on fine cotton material like voile, two x two, cambray, mulmul, organdie, chiffon, georgettes, nets and other similar sheer fabrics.

Motifs:

The motifs used are mostly flowers, foliage, creepers and birds.



Chikankari motifs

Stitches:

Stitches like satin, back, stem, buttonhole and herringbone stitches are used.

a. Bukhia:

'Bukhia' is nothing but satin stitch, which is done on the wrong side of the material and the design is delicately outlined with tiny running stitches from the right side. This sort of embroidery gives an opaque effect. The effect of fine muslin background produces a shadow appearance.

b. Simplified Bukhia:

Herringbone is used in the place of sation. The stitches that appear on the back of the cloth is of herringbone style. It gives a shadow effect on the right side. This is easier and simpler than Bukhia.

c. Murri:

'Murri' is a knotted style of chikankari, worked in the centre of flowers, giving an embossed effect. It is nothing but French knot, which resemble the rice grain in shape.

d. Tepchi:

Tepchi is a simple running (darning) stitch, used to fill the straight or curved lines in the floral design. It is mainly used to give the outlines for the design. It is a flat style.

e. Button hole stitch:

This is used to cover small floral motifs. Closed blanket stitch is usually used for this.

f. Khatawa:

This is used in the place of Bukhia which is a minute applique work.

g. Jali Work:

'Jali work' gives an effect of open mesh or net like appearance. Sometimes it looks like drawn thread work or lace like. This effect is produced by pushing apart the warp and weft yarns with the help of needle, forming into tiny holes and are later tightened to give the cloth firmness and appearance of a net.

Uses of chikan work:

Chikan work was done on sari borders, pallu with tiny buttas in the body of the sari, blouses, kurtas, cuffs, collars, jubbas, handkerchiefs, caps, table mats, cushions, curtains and other household linen.

3. The Kantha of Bengal:

The traditional folk art of Bengal is famous as Kantha, which means 'Patched Cloth' and 'quilting'. The Dacca muslin saris of gray, black or white coloured are used for thin embroidering. The old discarded cotton saris or dhotis are piled up on the top of each other quilted and embroidered.

The size of thickness of Kantha varied according to its type. The layers of pieces are sewn together by simple darning stitch in white thread, drawn from the old sari borders. The design is first traced and the filling is done by coloured thread, taken from the coloured borders of saris. Lotus is the most common and important motif widely used in Kantha.

Method of stitching:

Usually satin with tacking is used for this kind of embroidery. Tacking is done to attach layers of fabric together. Work tacking stitch from centre to edge or vice versa.

Motif:

100 petal lotus is the most common motifs used for kantha. Other than this scenes from day to day life, folk stories, mythological stories are used.

Speciality:

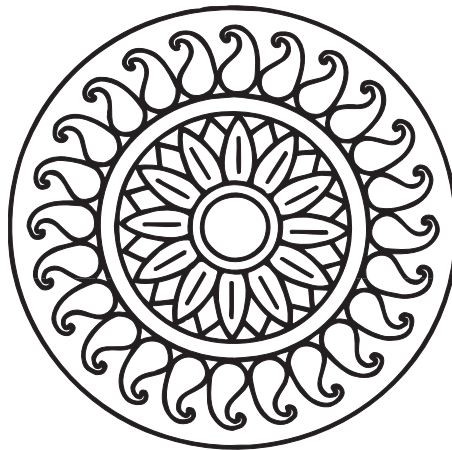
In original kantha both the sides will be identical.

Items with Kantha embroidery:

There are different kinds of kanthas named according to its utility. There are seven types of kanthas used as wrappers in winter, for book, valuables, mirrors, combs, wallets, pillows and bedspreads.

a. Bayton:

Bayton, a three feet square piece serves as a wrap for books and other similar valuables. It has a central motif, usually the lotus with hundred petals called 'Satadala



100 Petal Lotus

Padma'. The core has Satadala Padma with two or three borders on the sides. The other motifs commonly seen are water pots, conch shells, kalkas, trees, foliage, flowers, birds, elephants, chariot, human figures etc.

b. Arshilata:

Arshilata is used as cover or wrap for mirror, comb and other such toilet articles. It is a narrow rectangular piece of 6" x 12" length. It has a wide border and the central motif is taken from the scenes of Krishna leela. The lotus, trees, creepers, spirals, inverted triangles, zig-zag lines, scrolls are also some of the commonly used motifs.

c. Durjani:

It is a square piece Kantha of 16" x 16" covers the wallet, has a central lotus motif with an elaborated border. The three corners of this piece are drawn together inward to make the tips to touch at the centre and are sewn together like an envelop. It will have

another flap to which a string, tussle or a decorated thread is either stitched or mechanically fixed, which can be wound and tied up when rolled. The other motifs used are various types of foliage, snakes and other objects from the natural surroundings.

d. Lep Kantha:

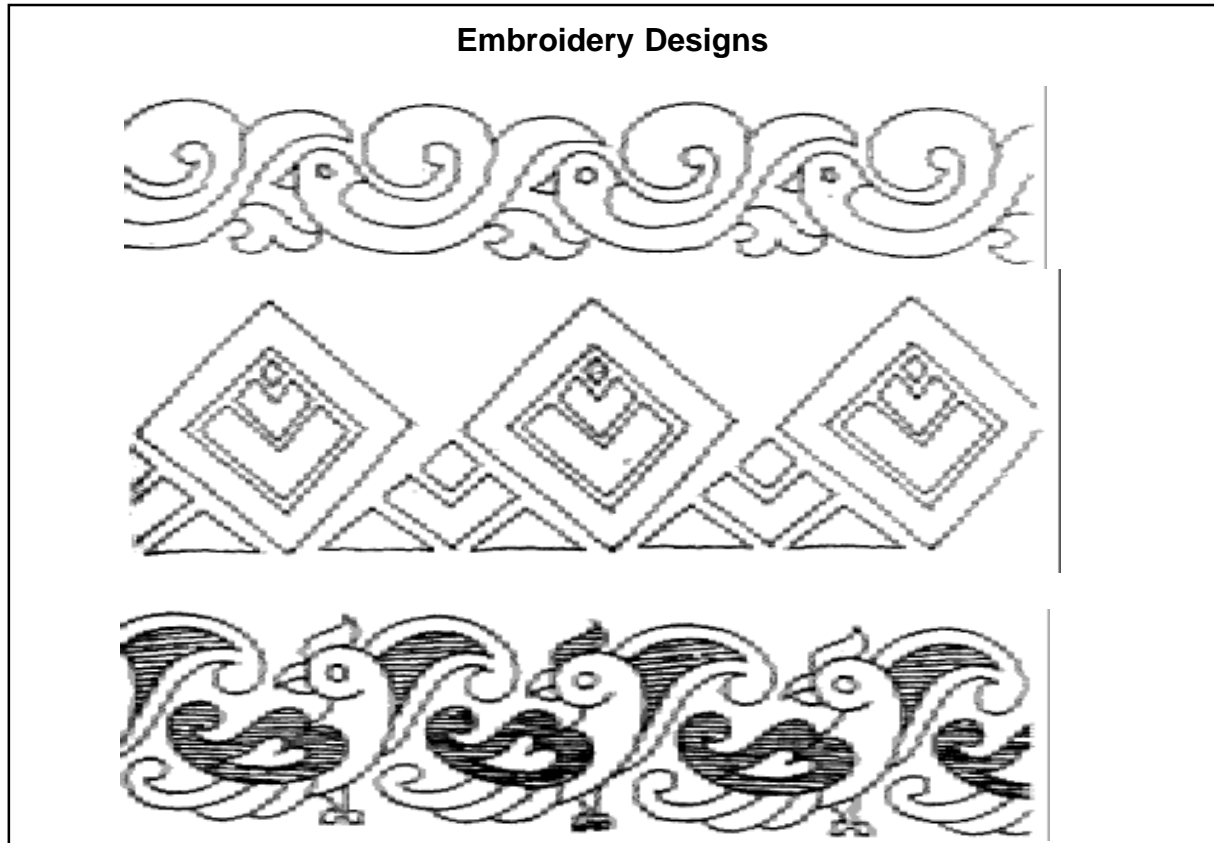
It is relatively a thick quilted wrap of 6½ feet x 4½ feet by more number of sari layers, placed on top of each other to provide warmth during winter season. Simple geometrical designs are worked with running stitch using coloured threads. The entire lep piece is been given a way rippled appearance by working simple embroideries.

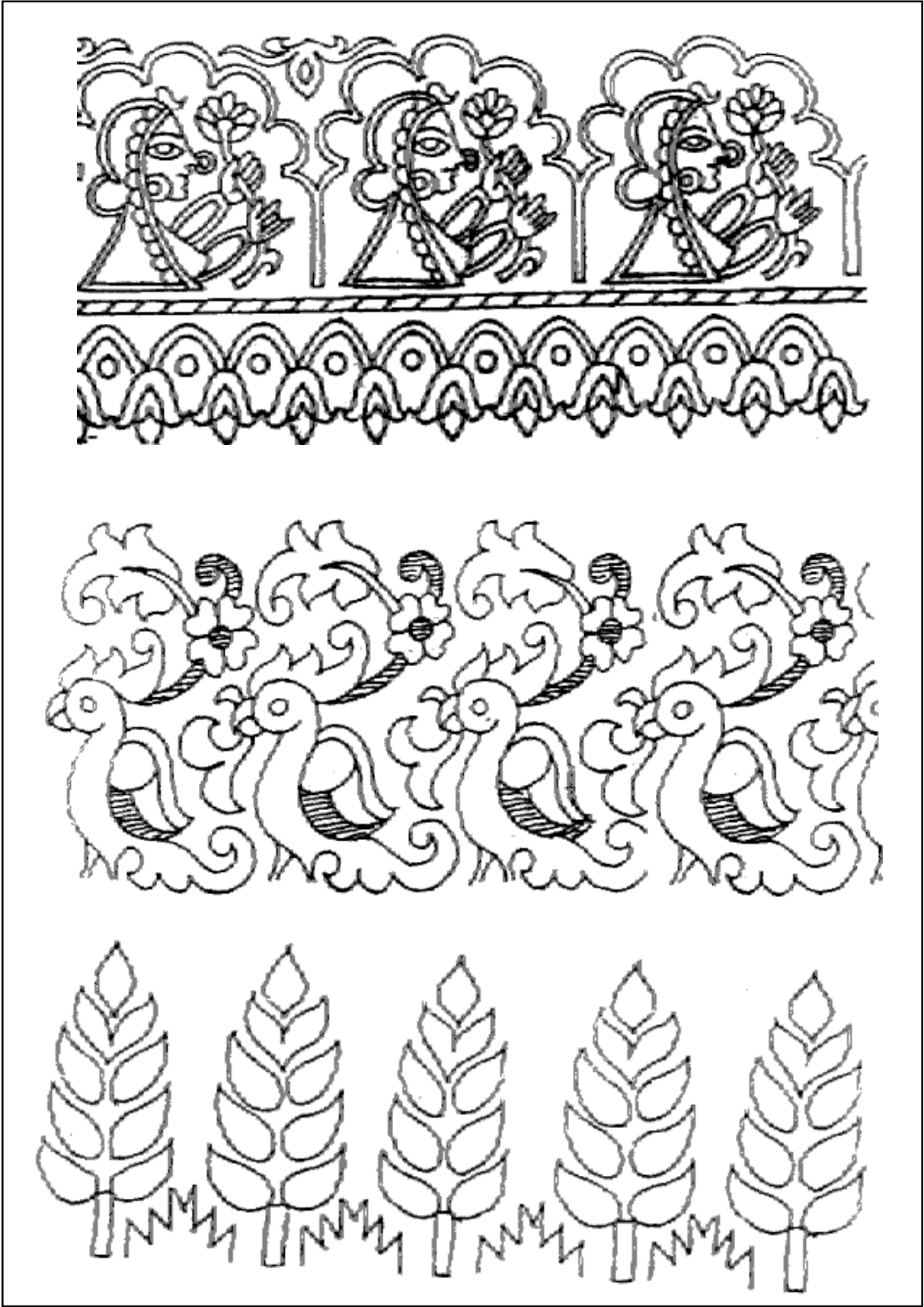
e. Oar Kantha:

Oar (oosar) kantha serves as a pillow cover. It is a rectangular piece whose size is about 2' by 1½'. Usually simple designs like trees, foliage creepers, birds or a liner design with longitudinal border constitutes the ground base and decorative border is stitched around its four sides.

f. Rumal:

Rumal is nothing but a hand kerchief and is the smallest among all the kanthas. A square piece having a size about one square foot. Lotus is the core and other motifs embroidered around it. Sometimes plant and animal motifs are also embroidered but invariably has a well decorated border.





Questions:

PART – I

Objective questions:

- Which is a temporary stitch?
(a) Back stitch (b) Even tacking (c) Herringbone (d) Whipping stitch
- Which stitch will be suitable for darning?
(a) Back stitch (b) Loop stitch (c) Chain stitch (d) Running stitch
- Which stitch is equivalent to machine stitch.
(a) Loop stitch (b) Feather stitch (c) Back stitch (d) Tailor taking
- This is a permanent stitch.
(a) Back stitch (b) Satin stitch (c) Chain stitch (d) Herringbone stitch
- This is a flat filling stitch used to cover regular or irregular shaped spaces.
(a) Satin stitch (b) Lazy daisy stitch (c) Cross stitch (d) Blanket stitch
- This is a simple filling stitch
(a) Couching (b) Chevron (c) Seed stitch (d) Stem stitch
- This stitch is done by laying a thread along the line of the design.
(a) Fish bone (b) Couching (c) Herring bone (d) Hem stitch
- Which embroidery is called white embroidery
(a) Kasuti (b) Kantha (c) Chikan work (d) Kashida
- How is Karnataka's embroidery called?
(a) Kasuti (b) Murgi (c) Kantha (d) Kashida
- This running stitch resembles staircase.
(a) Gavanthi (b) Negi (c) Menthi (d) Murgi

Answer in one or two words:

- Name the types of tacking.
- Name any two permanent stitches.
- What are the stitches used in combination stitch?
- Name any two decorative stitches.
- Which is a drawn thread work?
- Classify basic stitches.
- Give the uses of French Knot.
- Give the other name for Chikan work.
- Which stitch is worked between double line?
- Which stitch is used to fill small spaces?
- Which stitch is otherwise called single satin stitch?
- Give the meaning of Kasuti.

13. What is chandrakali?
14. What is magic chain stitch?
15. Which stitch is used in bridal saree of Karnataka?
16. What is Bukhia?
17. What is negi?
18. What is menthi?

PART – II

Answer in a paragraph:

1. Write about Tailor's tacking with diagram.
2. Give the problems of improperly made Hemming.
3. Write about any one permanent stitch.
4. Write the uses of whipping stitch.
5. What is rumal?

PART – III

Answer in a page:

1. Explain about temporary stitches.
2. Write about Hem stitch.
3. Write about any 4 permanent stitches.
4. Write about any four decorative stitches.
5. Brief out on kasuti.

PART – IV

Answer in a page:

1. Brief out on decorative stitches. (Any ten)
2. Explain in detail in Chikankari of Lucknow.
3. Explain in detail on Kantha of Bengal.

Answers for objective type questions:

1. (b) 2. (d) 3. (c) 4. (a) 5. (a) 6. (c) 7. (b) 8. (c) 9. (a) 10. (d)

8. SEWING MACHINE

8.1 INTRODUCTION:

Sewing Machine is a useful device when taken proper care it can be used for many years. It is an expensive device, hence with regular use it should be maintained properly. Now-a-day, Sewing Machine is considered as one of the useful devices in every home.

Sewing machines are available commercially in different models, such as domestic model, Tailor model, industrial model, portable and electronic model. These may be operated by hand, treadle or electric motor. When choosing a sewing machine, select a model from a well known, reliable manufacturer. Automatic Sewing Machines that make zig zag stitch in addition to the usual straight stitch are also being manufactured and sold now.

8.2 INVENTION OF SEWING MACHINE:

The Invention of Sewing machine was the combined ideas and work of many inventors. In 1790, the first patent was given to Thomas Saint, an Englishman, for a machine that sewed on leather.

In 1832, Walter Hunt developed a machine in his shop in New York City. He incorporated two new ideas. These were the eye-pointed needle and a locking stitch. Many other people contributed to the development of the sewing machine. In 1845, Elias Howe, an apprentice watchmaker from Boston, made a sewing machine that had a curved eye-pointed needle and an underthread shuttle. This machine could sew 250 stitches per minute. That was five times as fast as the fastest hand sewer. In 1846, Isacc M. Singer, an American, produced a machine that had a straight needle and could sew continuously.

8.3. SELECTION OF A SEWING MACHINE:

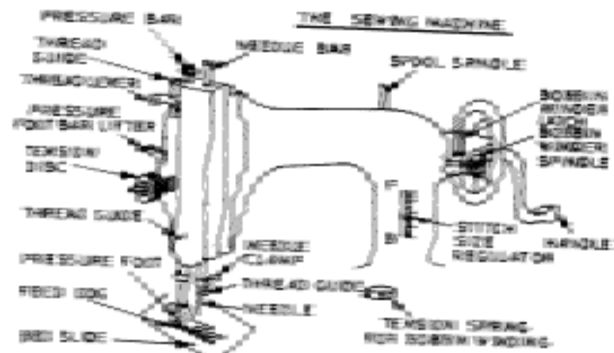
1. Whether attachments and repair tools are supplied with the machine.
2. Whether spare parts and repair service are readily available.
3. Whether a guarantee is offered on the machine.
4. Whether the wooden supports are well constructed and hinges, drawers, locking mechanism etc., are sturdy.
5. Whether the machine does reverse stitching and whether there are adjustable lock positions for forward and reverse stitching.
6. Whether the machine is easy to start and stop.
7. Whether it runs smoothly at all speeds without making holes and vibration.

8. Whether the needle and bobbin are easy to thread and bobbin winder easy to use. Also make sure that the bobbin gets wound evenly and the winding stops automatically before it is too full.
9. Whether two pieces of fabric stitched together move between the foot and feed dog evenly at the same rate.
10. Whether the cover plates are easily removable and all parts readily accessible for oiling and cleaning.

Make sure that you are supplied with an illustrated instruction manual giving directions for operation and care of the machine.

8.4. PARTS OF SEWING MACHINE:

The basic parts of a sewing machine are listed below.



1. Spool Pin:

Holds the spool of thread in the pin on the top of the machine.

2. Thread guides:

Hold the thread in position from the spool to the needle.

3. Tension disc:

This is a simple mechanism where two concave discs are put together, with the convex sides facing each other. The thread passes between the two discs. The tension of the thread is adjusted by a spring and a nut which increases or decreases the pressure on the disc.

4. Take-up lever:

At the outside end of this lever, there is a small hole through which the thread passes. The lever moves down to loosen the top thread while the stitch is being formed, then it moves up and pulls the loop of thread tight to complete the stitch.

5. Needle bar:

This is a steel rod which holds the needle at one end with the help of a clamp.

6. Bobbin case:

This moves into position to catch the top thread and form the stitch, as the needle is lowered into the bobbin chamber.

7. Presser foot:

This is attached to the presser bar and it holds the cloth firmly in position when lowered.

8. Presser foot lifter:

This is a lever which is attached to the presser bar for raising and lowering the presser foot.

9. Stitch regulator:

This controls the length of the stitch. Some regulators can be set to stitch in reverse.

10. Bobbin winder:

This facilitates the winding of thread on the bobbin. Some are made to stop automatically when the bobbin is full.

11. Flywheel:

When this is made to revolve, the machine starts to work.

12. Clutch or thumb screw:

This is in the centre of the flywheel, it engages and disengages the stitching mechanism.

13. Slide plate:

This is a rectangular plate which can be slid open to remove or put in the bobbin case.

14. Needle plate or throat plate:

This is a semicircular plate with a hole to allow the needle to pass through it and collect the bobbin thread.

15. Feed dog:

This consists of a set of teeth fitted below the needle plate. It helps to move the cloth forward while sewing.

16. Face plate:

This is a cover which when removed gives access to the oiling points on needle bar, presser bar and thread take-up lever.

17. Pedal:

It is made out of iron. When pressing this with foot, the machine works.

18. Belt:

This is usually made out of leather, but a cloth Tape, Nylon wire or any other strong rope can also be used.

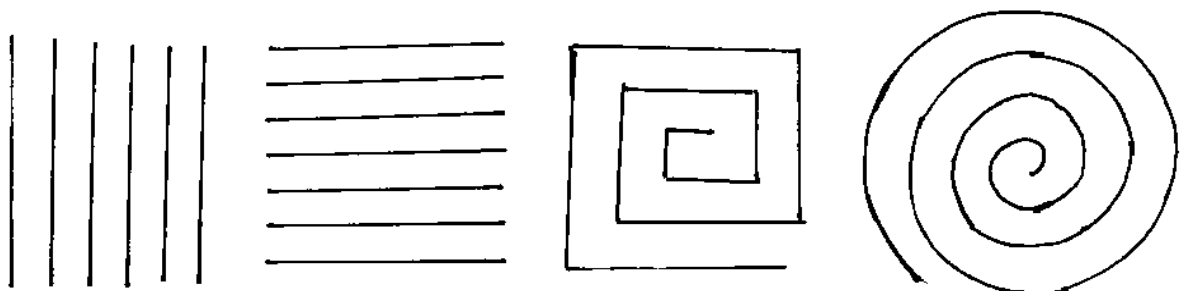
8.5 OPERATING THE MACHINE:

Manufacturer usually supply an instruction manual with each sewing machine they sell. It is essential to read this book carefully and follow the instructions meticulously. When you are learning to treadle, run the machine with the presser foot up and the clutch on flywheel loosened so that the needle does not go up and down. Sit at a comfortable height in front of the machine and place one foot forward and the other foot slightly back on the treadle. Start the machine by turning the flywheel towards you. As the treadle begins to move, start pedaling slowly in such a way so as to continue this motion. Continue evenly, and gradually increase the speed. To stop the machine, place your hand on the flywheel and stop the motion of the feet. Practice to run the machine smoothly at correct speeds.

An electric sewing machine is operated by knee or foot control of an electric motor. A little practice is required to control the pressure needed to operate the machine at any desired speed with an even, regular rhythm.

1. Stitching along lines:

Tighten the clutch or thumb screw and without threading the machine, lower the presser foot and practice stitching on paper along lines of various shapes (straight lines, curved



Stitching along lines

lines, broken lines and lines with corners) until you can control the machine reasonably well. To turn corners, stop with the needle down at the exact corner, raise the presser foot and turn the paper to the desired position, leaving the needle in, then lower the presser foot again and stitch.

2. Selection of thread and needle:

A perfect stitch can be obtained only when the thread is selected to suit the material to be stitched and the needle is of correct size. For stitching on delicate thin fabrics, use fine thread and fine needle. For heavy fabrics, needles and thread size should be larger.

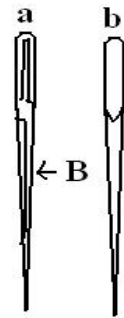
3. Winding the bobbin:

Bobbins wind differently on the various machines, but generally the thread is first placed on a spool pin located below the flywheel and then drawn through the thread guide near the spool pin. Now with your hand wind the end of the thread on the bobbin in clockwise direction and place it on the winder. Turn the bobbin on the winder until the pin like projection

on the winder fits into the slot on the bobbin, thus holding bobbin in place. Then press the winding lever down until the rubber ring touches the hub of the flywheel and is held there. Loosen the thumb screw and run the machine holding the thread end loosely. Make sure that the thread winds on the bobbin evenly and that you do not fill the bobbin too full. In most machines the winding will stop automatically when the bobbin is wound about three-fourth full.

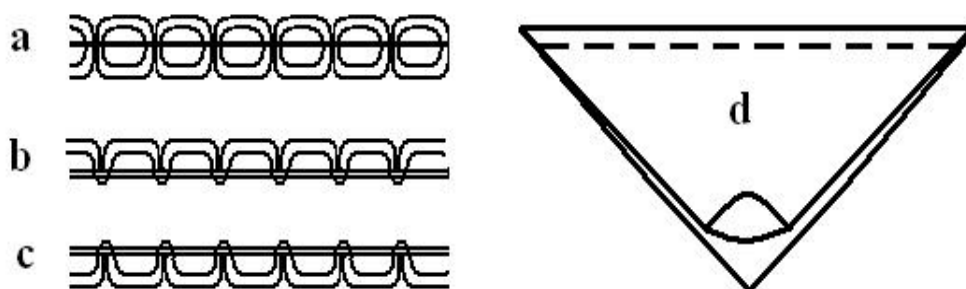
4. Needle Clamping:

Machine needles have a flat side and round side. On the flat side there is a short groove (a) are the eye and on the round side there is a long groove (b). When fixing a new needle in the machine, remember that the long groove must always face the side from which the machine is to be threaded i.e., the side facing the last thread guide. Raise the take up lever to its highest point and loosen the needle clamp screw to remove the old needle. Keeping the take-up lever in the same position, insert the new needle upward into the needle clamp as far as it will go and tighten the needle clamp screw. As soon as the needle becomes blunt it can be changed.



5. Adjusting the tension:

Before regulating the tension disc make sure that the threading of the machine - upper and under threading is correct. When there is a perfect balance of tensions between the upper and lower threads the stitches lock or meet together in the middle of the thickness of the cloth. The stitch will look alike on both sides related to shape and thickness. When the upper tension is too tight, the spool thread lies straight on the top of the fabric and the



Adjusting the tension

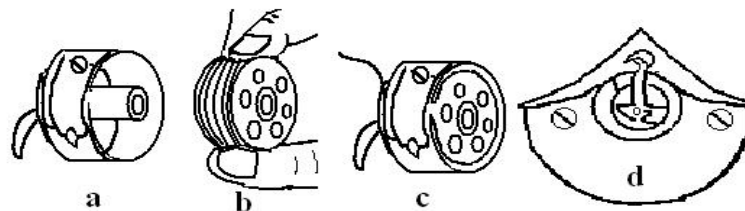
under thread appears like loops on the upper side of the cloth. If the upper tension is too loose the under thread lies straight on the under side of the fabric and the upper thread appear like loops on the underside. An easy method of recognizing tension is to stitch diagonally across a square of fabric folded on true bias as shown and then stretch the cloth firmly between your fingers until one or both threads break. The broken thread is always the one with tighter tension. If the tensions are balanced both threads break together and require more force to break. If adjustments are needed, it is better to adjust the upper tension. To increase or decrease, upper tension turn the screw on the tension regulator

with the presser foot down. In turning the screw remember, that right is tight and left is loose. Usually there will be numbers written on the tension dial. To increase tension you should turn toward the higher numbers and to decrease turn toward the lower numbers. Do not move more than two numbers or a slight turn at a time. Stitch on a sample of fabric to recheck the tension.

Avoid changing the lower tension unless you are sure that the tension cannot be corrected completely by adjusting the top one alone. The lower tension is adjusted by turning the small screw on the bobbin case using a screw driver. Usually the screw is turned to the right to tighten and the left to loosen. Make a very slight turn only, each time.

6. Under threading:

In each bobbin case there is a slanting slot and a spring. Insert the bobbin into the bobbin case so that the thread comes around the bobbin and turns back to lie in the slot. Now guide the thread through the slot and below the spring and pull out a length of thread. Test the tension of the bobbin thread by pulling the thread end gently. There should be a



Under threading

slight but noticeable tension and bobbin should stay firmly in place. Leave a thread end 3 or 4 inches long extending from the bobbin case. Now open the slide plate lift the latch on the bobbin case with your thumb and forefinger and insert the bobbin case into the machine. Close the slide plate.

7. Top threading:

Raise the take-up lever to its highest point before you start threading. The spool of thread is first placed on the spool pin on top of the machine head and the thread end is passed through thread guide to tension mechanism. After drawing the thread between the tension discs and through the take-up spring, pass the end of the thread through the hole in the take-up lever from the side nearest the tension disc. Now thread the remaining guide which leads to the needle and insert the thread into the needle from the side on which the last guide appears.

8. Sewing on fabrics:

Raise the presser foot and turn the flywheel so that the take-up lever is at its highest point. Pull the upper and under threads straight back under the presser foot to prevent them from becoming knotted at the beginning of the stitching line. Place the cloth to be stitched under the presser foot, with the seam allowance to the right of the needle and the

rest of the material to the left. Now turn the wheel until the needle enters the fabric at the exact starting point, and then lower the presser foot. Start the machine slowly, guiding the material gently; with both your hands, and then gradually increase the speed of stitching. Do not pull the material forward or backward, but hold the two layers slightly taut and firm at the back and front of presser foot. When you are nearing the end of the stitching line, stitch slowly with right hand on flywheel and left hand on work. Stop the machine in time so that you do not sew beyond the cloth. Have the take-up lever at its highest point to avoid unthreading the needle when beginning to stitch again. Raise the presser foot and pull the material straight back with threads under the presser foot to avoid needle from bending. Cut the threads with the thread cutter or with scissors. Leave several inches of thread extending from the machine to prevent unthreading.

8.6 CARE OF THE MACHINE:

Regular cleaning, oiling and care of the machine ensure satisfactory sewing and a long life for the machine. When not in use, keep machine covered to prevent dust from settling on it.

1. Cleaning:

Always remove lint deposit, dust and thread bits before oiling any part of the machine. Use a small dry brush or old tooth brush and a soft cloth to remove dust and lint. Use a pointed instrument like a needle to pick out bits of thread and lint that cannot be brushed out. To clean the feed dog, remove the needle plate of the machine and brush off all lint deposits and dirt sticking to the feed mechanism. To clean the shuttle race remove the two screws holding the shuttle race assembly to the machine, take out the shuttle race and wipe its groove free of dirt, fluff and broken bits of thread. Some times loose thread wind around the pivot of the treadle and make the machine hard to run. Remove thread bits which are caught in the wheel and all lint and dust sticking to the treadle parts.

2. Oiling:

It is necessary to oil and lubricate the machine periodically. If the machine is used every day, oil it once a week. If you use it infrequently, then oiling once a month is sufficient. To oil thoroughly remove the upper thread, needle plate, slide plate, face plate, bobbin case, needle and presser foot. Read the instructions manual for location of parts that need application of oil.

Applying machine oil to all oiling holes and joints where one parts rub against another. One drop of oil is enough for each point. While oiling turn the flywheel back and forth to help the oil flow to the moving parts. It is essential to oil the shuttle race. After oiling the points on the head of the machine, tilt the machine head back to oil the parts on the under side. On a treadle machine, the belt will have to be released before tilting the machine head back. Do not forget to oil the pivots of the treadle. When the machine has been thoroughly oiled, wipe away excess oil and run it slowly for several minutes on a waste piece of material. Place a scrap of fabric under the presser foot and lower the needle

before closing. The fabric will absorb the excess oil that will drain down through the machine and will prevent formation of oil spots on the fabric.

If the machine becomes gummed with oil, put a drop of kerosene in each oil hole and at joints and run it rapidly for several minutes. Then wipe off the oil that oozes out with a soft cloth and reoil the machine. It will need a second oiling within a few hours after this treatment. The motor of electric sewing machine needs periodic greasing done by a qualified service agent.

8.7 PROBLEMS AND RECTIFICATION:

Some of the common troubles and their possible cause are listed below. You can take care of most of these by yourself. In case of major troubles the help of a qualified mechanic should be obtained.

1. Tangles thread at the beginning:

1. Bobbin too full 2. Bobbin set in wrong direction 3. Under thread not drawn up 4. Both threads not pulled back under the presser foot 5. Machine not properly oiled and cleaned.

2. Skipped stitches:

1. Needle bent 2. Needle set with long groove turned to wrong side 3. Needle too high or too low in the needle bar 4. Needle too small 5. Needle threaded from the wrong side 6. Excess oil on shuttle.

3. Upper thread breaking:

1. Poor thread 2. Machine incorrectly threaded 3. Needle set on wrong side 4. Needle too fine for thread 5. Needle threaded from the wrong side 6. Upper tension too tight 7. Sharp edges on needle plate hole or shuttle 8. Thread take-up spring broken.

4. Lower thread breaking:

1. Poor thread 2. Lower tension too tight 3. Bobbin case threaded wrongly 4. Sharp edge on needle plate 5. Bobbin wound too full or uneven 6. Dirt in bobbin case.

5. Fabric puckering:

1. One or both tension too tight 2. Stitch too long for material being sewn 3. Blunt needle.

6. Needle breaking:

1. Incorrect size of needle for thread and fabric 2. Needle blunt 3. Pulling of material while stitching 4. Presser foot incorrectly set 5. Crossing a thick seam using a too small needle.

7. Staggered stitches:

1. Too little pressure on presser foot
2. Take-up spring weak, broken or missing.

8. Uneven stitch length:

1. Incorrect presser foot pressure
2. Feed dog dirty or worn out.

9. Material not feeding correctly:

1. Stitch regulator set too close to '0' point
2. Dirt under needle plate near feed dog
3. incorrect presser foot pressure
4. Bent presser foot.

10. Machine runs heavily:

1. Lack of oil
2. Thread wound round wheel or treadle bearing
3. Belt too tight
4. Bobbin winder pressed down
5. Thread jammed in shuttle race
6. Gummed oil or dirt on bearings.

Questions:

PART – I

Objective questions:

1. Name the provision allotted in the sewing machine for winding bobbin.
(a) Spool pin (b) Bobbin (c) Bobbin case (d) Bobbin winder
2. Belt is made out of this.
(a) Ribbon (b) Cord (c) Leather (d) Jute
3. The size of the needle used for hand stitch is.
(a) No.12 (b) No.7 (c) No.9 (d) No.5
4. The size of sewing needle used for thin fabric is.
(a) No.15 (b) No.16 (c) No.14 (d) No.18
5. How much oil would you apply to each oiling point?
(a) 1 drop of oil (b) 2 drops (c) 5 drops (d) Several drops

Answer in one or two words:

6. Write notes on upper threading.
7. Write about fly wheel.
8. What is the use of slide plate?

9. What is the use of face plate?
10. Write about tension disc.

PART – II

Answer in a paragraph:

1. Write about the importance of sewing machine.
2. What is presser foot and take up lever? Explain.
3. How will you choose a needle and thread?
4. Explain the adjustment of tension disc.
5. What are the common defects of sewing machine?

PART – III

Answer in one page:

1. Write about the points to be considered while selecting sewing machine.
2. Explain about any 5 parts of sewing machine.
3. Write about winding of bobbin.
4. How will you clamp the needle?

PART – IV

Answer in detail:

1. Explain in detail on parts of sewing machine.
2. What are the defects of sewing machine and how will you rectify it?
3. How will you maintain a sewing machine?

Answers for objective questions:

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

9. BODY MEASUREMENT

9.1 INTRODUCTION:

Garment fitting is based on taking body measurements. So it is very important for a dress maker to know how to take accurate measurements. The following points will be very useful, for this purpose.

9.2 BODY MEASUREMENT:

a. Care to be taken:

1. Try to know the customer's requirements, regarding the fit, style and shape of the garment (pockets, collar, buttons, seam, finish etc.) before taking measurements. A preliminary talk with the customer, showing fashion pictures are stitched garment will help one to understand the design.
2. Observe the figure carefully and if any deviation in proportion is found, do not simply remember but record it in the order book, in without giving any idea of the deformity to the customer.
3. The person to be measured should stand erect, but in a natural pose, in front of a mirror.
4. Measurements should be taken comfortably without pulling the tape too tight or loose.
5. The measurements should be taken in proper order and with a certain sequence.
6. All girth measures should be taken tightly, as ease for movement is included in the draft.
7. To avoid any mistake, take the measurements twice.

b. Observing Human Body:

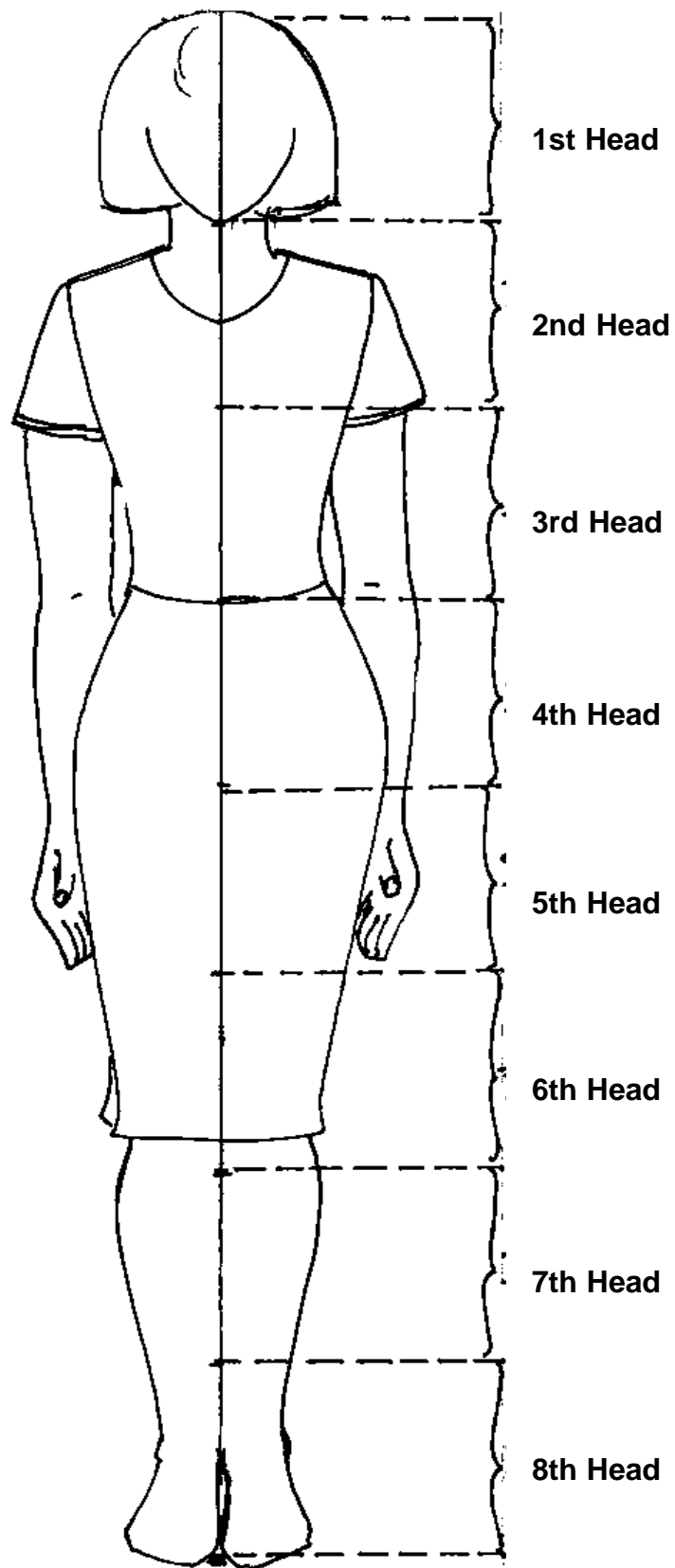
For a successful garment cutting, one must know the size and shape of the human body, for which he has to design. A student should therefore remember the following points about the anatomy, before he starts to learn cutting.

Eight Head Theory:

A grown up human body is divided into eight equal parts, which are equal in height to that of the head. So each part is known as the "head". All these eight divisions or heads are as follows :

- 1st head : From hair to chin or nape of neck.
- 2nd head : From chin to chest or bottom of scye.
- 3rd head : From bottom of armhole to waist.
- 4th head : From waist to hip.

EIGHT HEAD THEORY



- 5th head : From hip to mid thigh
- 6th head : From mid-thigh to below knee
- 7th head : From knee to calf muscle
- 8th head : From calf to tip of toe.

c. Calculating other measurements using chest circumference:

Measurements	Men	Women
1. Waist	Chest - (4 to 5")	Chest - (5" to 7")
2. Hip	Chest + (1 to 2")	Chest + (2 to 4")
3. Shoulder (Half)	$\frac{1}{4}$ Chest - $\frac{1}{2}$ "	$\frac{1}{6}$ Chest + (1 to 2")
4. Armscye depth	$\frac{1}{8}$ Chest + 1"	$\frac{1}{8}$ Chest + (2" to 2.5")
5. Neck	$\frac{1}{3}$ Chest + (2 to 3")	$\frac{1}{3}$ Chest + (2 to 2½")

9.3 TAKING BODY MEASUREMENT:

a. Bodice measurement:

1. Bust:

Measure around the fullest part of the bust raising the measuring tape slightly to a level just below the shoulder blades at the back.

2. Waist:

Measure snugly around the waist keeping the tape parallel to the floor.

3. Neck:

Measure around the the neck, passing the tape just above the collar bone time front and along the base of the neck at the back.

4. Shoulder:

Measure from the neck joint to the arm joint along the middle of the shoulder (A to B in fig. a)

5. Front waist length:

Measure down from highest point of shoulder to waist line through the fullest part of the bust (A to C fig. a)

6. Shoulder to bust:

Measure down from highest point of shoulder to tip of bust (A to D in fig. a)

7. Distance between bust points:

Measure in the horizontal direction, the distance between the two bust points (D to E in fig. a)

8. Back width or across back measurement:

Measure across back from armhole to armhole about 3 inches below base of neck (P to Q in fig b)

9. Back waist length:

Measure from the base of neck at the centre back to waist line (R to S in Fig b).

10. Armscye depth:

Measure from base of neck at centre back to a point directly below it and in level with the bottom of the arm where it joins the body. (R to T in fig b).

b. Sleeve measurements:

11. Upper arm circumference:

Measure around the fullest part of the arm.

12. Lower arm:

For lower arm, measure around the arm at desired level corresponding to lower edge of sleeve.

13. Elbow circumference:

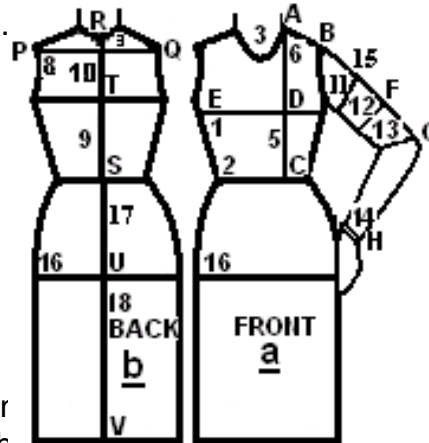
Measure around the arm at elbow.

14. Wrist:

Measure around the wrist.

15. Sleeve Length:

For short sleeve length, measure down length of sleeve (B to F in a) For elbow length, sleeve measure from top arm to elbow point (B to G in a) For full length bend the elbow slightly and measure down from top of arm to back of wrist passing the tape over the elbow point (B to H in a).



c. Skirt measurements:

Waist:

Measure snugly around the waist keeping the tape parallel to the floor.

16. Hip:

Measure around the fullest part of the hip horizontally. (7" to 9" from waist approx.)

17. Waist to Hip:

Measure down from waist at centre back to fullest part of the hip (S to U in fig.b).

18. Skirt Length:

Measure down the centre back from waist to desired length of skirt (S to V in fig. b) length from waist to floor can be taken at the same time and the difference between the two noted. This difference will give the number of inches the skirt is above the floor level. After taking your measurements compare then with the sample measurements for ladies garments given table. 1. Any measurement which appears too small or exaggerated must be rechecked at once.

Sample measurements for ladies garments

(All measurements are inches)

Bust (cir)	28	30	32	34	36	38	40	42
Waist (cir)	24	24½	25	26	28	30	32	33
Hip (cir)	30	32	34	36	38	40	42	44
Back width	14	14	14½	15	15½	15½	15¾	16
Army scye depth	6¾	7	7¼	7½	7¾	8	8¼	8½
Lower arm (cir)	9½	9¾	10	10¼	10½	11	11¼	11½
Wrist (cir)	6¼	6½	6½	6¾	6¾	7	7¼	7½
Back waist length*	13 to 16							
Shoulder to bust *	7½ to 9½							
Full sleeve length*	20 to 23							
Short sleeve length*	7 to 10							
Waist to hip *	7 to 9							
Waist to ground *	38 to 44							
Choli length *	12 to 14							
Pant top length *	18 to 23							
Kurta length *	38 to 42							
Maxi dress length	52 to 56							
Maxi skirt length *	38 to 44							
Middy skirt length"	24 to 28							

* These measurements depend on the height of the person.

Sample measurements for children's garments (All measurements are in inches)

Age (in years)	1	2	3	4	5	6	8	10	12	14
Chest	18	19	20	21	22	23	24	25	26	28
Waist	18	19	20	21	22	22	23	23½	24	24
Hip	19	20	21	22	23	24	26	27	28	30
Back width	8	8½	9	9½	10	10½	11	12	13	14
Back waist length	8	8½	9	9½	9¾	10	10½	11	12	13
Armscye depth	4½	4¾	5	5¼	5½	5¾	6	6¼	6½	6¾
Short sleeve length	3½	4	4½	5	5½	5¾	6	6¾	7	7½
Lower arm	7	7½	8	8¼	8½	8¾	9	9¼	9½	9½
Full sleeve length	9	11	13	14	15	16	17	19	20	21
Wrist	5	5¼	5¼	5½	5½	5¾	6	6	6¼	6¼
Waist to hip	3	3½	4	4½	5	5¼	5½	6	6½	7
Waist to ankle	16	18	20	22	24	26	30	33	36	38
Maxi skirt length	16	18	20	22	24	26	30	34	37	39
Short skirt length	8	9	10	11	12	13	14	16	18	20
Frock length	15	17	18	20	22	23	24	27	30	33
Blouse length	10	10½	11	11½	12	13½	14	15	16	17

These are typical measurements for girls. For ages up to five, the body measurements (i.e. all except the last four items in the table) apply also to boys.

Sample measurements for boys' garments (All measurements are in inches)

Age (in years)	2	4	6	8	10	12	14	16
Chest	19	21	23	24	26	28	30	32
Waist	19	21	22	23	24	26	28	30
Hip (seat)	20	22	24¼	26	28	30	32	34
Neck	10	10½	11	11½	12	13	14	16
Back width	8½	9½	11	12	12½	13	14	15
Back waist length	8½	9½	10½	11½	12½	13	14	14
Short sleeve length	4	5	5	6	7	8	9	10
Full sleeve length	11	14	17	19	20	21	22	23
Cuff length	6	6½	7	7¼	7½	8	8¼	8½
Shirt length	13	15	17	18	20	22	25	28
Pant length	20	23	26	29	32	35	38	40
Half pant length	9	10	10½	11½	12	12½	13½	14½

9.4 PATTERN ALTERATION:

Successful pattern alteration demands changing size without changing proportions and lines. Correct changes are made by tucking or piecing patterns near their center and without changing the original size. It is not advisable to cut beyond a pattern or turn the edge of pattern since such alterations change its shape as well as its size.

After deciding where the pattern needs to be altered, draw a straight line as a guide for cutting the pattern. For most alterations make the line parallel cut along this line as needed, so that it will spread out flat. If you are lengthening or shortening an entire pattern piece, you will need to cut the pattern all the way across and increase fullness entirely through pattern. Before cutting, draw two short lines a few inches apart, at right angles to and across the cutting line. Then match these lines when you spread and place the pattern, keep the pieces in correct position.

Spread or place, the cut edges to make the pattern larger or smaller, as needed. When you spread the sections apart, lay a strip of paper underneath the cut edges. Check the altered pattern measurements to be sure that they are with the measurements, needed then paste, pin or use gummed tape to fasten the pattern pieces in place.

Sometimes more than one change is also needed in a pattern piece. The best way is to take care of each alteration separately. Try not to change the shape of the armholes, neckline, or shoulders anymore than necessary.

If the alteration is difficult, then make a duplicate pattern made with newspaper, make all markings and notches on the duplicate, and make the necessary corrections on it. It is a good idea to try out the altered pattern in muslin or old cloth to be sure of the fit. Then alter the original pattern in the same way.

Pattern alteration can be best done by a slash and spread method for enlarging a pattern and fold pleat for reducing it. While altering a pattern it is necessary that all grain lines must be straight.

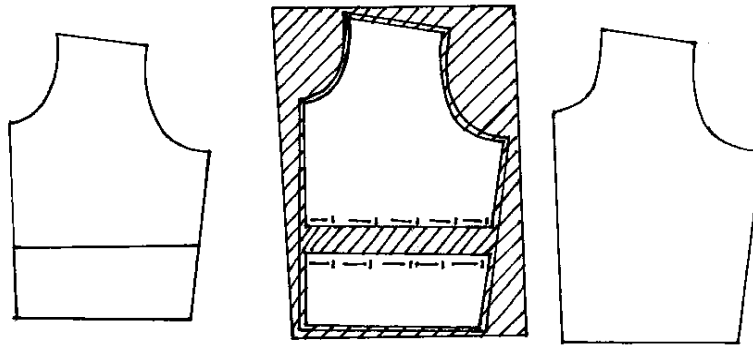
Equipment needed for altering patterns, includes a pair of scissors, some light weight paper, and pins. Heavy paper is not suitable for making alterations, also a ruler and pencil to redraw construction details that are interrupted by your alterations are necessary.

9.5 ALTERATING PATTERN:

1. To lengthen a blouse:

1. Cut across the pattern about 2 or 3 inches above the waist line at right angles to the center line.
2. Spread the pattern to the necessary amount. Pin each edge of pattern to a strip of new paper.

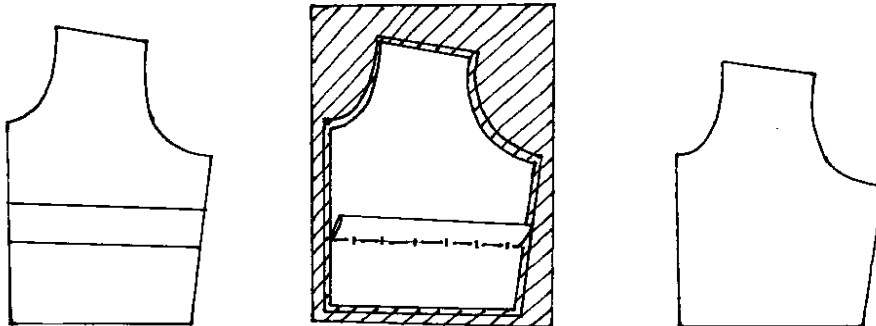
3. Draw new side seam lines keeping them straight from armhole to waistline.



Lengthening a blouse

2. To shorten a blouse:

1. Make a pleat of the correct width across the pattern about 2 or 3 inches above waistline.

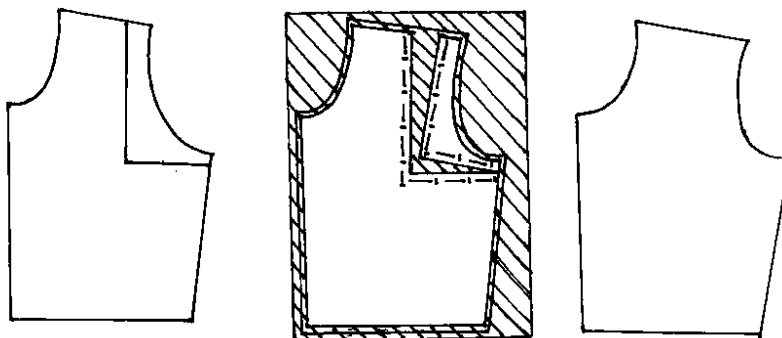


Shortening a blouse

2. Keep it at right angles to the center line and pin a piece of paper.
3. Draw side seam lines as shown.

3. To increase the shoulder width of a blouse:

1. Slash from the shoulder downward the armhole, then across almost to the side seam.

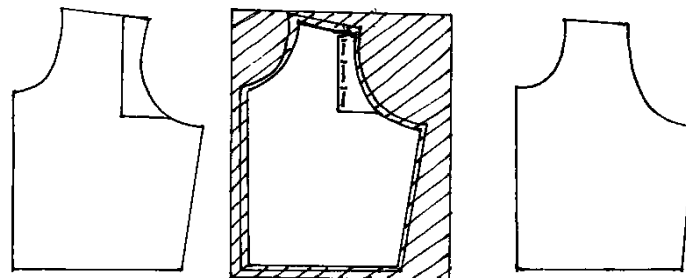


Increasing the shoulder width

2. Spread the slashed edges to the correct amount and pin to a piece of paper.
3. Draw new shoulder seams making straight lines from the neck line to the armhole.

4. To decrease the shoulder width of a blouse:

1. Slash as described above, but overlap the edges of the slash the necessary amount and pin.

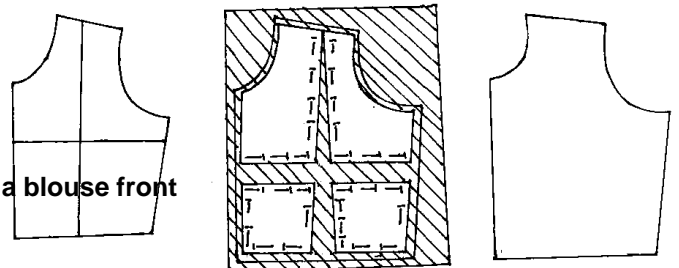


Decreasing the shoulder width

2. Draw new shoulder seam lines keeping them straight from neckline to armhole.

5. To Increase the size of a blouse front:

1. Make slashes crosswise and lengthwise, cutting through the center of any dart. When there is no dart at the shoulder, slash almost to the shoulder line.
2. Spread the pattern and pin it to paper, to make the necessary changes in each direction.

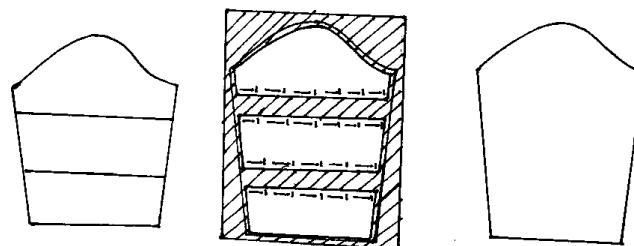


Increasing the size of a blouse front

3. Locate new dart points half way between
4. Draw lines from these points to the broad end of the original dart.
5. Then, draw new seam lines.

6. To lengthen a sleeve:

1. Slash directly across the sleeve above the elbow and again below the elbow. Separate slash lines and make an insertion with a piece of correct widths.

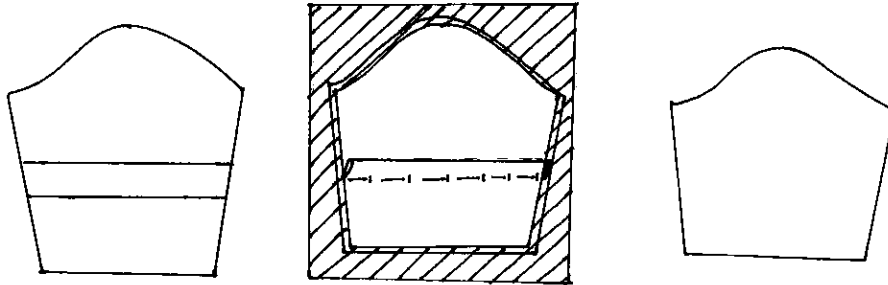


Lengthening a sleeve

2. Straighten seam lines, if necessary.

7. To shorten a sleeve:

1. Fold out pleats above and below the elbow to keep proportions correct.
2. Straighten seam lines, if necessary.



Shortening a sleeve

8. To Increase the width of the skirt (large hip):

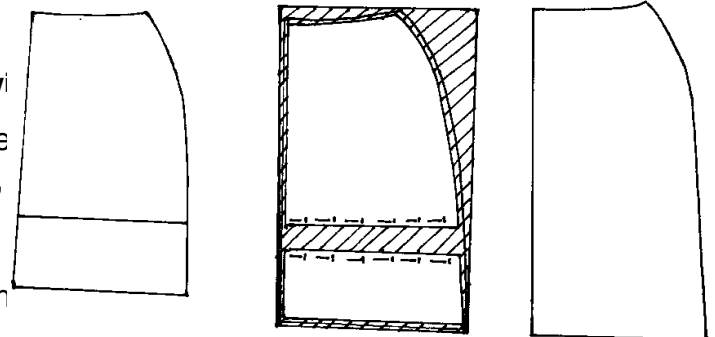
1. Slash the side piece both front and back between the side seam and the dart position.
2. Make an insertion of even width from waist to hem on both front and back.

Increasing the width

3. This alteration increases the size of the hip line by taking up darts and seams,

9. Lengthen a skirt pattern:

1. Cut across the skirt, pattern at right an few inches above the hemline.
2. Spread the slash the necessary amount and pin to a strip of paper.



Lengthening the skirt

3. Extend the seam lines and the hemline until they meet the necessary measurement.

10. Shorten a skirt pattern:

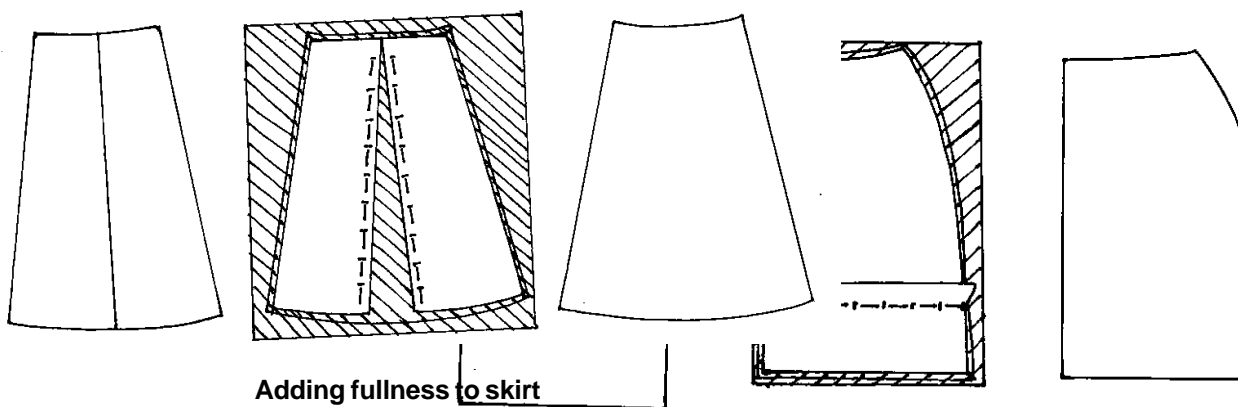
1. Fold a pleat of the correct width across each gore a few inches above the hemline. Fold at right angles to the grain line.

Shortening a skirt

2. Straighten the seam lines by folding back the projecting edges below the crosswise alteration pleat.
3. Keep each of the folded-back edges even in width.

11. Adding fullness to skirt:

1. Slash the skirt pattern to the waist line where ever the flare is needed.
2. Spread for the required extra fullness.



3. This curves the waist line more and causes the flare to fall from the point of the slash.

Questions:

PART – I

Objective questions:

1. Human body can be divided into
(a) 6 heads (b) 8 heads (c) 9 heads (d) 5 heads
2. Height of Kurtha is
(a) 38" to 42" (b) 40" to 42" (c) 42" to 44" (d) 44" to 46"

3. Elbow circumference refers to

(a) Measurement around wrist	(b) Measurement around fullest part of arm
(c) Measurement around the elbow	(d) Measurement till desired level
4. Height of Middy skirt is

(a) 28" to 30"	(b) 24" to 28"	(c) 30" to 32"	(d) 26" to 28"
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Answer in one or two words:

1. How will you take the waist measurement?
2. How will you take the neck measurement?
3. Define Pattern.
4. What do you mean by pattern alteration?
5. How will you take the back width measurement?
6. How will you take the lower arm circumference?

PART – II

Answer in a paragraph:

1. What is meant by bust measurement?
2. How will you measure the armhole depth.
3. How will you increase and decrease the length of bodice pattern?
4. Draw and explain how you will increase the shoulder width.

PART – III

Answer in one page:

1. What are the steps required to be taken while measuring the body?
2. Draw and explain eight head theory.
3. Draw and explain how you will increase the waist measurement,
4. Sketch and explain how you will increase the front bodice measurement.

PART – IV

Answer in detail:

1. Discuss on pattern alteration.
2. Elaborate on taking body measurement.

Answers for objective questions:

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

10. PATTERNS

10.1 INTRODUCTION:

A basic pattern can be prepared by one of two methods either by drafting or by draping fabric on a model (or person concerned).

Drafting is otherwise called as block pattern method. Drafting may be defined as a system of drawing patterns on paper with mechanical precision, on the basis of body measurements. This is an effective and economical method which can be learned easily. The basic pattern may be modified to develop pattern for varied styles by a technique called "flat pattern designing". The basic pattern should have only a minimum number of darts and it should fit the body comfortably without being tight or loose.

10.2 TYPES OF PAPER PATTERN:

There are different types of paper pattern. They are

1. Standardised paper pattern
2. Individual paper pattern
3. Block paper pattern
4. Graded paper pattern
5. Commercial paper Pattern.

1. Standardised paper pattern:

Paper pattern prepared using standardised body measurements are standardised paper patterns. This method is being followed in the training and tailoring schools.

2. Individual Paper pattern:

The measurement of a particular person is taken and pattern is prepared using these individual measurement. The pattern prepared for a particular person will not suit other person. These are usually done at home and some tailor shop.

3. Block paper pattern:

Generally these are made with standard sizes with thick cardboards. These are mostly used in garment industries. The garment made out of these block patterns will fit for those who have measurements equivalent to that of the standardised body measurement. In garment industry these type of pattern will be helpful to cut bulk amount of garment in less time.

4. Graded paper pattern:

Pattern of five consecutive sizes (for eg. 30", 32", 34", 35", 38" chest size) are marked in one single pattern. The required size according to the individual body measurement is traced separately, cut and used.

5. Commercial paper pattern:

The paper pattern for different designs are available in readymade forms. These patterns are called as commercial pattern. These patterns are enclosed in the envelop along with the instruction sheet. The instruction sheet will provide information about selection of fabric, preparation of fabric, marking, cutting, and steps for sewing. The front side of envelope contains front view, side view and back view of garment design along with the body measurement. While choosing a commercial pattern one must choose according to the body measurement.

10.3 PRINCIPLES FOR PATTERN DRAFTING:

Drafting can be done on ordinary brown paper which should not however be too thin. To obtain an accurate draft, use a sharp pencil, and a ruler for, drawing straight lines. To get the corners at right angles, keep an 'L' scale or set squares ready. Before drafting, it is important to understand the procedures and instructions clearly, and to have practice in drawing a well balanced pattern with smooth curves and straight lines. You must understand the following principles before starting to attempt drafting.

1. Patterns must be made larger than body measurements to allow for freedom of movement, ease of action and comfort in wearing. Recommended ease allowance for various parts of the body are listed below. For bust 3" to 5" (3" for a tight fitting garment and 5" for loose fitting one); waist $\frac{1}{2}$ " ; hip 3" to 5" ; upper arm 3" to 4"; arm hole depth 1". For all the garment the ease allowance must always be left before cutting out the pattern.
2. For symmetric designs where the right and left sides are alike, paper pattern for half front and half back only need to be made. For the bodice, start the drafting with the back part. For sleeves, full pattern must be drafted.
3. It is better to draft the primary or basic pattern blocks - plain bodice, plain sleeve, plain skirt without seam allowances. When this is done, be sure to leave seam allowances while laying out the pattern on the material at the time of cutting. If you do not have much experience in cutting, and want to avoid the risk of cutting without seam allowance you may add seam allowances to your paper pattern itself after completing the draft.
4. The following construction detailed information should be recorded and marked clearly.
 - a. Name of each piece of pattern (bodice front, bodice back, sleeve etc).
 - b. Number of pieces to be cut with each pattern piece. (For example, for a back open dress, you have to cut 1 front, 2 backs and sleeves).
 - c. If seam allowances are not included in the draft, this should be mentioned. If seam allowances are included, seam lines and cutting lines should be clearly shown.

- d. Lengthwise or straight grain line should be drawn with a red pencil as shown (← — →) on all pattern pieces. This line indicates that the pattern should be kept on the cloth in such a way that the line is parallel to the length of the cloth or the selvages, it is usually drawn parallel to the centre front and centre back edges of the pattern.
- e. Provide matching notches or balance marks if necessary along seams to show which seams are to be joined together.
- f. Centre front and centre back line should be marked. It is advantageous to cut outward notches at centre front and centre back of pattern pieces because at the time of assembling the garment, notches on collars can be matched to notches on the neck line of garment etc.
- g. Fold lines should be clearly shown. Fold lines appear along centre front or centre back, edges and sometimes along hems to show where the material is to be folded. Dart markings, pleat markings etc. should be clearly shown.

ADVANTAGES OF PAPER PATTERN:

1. A good pattern of the right size which has been adjusted to suit your individual requirements will enable you to obtain a good fit.
2. A pattern prepared on thick paper or card board can be preserved for a long time and can be used over and over again.
3. By manipulating the basic pattern pieces it is possible to produce patterns for complicated and original designs. (For example, the basic sleeve can be adapted for a full sleeve or bell sleeve)
4. A paper pattern of a particular size can be used to make new patterns of proportionately larger or smaller sizes by following a systematic procedure called grading.
5. Cutting with the help of a paper pattern is quicker and easier than drafting straight away on the fabric.
6. Use of a paper pattern will enable you to cut the garment with a minimum amount of fabric because it is possible for you to try out the placement of pattern pieces in different ways till you have found the most economical way to keep them.
7. If there are any mistakes while drafting, these can be corrected in the pattern itself.
8. Patterns can be modified according to latest fashion.
9. In making one's own pattern there is a great scope for deriving personal satisfaction from the freedom to create our own design.
10. By making different patterns, it improves our skills and gives us experience.

10.4 COMMERCIAL PATTERN:

Development of Commercial Patterns: Commercial patterns were first made, in U.S.A in the 1850's by Ebenezer biter of who was a tailor. In the beginning they were crude patterns in rough paper, for simple demonstration only. The first pattern was of men's and boys clothing Patterns for women and children were also developed later and became, available commercially. You may have seen fashion magazines like Vogue, McCall's Pictorial Simplicity etc. and their pattern books.

Commercial patterns are usually done on tissue Paper. Since tissue paper is not bulky, it allows many piece of pattern to be packed compactly in an envelope. In commercial patterns seam allowances are included for safety. Patterns of established companies are usually printed and marked clearly with straight grain lines. Seam lines, cutting lines, darts, centre lines and all the necessary construction details. Good patterns are carefully labeled with the following information; the pattern size, name of each pattern (back, front, sleeve etc), number of pieces to cut horn each pattern piece etc. In addition some companies provide instruction sheets explaining the steps involved in using the pattern to cutout the garment, transferring pattern markings, and constructing the garment.

In India there are very few concerns making paper patterns probably because there is not much demand for them. Unlike in foreign countries we have the facility to get our clothes custom tailored at fairly reasonable rates, housewives and woman who know a little bit of tailoring prefer to make their own patterns rather than buying expensive ready made patterns. This may be another reason for the lack of demand for commercial patterns.

1. Selection of commercial patterns:

Patterns for women's and children's garments are usually sized according to bust measurement. Pants and skirts are sized according to waist, hip and length measurements. Hence before selecting the pattern, you should take your body measurements accurately and buy the correct size. The measurements listed on the pattern envelope are the actual body measurements, (Note: The pattern pieces will be somewhat larger, since a certain amount of ease allowance is included. The amount of ease will vary with the manufacturer and the garment design).

2. Merits:

Reputed companies standardize their patterns after doing a lot of research and trying out the fit on models, if your measurements have the same proportions as for the standard size figure it would be simple to buy a Commercial pattern than to draft one yourself. So the Commercial pattern saves you time and of foil. It may even give a better fit than a home-made pattern if you are inexperienced.

3. Demerits:

Commercial patterns are expensive. Secondly patterns for different types of garments are not readily available in India, and good patterns are especially hard to get. For people

whose measurements don't have the same proportions as the standard figure. Commercial patterns do not give fit without some alteration pattern alteration processes are rather complicated and may prove more laborious in practice than drafting pattern based on rarely be used more than once unless you copy it on to thick paper for further use.

10.5 DRAPING:

There are three common terms used to describe this technique-draping, toile and modeling. A fourth term is sometimes used namely moulage. In order that confusion does not ruin, it should be realized that these four terms refer to one and the same technique. However the most modern term used is modeling. Although modeling is basically a skill, artistic acumen is necessary to use the technique to full average for the design of a garment.

There are some fabrics which land themselves more readily to draped styles because they have a quality which allows the material to hang in unison with a complementary to the body. In other words they possess "drape" Eg. of such fabric are jersey, chiffon, and moss crepe.

Draping is the manipulation of fabric on a three dimensional form by a designer to obtain perfect fit and harmony between the fabrics and design of the garment and the silhouette of the individual.

Modeling or Draping is the molding of material around a dress stand or human body for the purpose of designing a garment just like a sculptor Modeling allows the fashion designer to work in three dimensions.

There are several types of dress form on the market but the most commonly used dress form is the muslin padded dress form, set on a movable height adjustable stand, duplicates the human body shape. It is firm, yet resilient and does not resist pins. The right and left sides are exactly alike.

Other types or dress forms available on the market are made of paper Mache or of plastic molded to the individual figure. For experimental work a half sized form is satisfactory because it requires fewer yardages with which to work. A variety of dress forms are available in standard sizes for junior and missy figures as well as for children's and men's figures. Draped styles are those which accommodate the material achieving the desired effect. Using the procedures described, we will find that greater freedom of expression in our design is possible.

A. Adhesive Paper Dress Form:

As because it is difficult for a person to fit herself, and a fitter is not always available a dress form, the exact duplicate of one's figure is almost essential. One that is made on the individual is more satisfactory and less expensive than the commercially made form. For that reason, the instructions for making a form have been included.

Materials needed:

Two shirts of thin knit material such as T-shirt. Thin muslin cut on the bias, and about 5 inches wide, to build up a neckline, or gauze tubing shaped to the figure; or a packaged dress form kit, which will contain all necessary material. Two rolls of medium weight adhesive papers, one inch wide.

Eight yards of colored scotch tape, $\frac{1}{4}$ inch wide stiff, corrugated, large enough to cut out a base for the largest hip size, and a neck size pieces, other materials; two sponges, two small basins for water, needle, thread, sharp scissors, surgical scissors if available, pencil, yardstick, rule, tapeline, sharp razor blade with one cutting edge only, shellac, small paint brush.

Method of Proceeding:

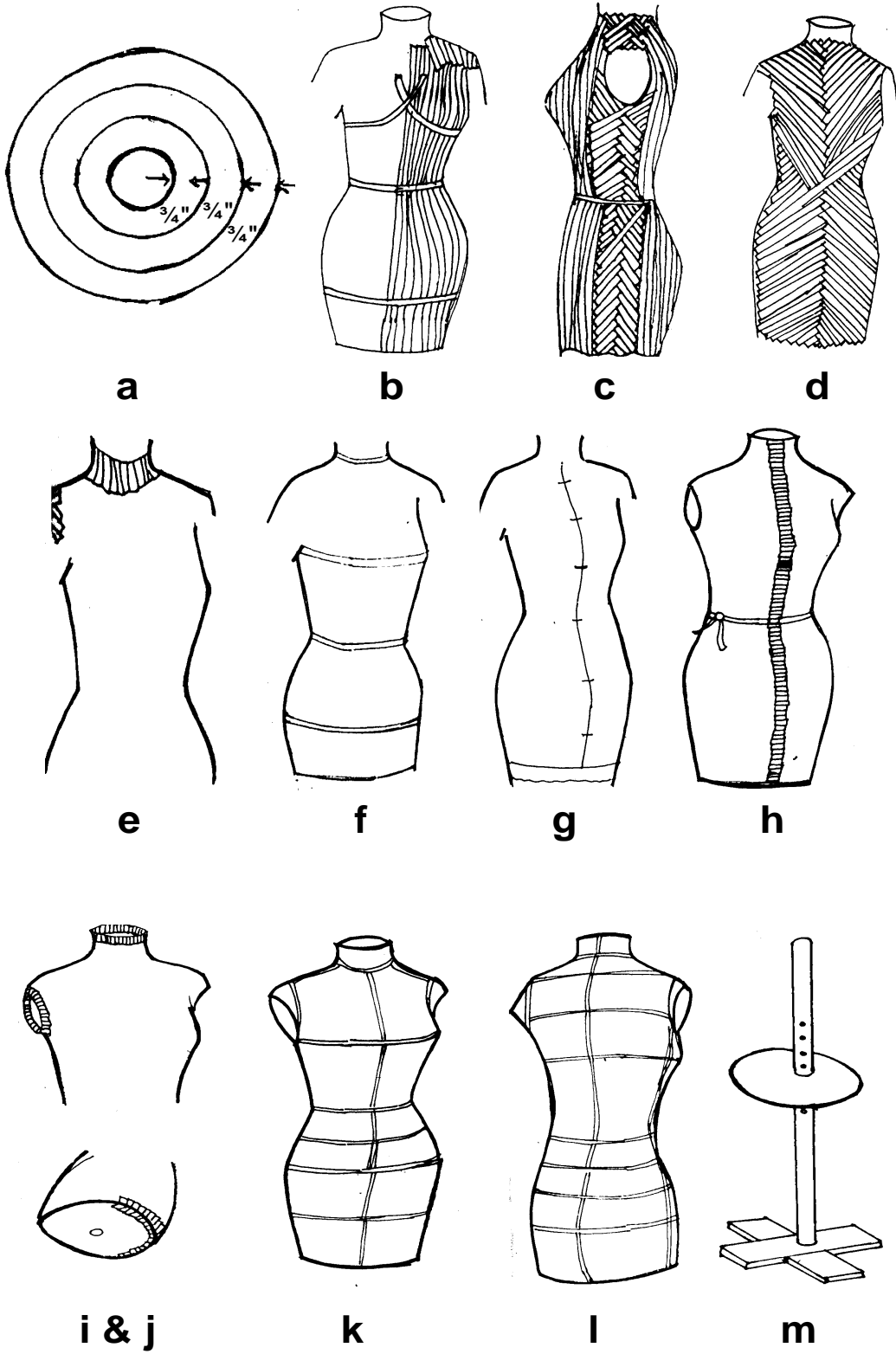
Four persons are necessary to construct the form quickly; two to moisten strips and two to paste strips to person, one working on the front and one on the back. Allow one hour for making the form on the figure, and one hour for finishing it after it is removed from the figure.

The person should wear a tight fitting garment which gives desirable style lines. She should stand so that her hands may be placed on the back of a chair or rest on the edge of a table for support.

To cut the paper, hold the roll with edge extending over a table edge, and cut through the roll with a razor blade. All strips should be cut before starting to make the form on the person. Keep separate on table each group of strips is cut from the two rolls of tape to prevent confusion and to speed up the operation.

- a. Diagram showing the depth each group of strips is cut from the two rolls. Each group should be labeled as it is cut.
1. First group of strips is cut $\frac{3}{4}$ inch from outside of both rolls and are approximately 15 to 12 inches long. These strips are used from shoulder to waist on first layer, and diagonally from neck down front and back on the second layer.
2. Second group of strips, around 12 to 9 inches is cut $\frac{3}{4}$ inch from outside of each roll. These strips are used on the first layer from waist to lower hip edge and on the second layer down from the neck in front and back.
3. Third group of strips, around 9 to 5 inches, cut $\frac{3}{4}$ inches, from outside edge of roll. These strips are used diagonally under the arm. On both first and second layers in making the form.
4. Cut around 2 fifty, 3 inch strips for finishing edges of form and for joining the two sections.

ADHESIVE PAPER DRESS FORM



- b.** Put the shirt: or substitute, on the person and sew edges together so that the shirt fits smoothly and firmly on the figure. It should run up onto the neck to form a neckband, extend out over appear to form a smooth Armscye, and extend well below the widest hips. Pull the shirt down smoothly from shoulder, and paste a long strip of moistened tape closely around the normal waistline, overlapping tape ends to prevent slipping. Paste another strip of tape closely below the widest hip. Paste stripe curving under each bust to preserve contour.
- c.** First layer of strips, 12 to 15 inches. Begin at center front and back, paste moistened strips on the figure from neck and shoulder edges to taped waistline, over lapping strips $\frac{3}{4}$ " of the strip width. Let strips curve to body contour as they will, and if too long tear off excess length. Continue pasting strips to armscye edge, overlapping strips at top of shoulder. Repeat for second side of front and back. From waist to lower hip edge, paste 9 to 12 inch strips at right angles to waist, joining tape ends to those above the waist. Paste 5 to 9 inch strips diagonally from underarm to lower hip edge, allowing strips to overlap front and back. Repeat for second side.
- d.** Second layer of tape. Above the waist use 9 to 12" strips. Start just below the neck, paste strips diagonally across front, alternating strips from right and left side, having strips overlap at top of shoulder. As you continue downwards, the end of strips should touch and form the upper Armscye. Continue the crossed strips down the body to lower hip line edge, using 12 to 15 inch strips below the waistline. this should form a smooth surface over the entire figure, especially at the waist where joining had occurred on the first layer. The second layer from underarm to lower hipline is reinforced with 5 to 9 inch strips the same as in c, the first layer.
- e.** Reinforce around Armscye to form a good shape, using 3 to 5 inch strips. Some persons may wish a short sleeve cap. This is formed from 1 to 3 inches beyond armscye at shoulder tip, using short 3 to 5 inch strips building a smooth upper arm curve, allowing strips to follow the arm curve when pasting on. (It is difficult to put on and remove garments with an extended sleeve cap). Finish the neck with one layer of 5 to 9 inch strips around the neck to form a good shape until dress form is removed from person. The neck can be reinforced more sturdily when form is removed.
- f.** Measure and mark the following from the form before removing—Neck, Bust, Waist, Widest hip. Measure from floor up to within 2 or 3 inches below the widest hip and carefully mark for the base of the form.
- g.** Mark for removing form from person, down center front and back with ruled line, across front and back at intervals for matching when joining half sectional. To remove form from the figure, cut with a one-edged razor blade down center front and back marked lines. Be careful to cut through paper only. Finish cutting through the fabrics with surgical scissors or sharp pointed shears.

Remove the two sections. Either before the form is made or after is the removed measure the person at the following positions and record in neck, bust, waist, and widest hip. Compute the difference between the person and the form at neck, bust, waist and hip. Divide by and remove this difference from the two centre front and two center-back edges of from. Cut smoothly along marked hipline which is parallel to the floor. Hold each section up to the light and reinforces on the inside of the form any sport that seam thin.

- h. Join the sections, using 3-inch strips:** Place front down on the table with edges and cross markings matching both front and back, and pin a tape securely around the waist. Paste 3-inch strips across cut edges of front, first on the outside and then on the inside. These strips should be closely overlapped to hold edges permanently. Repeat for back.
- i.** Trim neck and armscye edges smoothly and reinforce with 3-inch strips around cut edge.
- j.** Trim bottom of form along marked line until it stands evenly on the table. Place bottom of form on paper and also mark around the hips, also mark center front and center back. Repeat the same for the neck. Cut cardboard from paper patterns and cut a 1¼ inch hole in the center of each. Fit the cardboard flush into the inside edges of the hip and neck and join to the form with 3 inch strips.
- k & l. Outer covering.** To keep the paper edges from curling, the form should be shellacked and thoroughly dried. A top shirt is tightly and smoothly fitted over form, sewing where necessary, and taping at armscye, neck and under the lower edge of the form. Using ¼ inch colored tape, mark the following measurement positions; centre front, center back, neck, shoulder width, back width, bust waist, Armscye, 3 inch hip, 6 inch hip, widest hip. (m) standard.
- m.** A stand is needed in order to use the form successfully. This is made, using two 2" x 4" x 18" pieces of wood for base, and a pole 5 to 5 ½ feet tall and 1¼" in diameter with nail holes bored up the length to adjust the height. An oral board cut from plywood should be smaller than the base of the form. Bore a 1½" hole in the center. This oval is slipped on the pole is rest over a large nail and support the form.

B. Draping on the stand:

One of the main advantages of the technique is that by experimenting in draping material on to the stand, you can build up a desired effect before cutting in to the fabric. The illustrative stage of design can be delayed until after the experimental stage, the illustration in effect, being a record, of the artistry displayed on the stand.

Stage 1:

Drape the uncut length of dress fabric over the stand. If the garment is for an individual client or yourself, first drape the uncut length of your fabric on the figure. This will enable you to evaluate the coloring and posture of the individual with the fabric and the line of the drapes.

Drape the fabric on the stand for the overall effect. Observe its natural characteristics, i.e. the ways it falls, its handle, texture and weight etc. Experimentation can now take place. Do not cut into the fabric, but pin to hold where necessary. Aim for the overall effect, details, can be worked later. Note, first of all, the silhouette, since each fabric drapes in a different way, this in turn alters the silhouette. Drapery is best continuing inline rather than as a separator piece, although this is not easily achieved. Alternative ideas may develop at this experimental stage. Evaluate your details. For example, checks or stripes placed on various grains will give different effects. Tucks may look better than gather in certain fabrics. If you intend to use trimmings, place them onto the fabric to see how well they co-ordinate.

Stage 2:

Substitute dress fabrics; To model the entire garments in the actual fabric is ideal, but unfortunately it makes experimentation expensive. For this reason, professional designer may use a fabric with similar properties which has been left over from a previous collection. Alternatively, the non-draped parts of the garment can be modeled in muslin with just the draped sections made in the actual fabric. When draped designs for checks or stripes, mark in the position of the lines on the muslin to get the effect of the fabric and to match the lines along the seams.

Stage 3:

Tape your stand: centre front, centre back shoulders, seam lines, style line, neck lines, waist, hip and bust line and position and direction of drapes. (The horizontal and vertical balance lines help the drapes to hang correctly)

If the fabric is not transparent, we may not be able to see the taped lines, below it, therefore sink pins along the taped lines, the pin heads below the fabric being your guide.

Stage 4:

Select and prepare the material: Prepare the garment material and since the whole garment is cut, allow enough material to cover both sides of the stand for each section. When estimating the amount needed for draped styles, bear in mind the extra fabric will be requires for the drawing up of folds from the bottom down from they top and the depth of the fold itself. The draping quality of the warp and weft grain should be the same in order to match both sides of a drape. Allow plenty of excess material beyond the outer edges of the stand and mark in the centre vertical line and the warp grain with a contrasting thread.

Stage 5:

Place and pin material onto the stand in the following way: A full toile is required, but you need to model one side only, except for asymmetric designs where both sides must be modeled. If translating and draped styles from a sketch observe where both sides must be modeled. If translating and draped styles from a sketch observe where the folds are coming from and going to and the amount involved at either end.

Line up the vertical central thread with the centre front line of the stand, and pin. To avoid injury to the fabric, use very fine pins, e.g. silk pins, and keep pinning to a minimum. Temporarily pin the surplus fabric to the side of the stand you are not modeling. Mould the fabric around the stand as desired, allowing the excess fabric to fall freely into the area where you wish the fullness of the drape to be placed. Use drapes in place of darts. The drapes can be continuing along the out edges of the stand and be allowed to fall forwards or back wards into a cascade of drapery or be caught up into a seam line etc., use the grain to experiment for the best effect, numbering that fabric drapes best on the bias. It is some times necessary to control drapes e.g. on a wide neckline could fall off the shoulder or in the case of side panel, where billows might occurs. The following methods are used to control drapes.

- a. By mounting the drapes on a fitted section, in this case, the fitting section should be modeled first:
- b. By weights places inside the drapes
- c. By taping.

Stage 6:

Indicate all details: All the details should be indicated with pins rather than chalk and pins should follow the direction of any darts, tucks, seams etc.,

Stage 7:

Remove from stand.

Stage 8:

Press: Do not press over pins as they will leave an impression in the fabric.

Stage 9:

True all lines of check details. The rough design now needs to be trued in order to establish the correct grain line and to ensure that the armhole, underarm sears and shoulder are the same length. Both sides although perhaps not the same shape on the left and right side if the design is asymmetric.

When a symmetric full toile is modeled, the left and right side will not be exactly the same. Therefore, choose the better side and fold that side over on the centre line on the double to transfer shape and details. Transfer all markings with thread.

Stage 10:

Check seam allowances.

Stage 11:

Make up and press

Stage 12:

Places on stand are model and check for any discrepancies.

Questions:**PART – I****Objective questions:**

- How many methods of preparing patterns are there?
(a) Three (b) four (c) one (d) two
- Drafting can also be called
(a) Block pattern method (b) Draping method
(c) Grading method (d) Layout
- While transferring right angles in paper patterns, this scale can be used.
(a) Triangular scale (b) L-Shaped scale
(c) Meter scale (d) All the above
- This type of paper patterns are available in ready made forms.
(a) Graded paper pattern (b) Standardised paper pattern
(c) Commercial paper pattern (d) Individual paper pattern
- These patterns can be prepared using individual measurements.
(a) Graded paper pattern (b) Standardised paper pattern
(c) Commercial paper pattern (d) Individual paper pattern
- These lines usually appear on centre front or centre back of pattern.
(a) Seam lines (b) Fold lines
(c) Dart lines (d) Hem lines
- Commercial patterns were first made in
(a) India (b) Japan (c) USA (d) China

Answer in one or two words:

- What is a commercial pattern?
- When and who discovered commercial pattern?

3. Name the types of paper pattern.
4. What are details that have to be marked in the pattern?
5. Where a pattern with standardized body measurement is used.
6. Why should ease allowance be given in a pattern?

PART – II

Answer in a paragraph:

1. What is individual pattern?
2. What is flat pattern technique?
3. What is commercial pattern?
4. How will you select a commercial pattern?
5. Explain the merits and demerits in the commercial pattern.

PART – III

Answer in a page:

1. What are the different types of paper pattern?
2. Give the advantages of paper pattern.
3. Explain about commercial pattern. Brief out on its types. How will you select commercial pattern?

PART – IV

Answer in detail:

1. Discuss on the principles of drafting.
2. Explain about the preparation of adhesive paper dress form.
3. Explain the stages in draping the material over dress form.

Answer for objective types questions:

1. (a) 2. (a) 3. (d) 4. (c) 5. (d) 6. (b) 7. (c)

11. PREPARING FABRIC FOR SEWING

11.1 INTRODUCTION:

Fabric of any type must be pre treated before cutting to avoid later alterations or damage in the finished garment. The untreated fabric may be of correct size on the first wear, but due to repeated washing it may shrink and be uncomfortable to the wearer. Grain perfection is another factor which may deform the silhouette of the garment. These factors must be given due consideration before cutting.

11.2 IMPORTANCE OF GRAIN:

Grain refers to the direction of yarns in fabric. Woven fabrics are made up of lengthwise and crosswise yarns interlaced at right angles to each other. The lengthwise or warp yarns are usually heavier or strong and highly twisted yarns. The lengthwise direction of the cloth should hang straight down on the figure from the neck to the waist, from the armhole to the elbow, from the waistline to the bottom of the shirt. Grain is important in the small places as well as the main pieces of a garment. It is helpful to have a crosswise grain line drawn on such pattern pieces as sleeves, yokes and collars.

In a well constructed garment, not only should the lengthwise grain run lengthwise on the body but the crosswise grains should be at right angles to the lengthwise grain or parallel to the floor at the base of the neck, across the bust, across the fullest part of the hip, at the base of the sleeve etc. This cannot be achieved if you are using an off grain fabric for cutting. The result will be an ill fitting garment which will wrinkle, lacks balance and is uncomfortable to wear. If a dress design should look balanced on the figure, the right half and left half should be identical in design, shape and grain.

11.3 SHRINKAGE:

All fabrics have tendency to shrink when dipped into water unless they are pre-shrunk. Excessive shrinkage can ruin the fit of the garment. While stitching, if the cloth has not been pre shrunk extra allowance for shrinkage should be kept. For various types of fabrics different shrinkage treatment has to be given.

a. Cotton and Linen:

If the fabric is white cotton it should be allowed for at least 4 hours in hot water to remove starch. To shrink the cloth uniformly the position of the cloth in vessel should be changed occasionally. For coloured materials luke warm water should be used and the same processes followed as for white fabrics given above. Different coloured fabrics should not be immersed in water together. Each colour should be immersed separately. After the material has been shrunk it should be allowed to dry in shade and should not be squeezed to remove water. The stiff materials like canvas or long cloth etc. should also be shrunk before they are used.

b. Silk, Rayon and Wool:

As silk and rayon shrink very little and slowly, it is not necessary to pre-shrink them before cutting. Little allowance may be kept while stitching the garment. Woollen materials can be shrunk in two ways.

1. One method is to steam the materials as follows. The cloth to be treated, should be spread over a table and folded right side facing . Now place a damp Turkish towel between the two layers. Spread an ordinary piece of cloth on the upper side of the cloth, then press it with moderately hot iron. This will provide the necessary steaming. This process should be repeated all over the fabric.
2. The second method is laying a layer of wet muslin or long cloth over the fabric and rolling the two together and allowing it to remain in this position over night. After this the muslin or long cloth should be removed and the woollen fabric is spread on the table with wrong side upwards. The fabric should now be pressed and allowed to dry naturally.

c. Closely woven starched cotton:

Dip the fabric into mild soap solution for at least four hours. For uniform shrinkage the position of the cloth should be changed occasionally. It should then be removed and rinsed with cold water 3 to 4 times, and then allowed to dry without squeezing. The cloth should be pressed, before it is completely dry.

- Note:**
1. In all cases the fabric should be unfolded and then treated for shrinkage.
 2. Care should be taken that the bucket or the vessel used is not rusty.

11.4 STRAIGHTENING OF FABRIC:

a. First Method:

Many times fabric needs to be straightened before the garment is cut out. Draw out a crosswise thread and cut fabric along the thread if the fabric has not been torn from the roll. Then the garment will fit better and hold its shape longer. To see whether it is straight, place it on a large table and make a lengthwise fold down the center to meet both selvedge together smooth out wrinkles. If the two selvedges meet evenly with the side of the table and the raw edges come together even with the ends of the table, then the fabric is straight. If the two edges do not come together and are not even with the end of the table, the material is not straight.

b. Second method:

The second method is by pulling the fabric on the bias. When fabric is pulled on the bias, it stretches. Always pull the corner of the shortest edge moving the hand over a few inches each time. The fabric is given a good, firm pull. Sometimes a partner is necessary to assist straightening the material. Then, each one should pull with a right hand and again

with the left hand. Continue pulling first with one hand and then the other until the material is straight. Repeat this until the selvages of the material come together. After this, press the material if the cloth is wrinkled. Dampen it with a damp cloth, press along the lengthwise of the fabric but not in the circle. Use a chair to hold the material so that it does not fall on the floor.

11.5 MARKING AND CUTTING FABRIC:

It is necessary to mark all details from the pattern to the cloth, which will be needed during the construction of the garment. Mark these details:

1. Seam lines.
2. Center front and center back lines.
3. Darts
4. Fold lines
5. Positions for pleats or gathers or Pockets
6. Buttonholes and buttons
7. Any other special markings used to construct the garment

a. Transferring Pattern Marking:

The fastest and most accurate way to transfer construction details from pattern to cloth is with dressmaker's tracing paper or carbon use a tracing wheel and have the carbon mounted on a heavy cardboard to protect table surfaces. Details should be marked on the wrong side of the cloth where most construction lines are needed. Use white tracing paper wherever possible because it is safe. If carefully handled its mark lasts longer. The pigment in coloured tracing paper leaves a more permanent line. It can usually be removed by scrubbing, but ordinary washing methods and dry cleaning do not always remove it. Test a scrap of your clothes before marking the garment. Garment sections should have been cut with the right sides of the cloth together, or when cut from a single thickness, with the right side up, next to the pattern.

Certain lines, such as those for folds and some kinds of pockets and buttonholes are needed on the right side of the cloth. Make the longest machine stitch called a bast stitch along with the traced lines on the underside of the cloth. Stitch through a single layer. The basting shows the detail on the right side of the cloth.

b. Cutting Fabric:

Keep the ends and sides of the material parallel with table edges at all times so that the grain never shift. Walk around the table for cutting, instead of pulling the material. Moving the pattern and material will shift the grain and result in uneven cutting. Do not pick up the

cloth from the table or slip the left hand between the cloth and the table. Hold the left hand down on the pattern close to the cutting edge and cut with long even strokes with right hand. Keep the cutting blade or shears resting on the table. Have the thumb in the round handle and the fingers in the long handle, so that shears will not slice at an angle. Cut with long, smooth strokes with the full length of the shears. Cut exactly even with the cutting edge as indicated on the pattern. Cut notches outward. Two or three notches may be cut as one wide notch. Look over the guide sheet or pattern to find out if extra pieces will be needed in finishing, such as shaped facings, bias binding, straight bands for cuffs or strips for piped buttonholes.

11.6 PATTERN LAYOUT:

Laying Pattern Pieces over the fabric in an economical way is called as pattern layout. This prevents wastage of fabric.

Principles of Pattern Layout:

Some of the principles to be followed while laying patterns:

1. Press the fabric as well as the pattern pieces flat before laying the pattern on the fabric.
2. Use a large table or any hard flat surface for accommodating the work.
3. If an open layout is used, place the fabric right side up on the table. For all other layouts fold the fabric right sides facing and wrong sides out.
4. Decide on the best way to fold your cloth this will depend on the width of the cloth, width of your pattern pieces, the type of cloth and design of the garment (whether left and right halves are identical. Whether many pieces have to be cut on fold the garment (whether left and right halves are identical, whether many pieces have to be cut on fold etc.) The common methods of folding the cloth for laying out pattern pieces are the following.

a. Lengthwise centre fold:

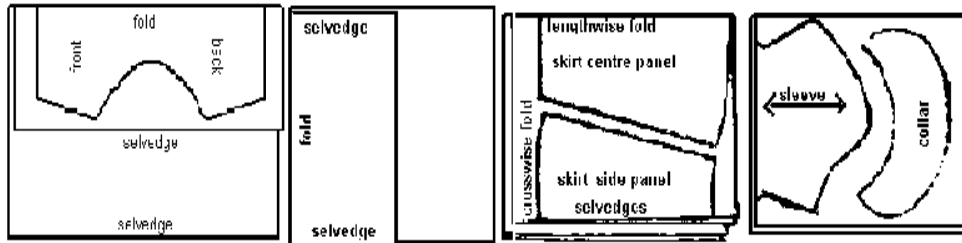
Here the fabric is folded down the middle parallel to the selvedge so that the selvages come together. This is the most frequently used fold. The layout for a simple frock on this type of fold is illustrated in the figure.

b. Off centre lengthwise fold:

This is used when narrow pieces have to be cut on fold. To ensure that the fold is parallel to the selvedge, mark points measuring the required distance (width of the half pattern including seam allowance) from the selvages at regular intervals and fold along the markings. The layout for a child's panty on this type of layout is illustrated in the figure.

c. Crosswise centre fold:

This is suitable for materials that are too narrow to accommodate the width of pattern pieces when folded lengthwise.



Different types of Lay-out

d. Off centre crosswise fold:

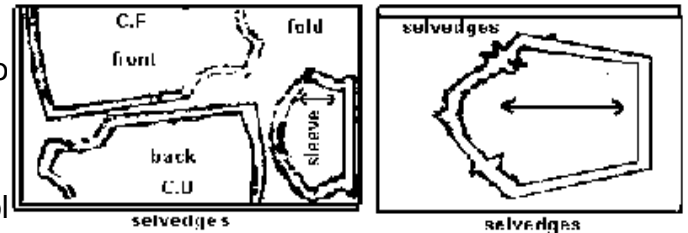
When only a part of the material is required to cut pattern pieces that are too wide for lengthwise fold layout, this type of fold is used.

e. Combination fold:

Here length wise fold and crosswise fo

f. Open layout:

In this type of layout, the fabric is not fol which regain right and left halves to be cut se



Make a trial layout by keeping weights or two pins per pattern, to make sure that cloth will be sufficient. Rules 6 to 9 must be borne in mind while making the trial layout.

5. Straight grain lines on patterns must be kept parallel to the fabric selvedge. To ensure this, measure and adjust the pattern so that both ends of the straight grain line are the same distance from the selvedge and pin the pattern to the fabric along the grain line arrows.
6. Fold lines on the patterns must be kept on folded edges of fabric.
7. Leave enough space between patterns for cutting outward notches and marking seam allowance (if the patterns do not include seam allowances). Also make sure that there is enough material left for cutting out belts, facings, etc. for which you may not have made paper patterns.

8. The patterns must be placed on the fabric in the most economical way.
9. Pin patterns to the fabric firmly, after placement of the pattern has been decided, pin the corners and the long outside edges of the patterns, placing pins close to and approximately perpendicular to the cutting line. Use just enough pins to keep the pattern in position. Too many pins will distort the edges. You should start cutting the fabric only after pinning all the pattern pieces.
10. Take care to use special layouts for asymmetric designs and for fabrics with bold designs, striped and checked designs, designs going in one direction and fabrics with nap and pile.

Questions:

PART – I

Objective questions:

1. Direction of the selvedge is
(a) Lengthwise grain (b) widthwise grain (c) bias grain (d) None
2. A fabric that does not require pre shrinking is
(a) cotton (b) rayon (c) wool (d) starched cotton
3. Straightening of fabric should be done
(a) before stitching (b) after stitching (c) before cutting (d) after cutting
4. The details necessarily to be marked and cut are
(a) fold lines (b) darts (c) seam lines (d) all the above
5. The fabric is not folded in
(a) combination fold (b) open layout
(c) lengthwise layout (d) None of the above
6. Lengthwise and crosswise fold is performed in
(a) combination fold (b) off centre crosswise fold
(c) lengthwise fold (d) open lay out
7. To prevent wastage of fabric, this method can be used
(a) Draping (b) Grading (c) Lay-out (d) Drafting

Answer in one or two words:

1. What is lay-out?
2. Name the garment for which a combination fold is used.

3. What is length wise center fold? Where it is used?
4. What is combination fold?

PART – III

Answer in a paragraph:

1. What should be done before cutting?
2. How cotton, linen fabrics are shrinked?
3. How a starched cotton fabric is shrinked?

PART – III

Answer in a page:

1. Explain on starightening methods in fabrics.
2. Explain how shrinkage is done for Silk, Rayon and wool fabrics.
3. Write about different types of lay-out?

PART – IV

Answer in a page:

1. Explain Shrinkage different types of fabrics.
2. What are the principles of pattern layout.

Answers for objective questions:

1. (a) 2. (b) 3. (c) 4. (d) 5. (b) 6. (a) 7. (c)

12. SEAMS AND SEAM FINISHES

12.1 INTRODUCTION:

A seam is a method of joining two or more pieces of material together by a row stitch. In garment construction, one of the major step is the joining of different section by seam. This can be done by hand or machine. Seams must be done as flat as possible, neat and evenly spaced. The type of seam to be used will depend on the type of garment, texture and durability of the fabric.

12.2 CHOICE OF SEAM:

The type of seam to be used on a garment will depend on various factors. The most important factors are listed below.

1. Texture of the fabric:

When working with a heavy fabric, bulky seams like french seam must be avoided.

2. Design and use of the garment:

When making a boy's sports shirts, a strong seam like flat fell seam should be used.

3. Place where seam in used:

Seams may be straight or curved depending upon the garment design. When joining curved edges, plain seam will give a better finish than any other type of seam. Some parts of the garment which may get stretched during body movement will have to be made with more durable seams.

4. Current fashion:

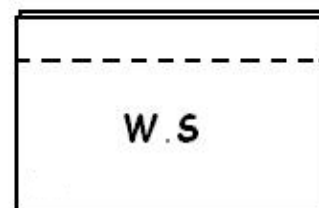
The modern trend is to use a simple seam which produces a garment.

12.3 TYPES OF SEAM:

Seams are of different types. They are: 1. Plain seam 2. Run and Fell seam 3. French Seam 4. Mantua maker seam 5. Piped seam

1. Plain seam:

This is the most widely used seam because it is easy to make, requires less time, is pliable and inconspicuous. It is used on all types of fabrics except on very transparent kinds, and is especially suitable for firm fabrics that do not ravel. To make this seam, place the two pieces of fabrics to be joined together right side facing, matching the seam lines. Insert pins at right angles to the seam line and work a line of tacking following the



Plain seam

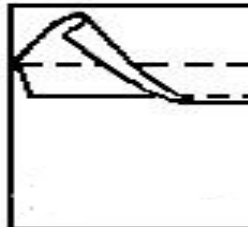
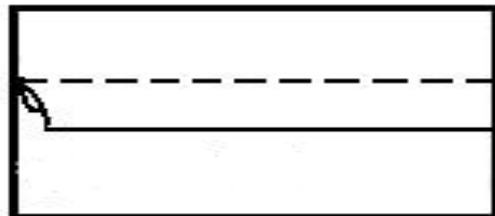
seam line. Remove the pins and stitch the seam exactly on the seam line. Remove tacking and press the seam open. If the fabric is fine, both the seam allowances can be pressed to one side. Plain seam is used especially for side seams and armhole seams on skirts, coats, petticoats, blouses etc.

2. Run and Fell seam:

This is also called flat fell seam, as it is flat durable seam used on men's sports shirt, work clothes, children's clothes and pyjamas. This can be stitched by Hand or machine. However it is time consuming and difficult to make on curved edges and on bulky fabrics

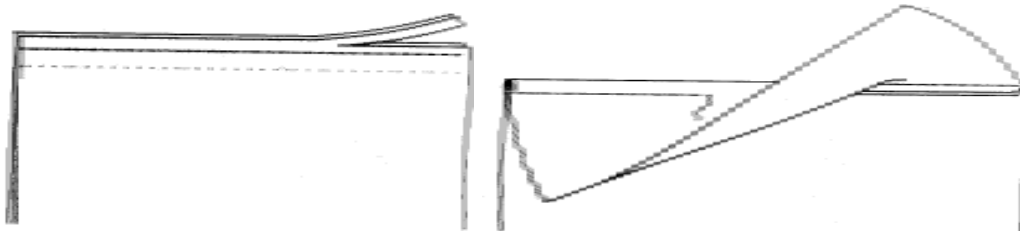
Run and Fell Seam

but suitable for thin fabric. Place the pieces to be joined right sides facing, and stitch on the seam line. Press both seam allowances together in the same direction and trim the under seam allowance to 1/8" and the upper one to 3/8". Turn under the raw edge of the wide seam allowance so as to make a smooth fold 1/4" wide. Keeping this fold in position with one hand, tack and fold down flat to the garment. Machine stitch close to the folded edge on the right side of the garment. The right side stitching and wrong side will show two rows



3. French seam:

This is also called as double seam and is used on delicate fabrics, especially on baby clothes and delicate blouses. Such as voile organza, muslin



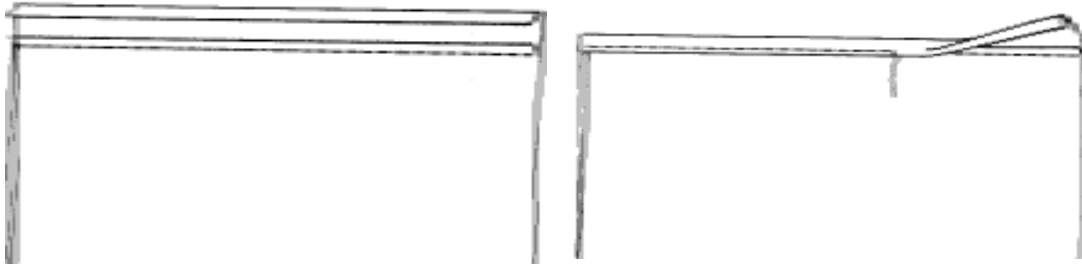
French seam

etc. It is a neat and durable finish, as the raw edges are completely enclosed. Do not use this seam on curves such as armholes and yokes stitched first. Plain seam must be trimmed and then stitched to prevent wrinkles seen on the right side. The two pieces of materials to be joined are placed together with wrong sides facing. Work a row of stitching 1/8" outside the seam line towards the raw edges. After stitching, trim the seam allowances to less than 1/8". Press the seam and turn the work so that the right sides are together.

Crease the first row of stitching so that it is directly on the edge. Pin or tack and stitch along the seam line about 1/8" from the fold. In this seam, care should be taken to see that there are no ravelings visible on the right side.

4. Mantua maker's seam:

This type of seam will not be suitable for bulky fabrics. Keeping right sides facing, tack the garment on the seam line. Trim one seam edge to 1/4" from the tacking line. Make a 1/4" turning on the wide edge so that this edge nearly touches the narrow seam allowance.

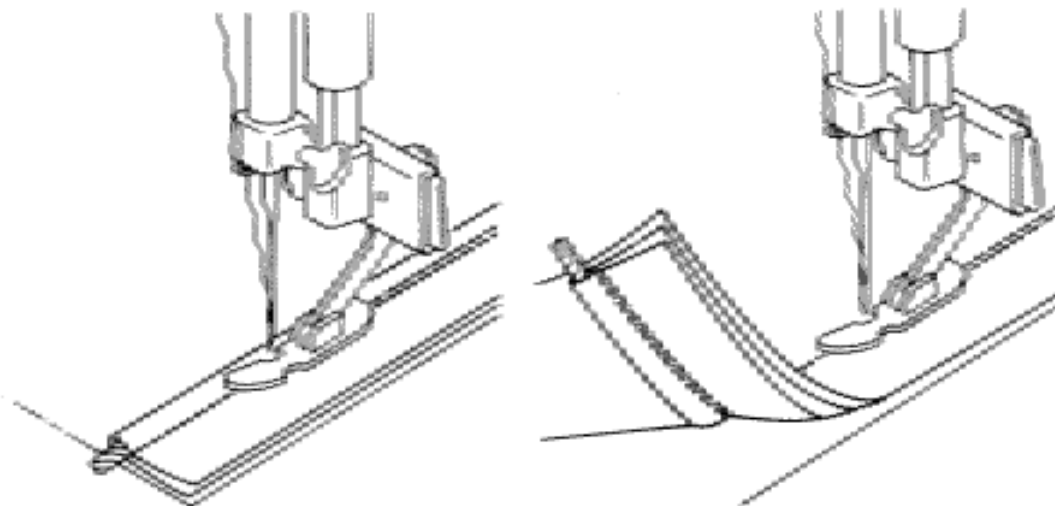


Mantua maker's seam

Now make a second fold to make the folded edge lie along the original tacking line, machine stitch or hem through all thicknesses and remove tacking.

5. Piped seam:

Sometimes a piping or bias piece is inserted in a plain seam to give a decorative finish to the garment. This type of seam is very often used in the waistline, Yokeline and armhole line of the garment. If a cord is enclosed in bias strip, the seam is called corded seam. Prepare the bias strip, fold it in the middle and tack it to the right side of the pieces



Piped seam

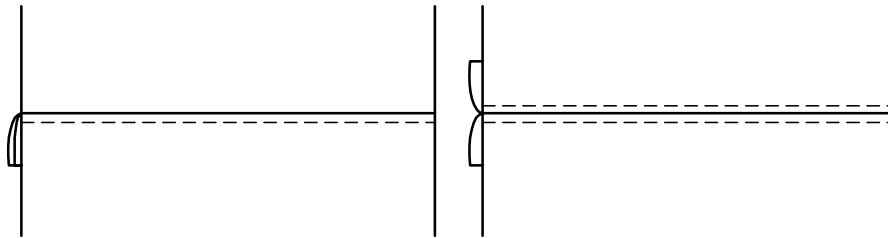
to be seamed in such a way that the bias fold extends 1/8" inside the seam line. To be more effective the bias material should be of contrast color.

12.4 TOP STITCHED SEAM:

Top stitching adds strength and decoration to the seam. Five different types of top stitched seams are: 1. Single top stitched seam 2. Double top stitched seam 3. Welt seam 4. Lapped seam 5. Slot seam.

1. Single top stitched seam:

Stitch a plain seam, press the seam edge to one side and make a row of machine stitching, close to the seam line on the right side catching the seam allowances.



Single top stitched seam

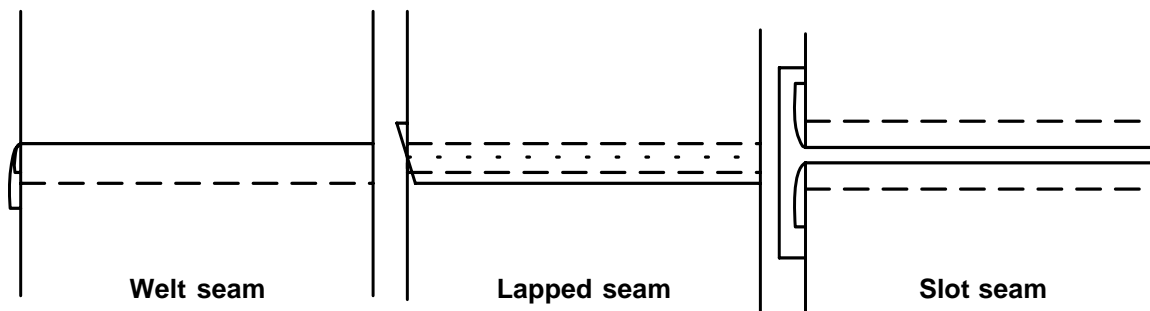
Double top stitched seam

2. Double top stitched seam:

Stitch a plain seam and two lines of stitching is done on the right side of the garment, one on either side of the seam line, after the seam allowances are pressed open.

3. Welt seam:

This is similar to single top stitching, but it is used for bulky fabrics such as wool and coat fabrics. Stitch a plain seam and trim one raw edge to about ¼" width. Press the two raw edges to one side, with the narrow one closed under the wider one. Now stitch on the right side, so that the stitching will come just outside the narrow seam edge, but inside the wider seam edge.



Welt seam

Lapped seam

Slot seam

4. Lapped seam:

This seam is used with natural or synthetic leather fabrics. Mark seam lines. Lap one edge over the other with seam lines meeting in the center. Place a row of straight stitching on either side of seamline or stitch with wide zigzag through center. Trim both seam allowances close to stitching. Lapped seams are used to eliminate bulk, especially on interfacing and interlining.

5. Slot seam:

This variation of lapped seam is used in skirt, coat and dresses for decoration. Sometimes it is combined with an inverted pleat. Cut a strip of fabric of the same length as the seam itself and having a width more than twice the width of the seam allowance. Work a row of tacking down the centre of the strip. Take the two parts of the garment to be seamed and fold their seam allowances to the wrong side. Now, with right side up, place the folded edge over the strip so that the folds fall exactly on the tacked line of the strip. Tack in position close to the folded edges and top stitch carefully along each side of the seam about $\frac{1}{4}$ " from the folded line. Finally remove the tacking. The slot fabric is shown $\frac{1}{4}$ " on the right side of the garment. This may be of contrasting color.

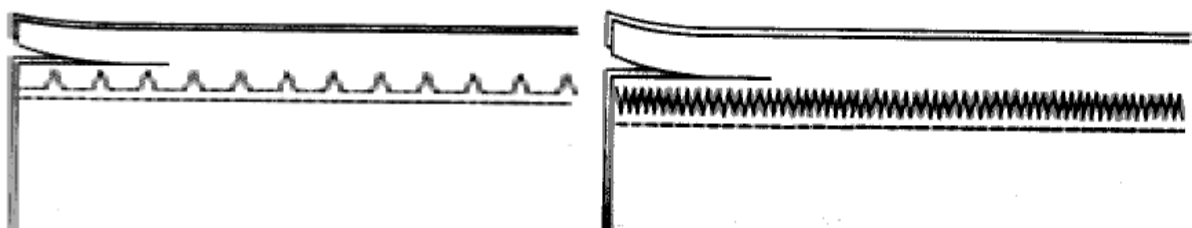
12.5 SEAM FINISH:

A seam finish is any technique used to make a seam edge look neater and/or keep it from raveling. A seam finish can be selected depending on the type of garment and texture of the fabric.

1. Double stitched seam finish
2. Pinked finish
3. Stitched and pinked finish
4. Overcast finish
5. Herringbone stitched seam finish
6. Hem stitched seams finish
7. Edge stitched finish
8. Zig zag stitched seam finish
9. Bound seam finish
10. Net-bound finish

1. Double stitched seam finish:

A double stitched seam is especially good for knits, such as knitted soft jersey where edges tend to curl. Stitch a plain seam with straight stitch. And then stitch a second

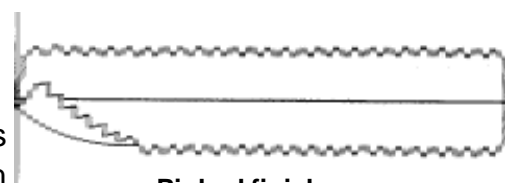


Double stitched seam finish

row $\frac{1}{8}$ " from the first stitch, using one of the following as straight stitch, zig zag, a blind stitch or other over edge stitch. Trim seam allowances close to the stitching. Press seam to one side.

2. Pinked finish:

This is a quick method and is not bulky, but is not a suitable finish for fabrics that ravel badly such



Pinked finish

as satin and other similar kind of fabrics. After stitching plain seam trim off about 1/8" of the seam allowance using the pinking shears. Then press the seam open.

3. Stitched and pinked finish:

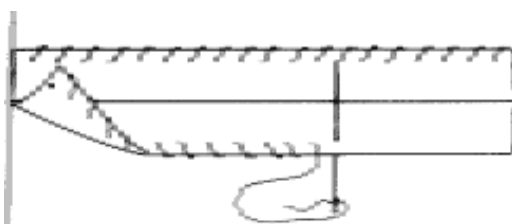
After a making a plain seam, turn the fabrics towards the wrongside, press the seam open and make both a stitch 1/4" from the seamline on both sides. Trim both the edges with pinking shear.



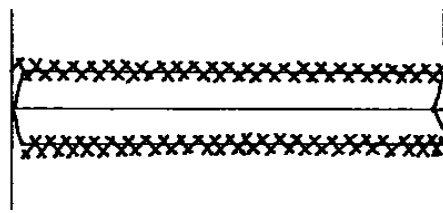
Stitched and pinked finish

4. Overcast seam finish:

This is a common finish used for both thick and thin fabrics that frays easily. It is suitable for narrow seams and also for seams that receives hard wear such as armholes and waist lines. Make a plain seam and press open. Work overcasting stitches over the raw edges separately. Avoid tight stitches in order to prevent edges from puckering on seams of armholes and yokes. Press the seam allowances to one side and overcast both edges together.



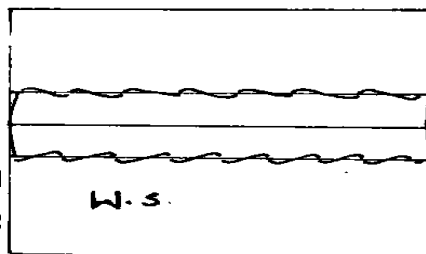
Overcasting stitched seam finish



finish

5. Herringbone stitched seam finish:

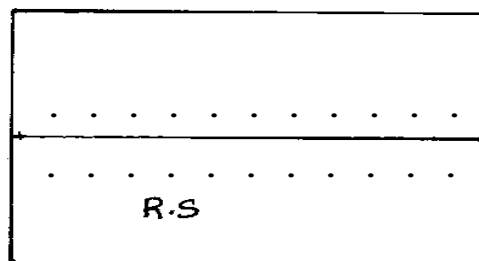
This finish neatens the raw edges and makes the seam flat, suitable for heavier fabrics. Press the seam open and work herringbone stitches on two raw edges, catching the garment.



making the one stitches

6. Hem stitched seam finish:

This finish neatens the raw edges with the help of hem stitch. Press the seam open

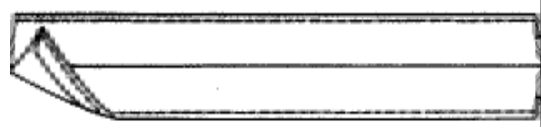


Hem stitched seam finish

and work hem stitch holding the fabric. The right side of the fabric shows small dots.

7. Edge stitched seam finish:

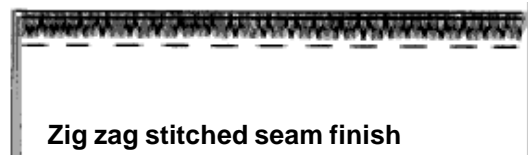
Plain seam is stitched and pressed open. Then turn under $\frac{1}{4}$ " on each seam edge and top stitch close to the fold without catching the garment. This finish is used on unlined coats and jackets where a wide seam allowance is available. This is a bulky finish and is not suitable for deeply curved seams.



Edge stitched seam finish

8. Zig zag stitched seam finish:

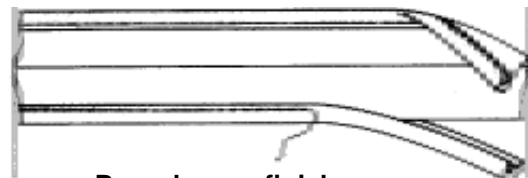
This type of finish is more suitable for natural fur and fake fur fabric. Trim seam allowance to $\frac{1}{8}$ " and stitch with plain zig zag stitches.



Zig zag stitched seam finish

9. Bound seam finish:

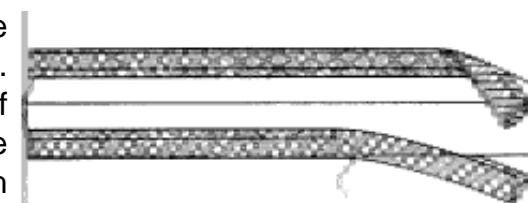
Bound binding is especially good for finishing seams in an unlined jacket or coat. Press the seam open on the wrong side and wrap a bias around it, with wider side of tape underneath, stitch close to edge of top fold, catching underneath fold in stitching.



Bound seam finish

10. Net-bound seam finish:

This is an inconspicuous and appropriate finish for delicate fabric, such as velvet or chiffon. Cut $\frac{1}{2}$ " wide strips of nylon net, fold in half lengthwise, slightly off center. Wrap net around edge with wider half underneath. From top, edge stitch narrow half to binding, catching wider half underneath in the stitching.



Net-bound seam finish

QUESTIONS:

PART-I

Objective questions:

1 Mark

1. When making a boy's sport's shirts, this type of seam is used.
(a) Plain seam (b) French seam (c) Run and fell seam (d) Piped seam
2. For this type of seam, a single row of stitch is worked close to the seam line on the right side.
(a) Double top stitched seam (b) Single top stitched seam
(c) Welt seam (d) Lapped seam.

3. Bulky fabrics will not be suitable for this seam
 - (a) Plain seam
 - (b) Mantua maker seam
 - (c) French seam
 - (d) Single top stitched seam
4. Which stitch adds strength and decoration to the seam?
 - (a) Top stitch
 - (b) Stem stitch
 - (c) Chain stitch
 - (d) Cable stitch
5. This type of finish is more suitable for natural and fake fur
 - (a) Zigzagged finish
 - (b) Pinked finish
 - (c) Edge stitched finishes
 - (d) Hem stitched seam finish
6. This is appropriate finish for velvet or chiffon fabrics.
 - (a) Net bound finish
 - (b) Stitched and pinked finish
 - (c) Pinked finish
 - (d) Zigzag finish
7. This kind of seam is the variation of lapped seam
 - (a) Lapped seam
 - (b) Slot seam
 - (c) Run and fell seam
 - (d) French seam
8. This is also called flat fell seam
 - (a) Run and fell seam
 - (b) French seam
 - (c) Plain seam
 - (d) Mantua maker seam
9. A neat, durable completely enclosed seam
 - (a) Mantua maker seam
 - (b) Run and fell seam
 - (c) Plain seam
 - (d) French seam
10. The seam with cord enclosed in the bias strip is
 - (a) Welt seam
 - (b) Top stitched seam
 - (c) Lapped seam
 - (d) Piped seam

Answer in one or two words:

1. How will you name the joining of two or more piece of material with a stitch?
2. Which seam is easy to make and requires less time?
3. What is the other name for Run and Fell seam?
4. Which seam is used on transparent and light weight fabric?
5. When working with a heavy fabric, which seam must be avoided?
6. When joining curved edges, which seam will give a better finish than any other type of seam?

7. Name the seam in which bias piece is used for decoration.
8. How many types of top stitch are there?
9. Name any two Top stitch.
10. Which seam will be suitable for knitted soft Jersey fabrics?

PART-II

Answer in a paragraph:

4 Marks

1. Define plain seam with a neat diagram.
2. What is lapped seam? Explain with diagram.
3. Explain stitched and pinked finish with diagram.
4. Write about pinked finish and overcast finish with diagram.
5. Write about single and double stitched seam finish.

PART-III

Answer in one page:

10 Marks

1. Write about types of top stitched seam.
2. Explain about Flat fell seam and french seam with diagram.
3. Describe about plain and slot seam with neat diagram.
4. Illustrate and Explain about mantua maker and piped seam.
5. Explain on choice of seam.
6. Write about bound and Net bound finish.

PART-IV

Answer in detail:

20 Marks

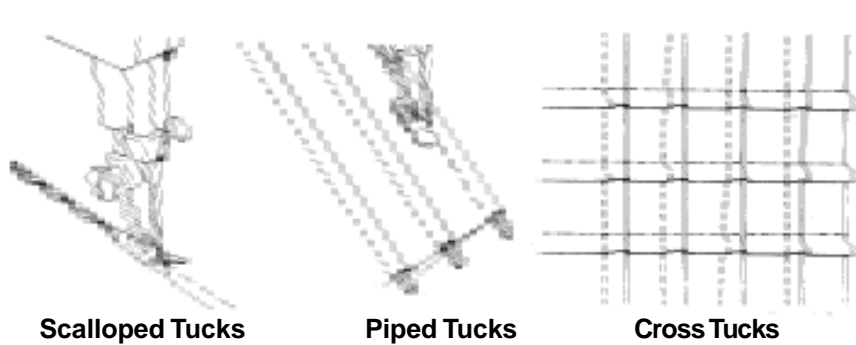
1. Write in detail on different types of seam with diagram.
2. Describe about different types top stitched seam.
3. Explain on types seam finish.

Answers for objective questions:

1. (c) 2. (b) 3. (b) 4. (a) 5. (a) 6. (a) 7. (b) 8. (a) 9. (d) 10. (d)

3. Shell or Scalloped tucks:

This is a very decorative tuck made by hand. Make a tuck of $\frac{1}{4}$ " finished width. On the stitch line mark uniformly spaced dots $\frac{1}{2}$ " apart. Do overcasting stitches pull tight on each dot inserting the needle from the wrong side and bring back the needle to wrong side after overcasting and reinsert to the next dot the same way. Repeat the same till the dots end. This is called as shell or scalloped tuck.



4. Piped or corded tucks:

These are made by placing cording on the wrong side of the fabric at centre of tuck before stitching the tuck. Stitching should be done close to cording.

5. Cross tucks:

When rows of tucks are stitched along the fabric in both horizontal and vertical direction, the decoration is called as cross tucking. First stitch the vertical tucks and press this to one side. Then stitch the horizontal tucks.

13.4 PLEATS:

Pleats are introduced usually at the waistline of skirts and dresses to provide fullness evenly all around. The preparation of pleats is similar to that of tucks, the main difference being that pleats are wider than tucks. Knife pleats, box pleats or inverted pleats are used in dresses.

1. Knife Pleat:

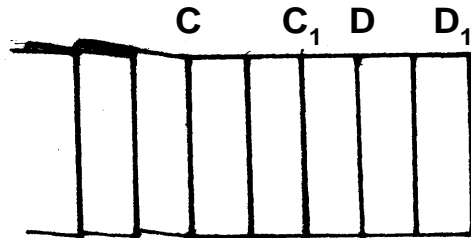
These are used in the place of gathers. They are usually about $\frac{1}{2}$ " - 2" wide and are turned towards the same direction. The figure shows two knife pleats tacking in position and marking for two more pleats. To form the third pleat, make a fold along line C and bring this fold to the right so as to lie over line C_1 . Similarly the fourth pleat will bring D over D_1 . The distance CC_1 is twice the width of the finished pleat.

2. Box Pleats:

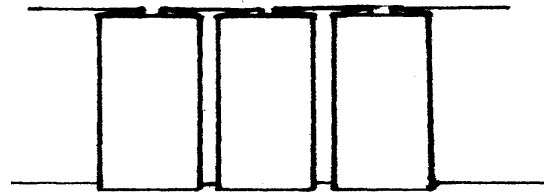
Two knife pleats turned away from each other (one to the left and one to the right) form a box pleat. This can be used in frocks and skirt waistline.

3. Inverted pleat:

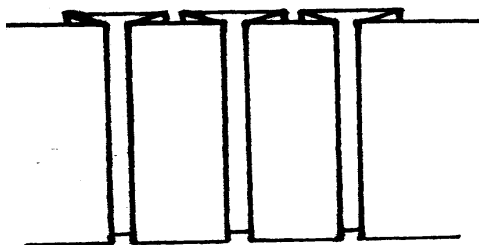
It is the opposite of box pleat. It is made up of two knife pleats turned towards each other so that the folds meet in the middle on the right side of the garment. This is used mostly in uniforms and skirt.



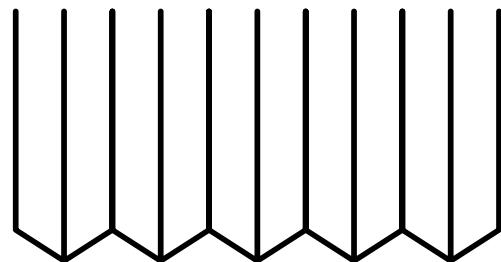
Knife



Box



Inverted Box



Accordion

4. Accordion pleat:

It is a very narrow, straight pleats, equal in width to each other. The folds resembles the bellows of an accordion, from which the name is derived. The width ranges from 3 to 13 mm. These are close together and depth is equal from waist to hem.

5. Sunray pleat:

Pleats which fan out and graduate from the waist. These pleats are set in the industries and to sustain pleating, the fabric used should be a synthetic or a blend with over 50% synthetic fibers. These are usually used on a circular skirts.

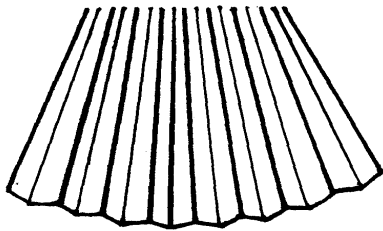
6. Kick pleat:

Any type of pleat such as knife pleat, box pleat, or inverted box pleat can be used to decorate this type of skirt. After pleating, a top, stitch near to the fold if made till the desired length (should not be made till the hem edge) and decorated.

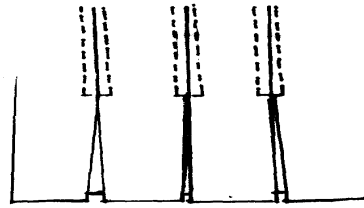
7. Cartridge pleat:

These are round pleats used for door and window curtains. Firm heavy fabrics will be more suitable for this type of pleats. Take a strip of material, $\frac{1}{2}$ the time as long as the section of the curtain material, which is to be trimmed with pleats. (eg. Strip length - 20"; curtain length - 40").

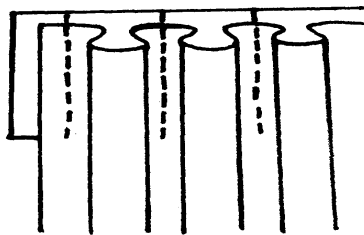
Make markings of 2" distance in curtain fabric and make marking on strips of 1" distance in between each marking. Tuck and stitch the curtain to the strip, matching the



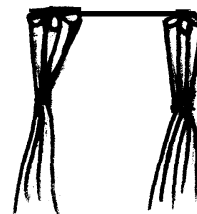
Sunray



Kick



Cartridge



Pinch

marking lines exactly. Do not press.

8. Pinch pleat:

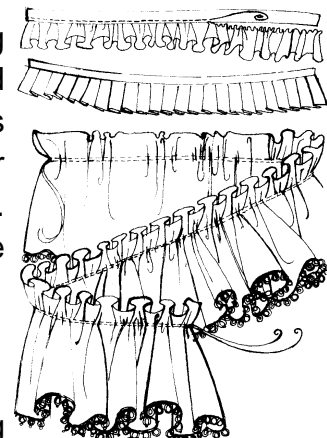
There are also used on curtains and draperies. These pleats are stitched part way down and so the markings are made as for tucks. Make three equal small pleats and baste them together along the top and front edge, press and machine the three pleats together across the bottom ends.

13.5 GATHERS:

Gathering is an effective and decorative way of distributing fullness over a given area. In dress making, gathers are often used at yokes line, waist line, neck line, upper and lower edge of sleeves for kid's and ladies garment. The amount of material needed for gathering will be twice the measurement of waist circumference. These are more beautiful on thin fabrics. Gathering can be done through several ways as given below.

1. Gathering by hand:

Fasten thread securely and work two rows of tacking stitches. Draw the ends of thread until the section measures the desired length and secure the thread by winding round over a bell pin.



Gathers

2. Gathering by Machine:

Adjust the machine for long stitch and loosed the upper tension slightly. Now work two rows of machine stitches $\frac{1}{4}$ " apart. Distribute the fullness evenly by pulling both bobbin threads together and do a row of machine stitch. Ruffles attachment or gathering foot can be used to gather large section of fabric.

3. Gathering using elastic:

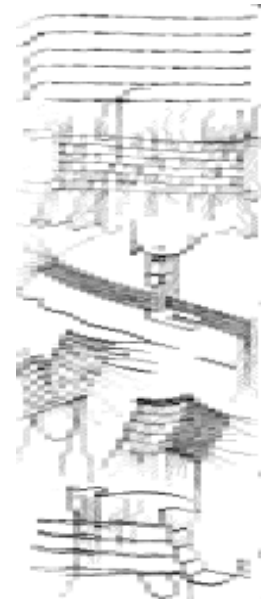
Gathers can be made by stretching a narrow strip of elastic and stitching on the part of the garment which is to be gathered.

13.6 SHIRRING:

Shirring is formed by several rows of gathering. Use shirring only on soft or lightweight fabrics.

1. Shirring made by long machine stitches:

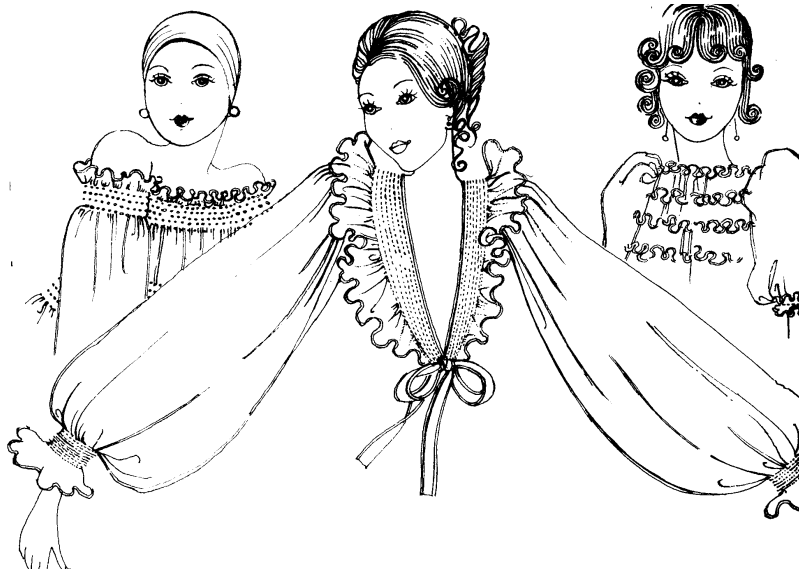
Stitch as many rows of gathering as desired with long machine stitches and secure each row with a knots in the seam allowance.



Shirring made by machine

2. Elasticized shirring:

This is made by using elastic thread in the bobbin. Wind elastic thread on the bobbin by hand, stretching slightly. Use a long stitch, 6 to 8 stitches per inch (3-4 mm in length).



Application of shirring on garments

Stitch on the right side of the fabric, stretching the previously stitched rows as you sew each new row.

Questions:

PART – I

Objective questions:

- To make a pattern to fit the body curves which can be used.
(a) pleats (b) gathers (c) darts (d) tucks
- What is the other name for half dart?
(a) double pointed dart (b) single pointed dart
(c) decorative dart (d) group dart
- What is other name for standard dart?
(a) Half dart (b) Full dart (c) French dart (d) Double pointed dart
- This is a diagonal dart.
(a) Half dart (b) Full dart (c) French dart (d) Single pointed dart
- To shorten a patterns length this can be used
(a) dart (b) tucks (c) gathers (d) pleats
- The tucks used for decoration is
(a) pin tuck (b) group tuck (c) scalloped tuck (d) All the above
- Which pleat is a very narrow, straight, with equal width.
(a) Sunray pleat (b) Accordion (c) Box pleat (d) Inverted box pleat
- Which is a round pleat.
(a) Accordion (b) Sunray pleat (c) cartridge (d) kick
- Pleats in which 3 small equal pleats are stitched together.
(a) Kick pleat (b) Sunray pleat (c) Box pleat (d) pinch pleat
- How several Rows of gathers is called as.
(a) Shirring (b) pleats` (c) Tucks (d) darts

Answer in a one word:

- What is the other name for full dart?
- What is pin tuck?
- What is size of pin tuck?
- In which pleat, two knife pleats are turned towards each other?
- Where will a bobbin elastic be used?

PART – II

Answer in a paragraph:

1. What is single dart?
2. What is French dart.
3. Name the types of tucks and write about pin tuck.
4. What is piped tuck?
5. Name the types of pleats.
6. What is knife pleat?
7. What is sunray pleat?
8. What is gathers? Name its types.
9. Write about Gathering by machine.
10. What is shirring?

PART – III

Answer in a page:

10 marks

1. Give a brief account or dart types.
2. Write about different types of tucks with diagram.
3. Write in brief on four types of pleats.
4. Write short notes on gathers with diagram.
5. Write about shirring.

PART – IV

Answer in details:

20 marks

1. Write in detail of different types of pleats.
2. Write in detail on different types of tucks, gathers and shirring.

Answer for objective type Questions:

1. (c) 2. (b) 3. (a) 4. (c) 5. (b) 6. (b) 7. (b) 8. (c) 9. (a) 10. (a)

14. PLACKETS AND FASTENER

14.1 INTRODUCTION:

Plackets are finished opening constructed in order to make it easy to put on or take off a garment. When the garment is in use plackets are kept closed (for good fit) with the aid of fasteners such as zips, buttons and buttonholes, press buttons, hooks and eyes etc. They are used at waist lines, neck lines, wrists and other snug fitting parts of the garments.

14.2 PLACKETS:

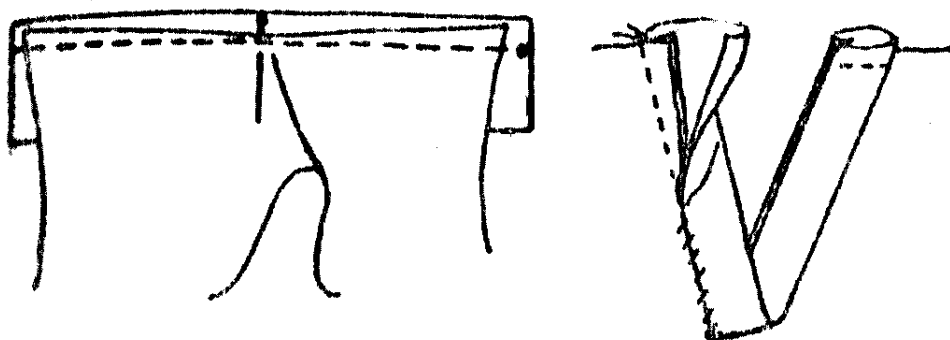
A placket may be made in an opening left in a seam, in slash or cut in a garment. The placket made in a seam is stronger and gives a better finish when completed. The following points should be kept in mind while making placket.

1. A good placket should be as inconspicuous and flat as possible. It should not be bulky, puckered or stretched. Fastenings should hold securely and there should be no gapping edges.
2. Neck openings must admit the head easily, pass over. The position of the placket should be such that it is easily accessible and convenient to operate.
3. Openings are subjected to certain amount of strain during wear and should be strengthened at the closed ends, lower end or neck and skirt openings, upper end of wrist openings etc. For plackets in seams to be durable, the garment seam should be at least 5/8" wide. Seams should not be trimmed or clipped too close.
4. The type of placket used should be suitable to the kind of garment on which it is used, its position in the garment, texture of the fabric, age and sex of the wearer and current fashion must be kept in mind while choosing placket.

14.2.1 Placket types:

1. Continuous bound placket:

This is also called one-piece placket and may be made in a seam or slash. It is



Continuous bound placket

suitable for children's dresses, undergarments like sari petticoat, and for sleeve openings

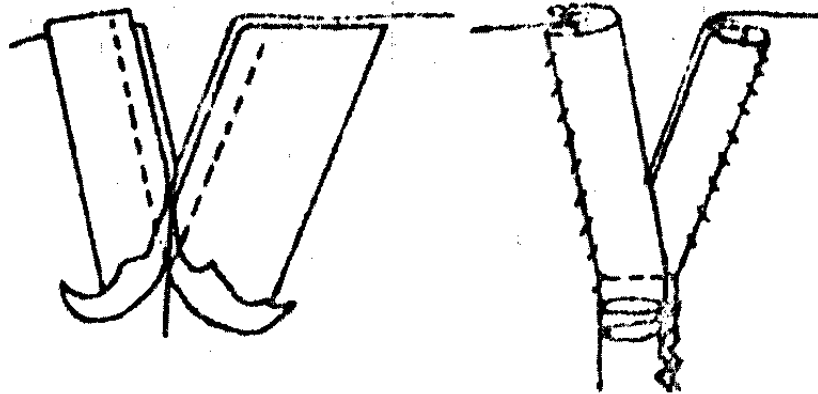
where a cuff or band is used. Do not use this placket on curved seams and on bulky fabrics.

To make a placket in a slash, cut a strip of fabric on the lengthwise grain. $1\frac{1}{4}$ " to $1\frac{1}{2}$ " wide and one inch longer than twice the length of the openings. Keep the centre of a long edge of the strip to the end of the slash, with right sides of garment and strip facing each other. Pull back the tip of the slash about $\frac{1}{4}$ " from the edge of the placket strip and pin. Spread the placket edges apart almost into a straight line and attach to the strip by a line of tacking worked $\frac{1}{4}$ " from the edge of the strip from the garment side, machine over the tacking line from one end up to its midpoint. Stop the machine at this point with the needle in the fabric, raise the pressure foot and move the fullness backward out of the way to prevent catching a pleat. Make sure that the garment edge is caught in the seam. Lower the presser foot and stitch to the opposite end of the opening.

Press the seam edges towards the placket strip and fold under the free edge of the strip $\frac{1}{4}$ " and crease. Then fold the strip over the seam edge and hem it along the stitching line. Fold the strip under on the overlap section and tack it at the seam. Tacking can be removed after the fasteners are fixed.

2. Bound-and faced placket or two-piece placket on a seam:

This is used in the left seam of skirts or petticoats and back seam of dresses. The underlap side of this placket is finished with a binding and the overlap with a facing. For this two separate strips of fabric are used, one of width $1\frac{1}{2}$ " for the overlap and a wider one ($2\frac{1}{2}$ ") for the under lap. Both the strips should be 1" longer than the placket opening. Stitch the narrow strip to the overlap side (front part of the skirt) and the wide strip to the



Bound and faced placket

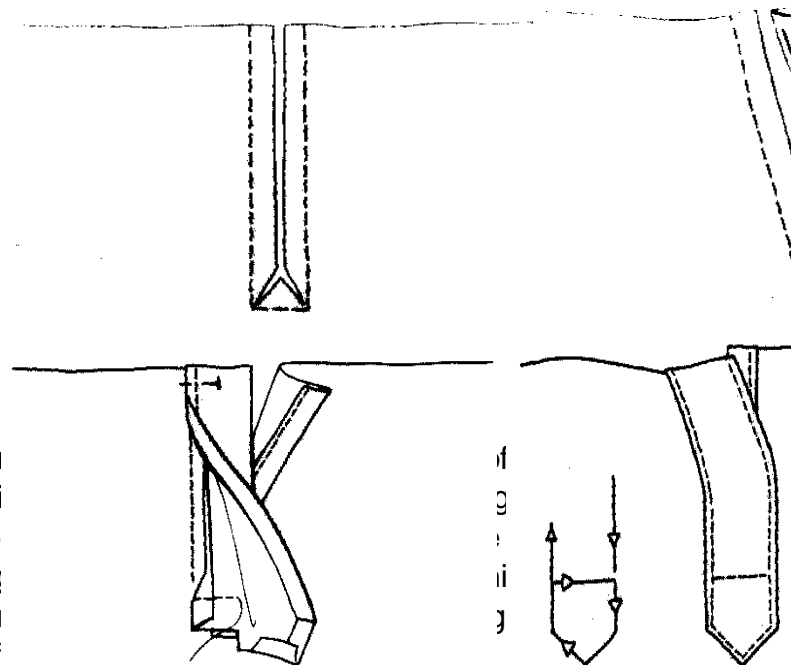
under lap side of garment (back part of the skirt), right sides facing and seam lines matching. The seam allowance used for attaching the strips should be the same as that of the seam on which the placket is to be fixed (about $\frac{1}{2}$ "). This is to ensure that the stitching line on the strip comes on line with the stitching line of the seam. The one inch extra length of the strips should extend below the placket opening. To finish under lap, crease the strip back over the seam, bring its free edge to the wrong side of garment, turn under $\frac{1}{4}$ " at the free edge and hem the fold to the stitching line. This forms the bound side of the placket and should be $\frac{1}{2}$ " to $\frac{3}{4}$ " wide.

For finishing overlap section of the placket, make a ¼" or wider fold to the wrong side of its free edge so that distance from the stitching line to the fold line is the same as the width of the binding on the under lap. Now turn the strip over completely to the wrong side of the garment (as for a facing) and hem or slip stitch the fold to the garment. Work a line of stitches at base of placket catching the under lap and overlap together. This can be done by hand from the wrong side in such a way that no stitches are visible on the right side.

3. Miter Placket:

It is also called Tailored Placket. This placket is used for beauty and also to add strength. This is commonly used on men's shirts, sleeve opening and on neck openings in jibbas and children's garment. When used on children's and ladies dresses, the strip used for placket may be of contrasting material for decorative effect.

For the under lap, prepare a straight grain strip (5"). Keeping one end of the strip exactly in line with the facing. Stitch a ¼" seam joining the edge of the strip to the edge of the opening. Now fold ¼" under on the free edge of the strip and the folded edge along the stitching line. The underlap and figure shows the finished appearance of



Construction of Miter Placket

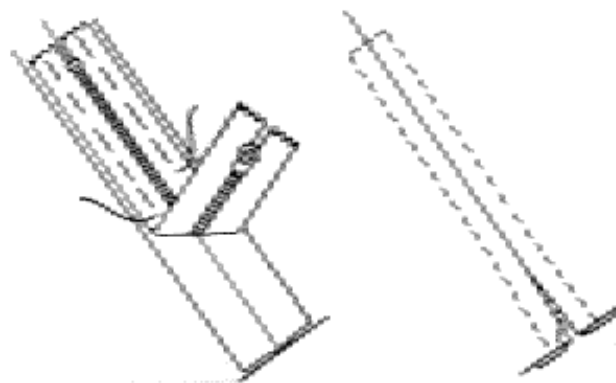
The overlap for this type of placket is usually shaped to a point at the end and is about 1" wide when finished. For this cut a strip 2¼" wide and 1¼" longer than the slit. Trim off the strip and mark the seam lines (dotted lines) ¼" inside the outer edge as This placket

is used for beauty and also to add strength. Keep the right sides of the strip facing the wrong side of garment and tack the short side of the strip to the free side of the placket opening on the seam line. Machine stitch and bring its overlap strip over to the right side of the garment. Turn under the seam allowance and adjust the position of the strip so that it will overlap the under lap binding. Tack in position. Top stitch the strip to the garment upward, then around the point and downward till sleeve opening. Now stitch across the overlap twice to hold the under lap in position. Note that the stitching has caught the under lap from under the presser foot and machine the overlap section alone without catching the garment.

Note : Remember to cut overlap strips as well as under lap strips in pairs (for a pair of sleeves) from fabric folded with right sides facing.

4. Zipper Placket:

Zippers are usually attached with tapes and available in different sizes. These can be selected depending upon the size & color of the placket. Garments with zipper are more attractive & comfortable to the wearer.



Zipper placket

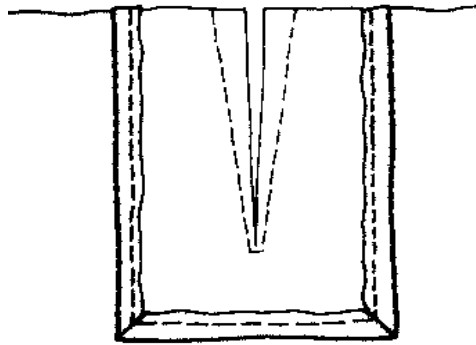
Cut the opening in garment fabric and select the zipper accord to the opening size. Toward the end of the cut make a short slit $\frac{1}{4}$ " wide diagonally on both the sides. Turn all the three raw edges to the wrong side and do a row of tacking. Take a square piece of Tape & Stitch its raw edge. Attach this to the end of the placket opening with the hemming. Over this, place the Zipper & stitch through the edges holding the fabric edge. Then take another square piece of Tape and stitch its edge and place it covering zipper edge & finish it with hemming.

Zipper must be carefully opened and closed, because if the pull tab slips away from the teeth or rail, it will be difficult for the wearer to operate it. This can be used in skirt, frock, shirt, handbags, decorative purses and other garments.

5. Faced Placket open:

This is a simple neck finish used on infants, children's clothes and night dresses. To make this, slash the opening down from the neck at centre front or centre back and

apply fitted facing to the opening. Place facing piece right sides facing the garment, do a row of stitch catching the garment more. Turn the facing to the wrong side and top stitch.



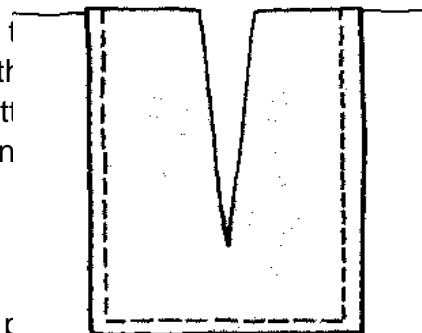
Construction of faced placket open

Finish the facing by turning the edge and hemming.

14.3 FASTENER:

Fasteners are any item used to close a garment opening. There are different types of fasteners. While selecting these fasteners they must be free from rust and with laundering they must not break. Select to suit the color, design and texture of the fabric, the style and use of the garment and the position of the placket. Also consider the age and sex of the wearer. Fasteners are decorative and functional. Some are conspicuous while some are inconspicuous.

Always fasteners should be fixed on the right side of the garment. They should be fixed in such a way that the right side of the garment overlaps the left side. In men's shirt, trousers etc., just as press button and children's dresses.



They should be fixed on the right side of the garment. They are generally used for ladies' cholis.

14.3.1 Fastener types:

Some of the types of fastener include press button, zippers, tapes and elastic.

They are used for button and buttonhole.

1. Press button:

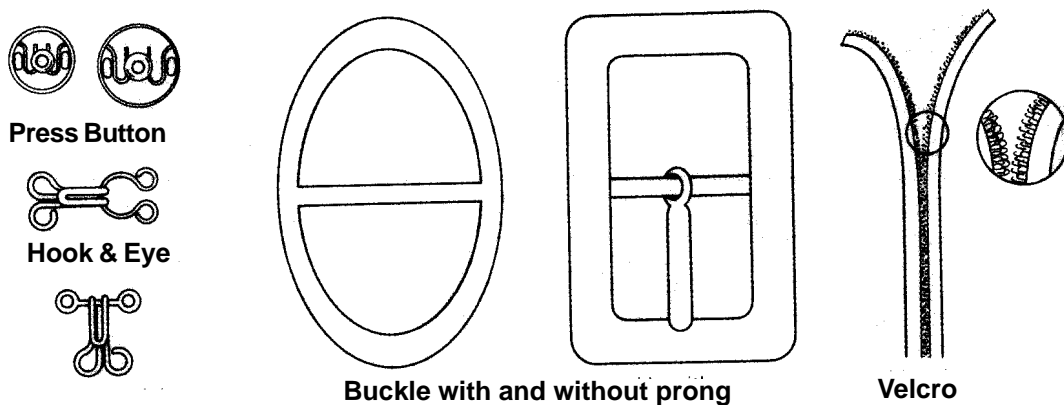
These are used to hold edges that will not have much strain when the garment is worn. They will open out if used on snug fitted parts. These are available in various sizes and weights. They are either black or silver. There are two sections in this a stud and a socket. On the wrong side of the overlap the stud is attached, close to the edge. Take care that the stitches fastening the press button do not show on the right side of the garment. After attaching the stud to the overlap press it to the under lap to make an impression. Place the socket over this impression and make four or five buttonhole stitches on each hole of the socket. Fasten the thread on the wrong side when finished. This fastener is ideal for sportswear and kidswear.

2. Hook and eyes:

These are used on the placket where there is crosswise strain. They form an inconspicuous closing. The hook should be placed 1/8" inside the finished edge of the overlap on the wrong side. Work buttonhole stitches or overcasting stitches around the rings of the hooks and at the centre of the hook. Then slip the needle through the fabric and bring it out near the hook end. Take several back stitches across and under the loop of the hook to hold it down firmly. Fasten off with small back stitches, without showing on the right side.

a. Eyes:

The eyes are curved or straight and are made of metal. These are usually substituted with thread loops of matching color thread. Usually finished in the same way as hooks. Fasten the thread on the wrong side when finished. Mostly overcasting, blanket or button hole stitch is used for stitching eyes.



b. Loops:

There are two types of loop. They are Thread loop and Fabric loop. The thread loop is an inconspicuous fastening which is most often found at the neck edge. To make a thread loop, sew four or five strands of matching thread on the under lap in the correct position, then work buttonhole stitches over these strands.

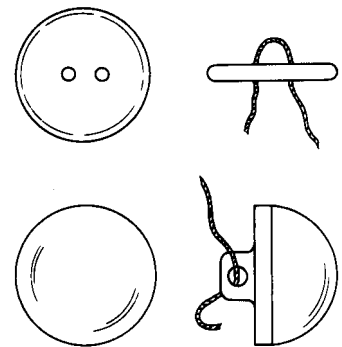
Fabric loops are made of strips of bias fabric stitched and turned inside out to form a narrow tube. The fabric used may be of self material. This type of fastening adds a decorative trim to children's and women's garments. Following gives the constructing steps. Cut a strip of bias fabric about 1" wide fold in half lengthwise, right sides together, and stitch about 1/8" from the folded edge down the length of the strip. Trim seam allowances to 1/8". Attach a strong thread to one end of tube at the seam. Turn the tube inside out by drawing the thread right through the tubing with a heavy needle. Cut the tube into lengths equal to the finished length of the loop plus seam allowance. Place these pieces on the right side of the over lap, shaped as loops turned away from the edge of the opening. Tack the facing right side down over loop and machine along seam line. Turn facing to wrong side and tack in position. Loops will be now extending from placket edge. Button, matching to the fabric loops are fixed on the under lap.

3. Buttons and Buttonholes:

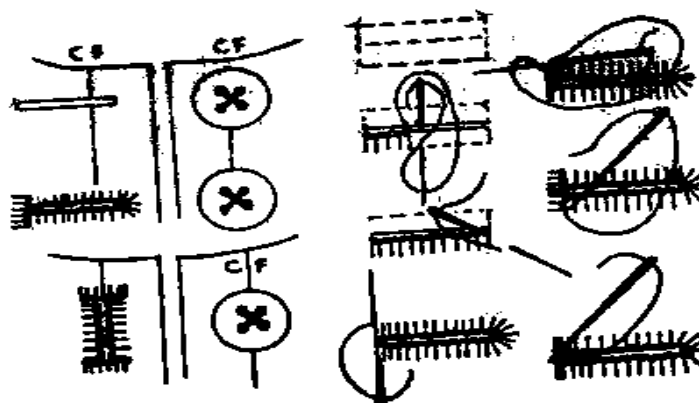
These are functional as well as decorative. Contrasting color or self colored buttons can be used. Buttonholes are slits cut in garments to hold the buttons in place. The raw edges of the slits are finished with buttonhole stitches.

a. Buttons:

Buttons should be selected to suit the color, design and texture of the fabric and also the style of the garment. Two types—shank buttons and buttons with holes are most commonly used. Buttons may be made of self fabrics, bone, glass, metal, plastics etc. Place overlap over the under lap so that the centre front line coincides. Insert a pin through the gap of the buttonhole. Now lift the overlap and mark the position of button on the pin mark. Sew button using the double thread bringing the needle up and down through the holes. After working enough stitches bring the thread to the wrong side of the fabric and insert it into the previous thread forming a small knot. Buttons with 4 holes may be sewn in the shape of a cross, two parallel lines, a square or an arrow head.



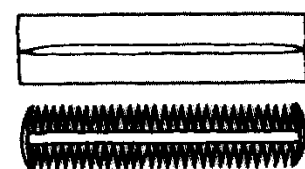
Button



Stitching of button and button hole

b. Button holes:

Buttonholes should be worked on the overlap before the buttons are fixed. They may be placed vertically or horizontally on the garment. Whether the buttonhole is vertical or horizontal, buttons are placed exactly on the centre front line. The allowance of the material beyond the center front line should be at least $\frac{1}{2}$ " or half the diameter of button used. The length of the buttonhole should be the diameter of the button plus $\frac{1}{8}$ " (or the thickness of the button).



Button Hole

4. Zippers:

These fasteners are available in a wide variety of colors, lengths and types. Several type of speciality zippers are available. Three basic types of zipper are conventional,

separating and invisible zippers. All zippers consist of either a chain of metal or plastic teeth or a synthetic coil joined to fabric tapes. Chains and coils are made in many weights and sizes, spirals of polyester or nylon. Coil zippers are lighter in weight, and usually more flexible, than chain zippers. Unlike metal, they will not rust, and they are available in more colors. Metal zippers are less affected by heat.

Zipper tapes are woven, generally of cotton or a blend of cotton and polyester. Some tapes for coil zippers are stabilized nylon or polyester knit. Zippers are opened and closed by means of a slider or runner with a handle like tab that moves it up and down the coil or chain. Top and bottom stops keep the slider from running off the zipper with metal teeth.

a. Conventional zipper:

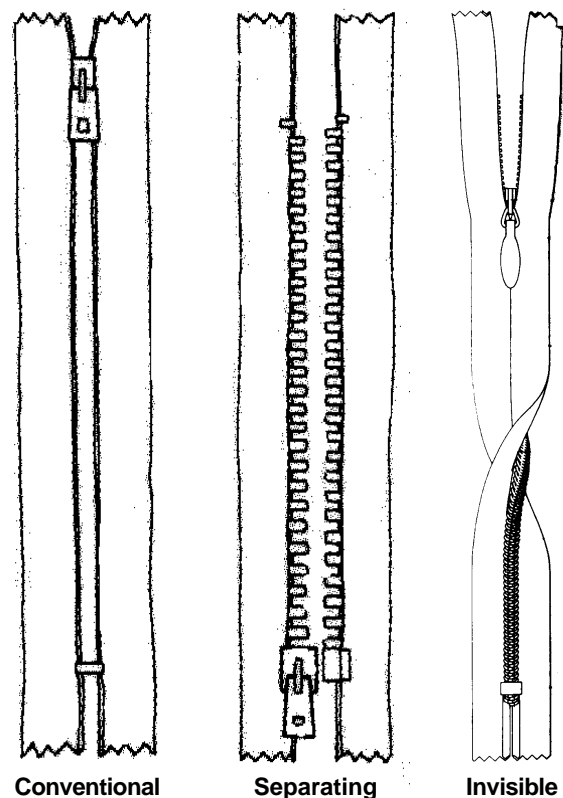
These zippers, whether made with exposed teeth (chain) or coil, open at the top and are held together at the bottom. They come in more different styles than any other zipper type. Depending upon the garment design, application may be by the centered, lapped, exposed, or fly method.

b. Separating zipper:

Separating zippers are made to open at both top and bottom, permitting the zipper opening to separate completely. Although used mainly on jackets, they can really be applied to any garment with a completely opened front. Also, dual reversible and two-way zippers that zip from the top and from the bottom are available for jumpsuits and similar garments. A centered application is the method generally used.

c. Invisible zipper:

These zippers are the newest type of zipper. As the name implies, they are structured differently from other zippers and are in a special way so that they disappear into a seam. When properly applied, neither the stitching nor the zipper teeth or coil is visible on the outside of the garment. Invisible zippers are used principally in skirts and dresses but they can go, in general, wherever a conventional zipper might be used, except in a trousers.



Other types of zipper include two way zipper, trouser zipper and decorative zipper with large teeth and a pull ring.

5. Elastics:

Elastic is available in several different types and widths. The type of elastic to choose will depend on whether it will be used in a casing or stitched directly to a garment.

a. Braided elastic:

This is recommended only for casing because it narrows when stretched.

b. Woven elastic:

It stays the same width when stretched. Thus it can be stitched directly to a garment or used in a casing.

c. Elastic thread:

This is very thin covered elastic core used for shirring. Since it is wound in bobbin for shirring it is called bobbin elastic.

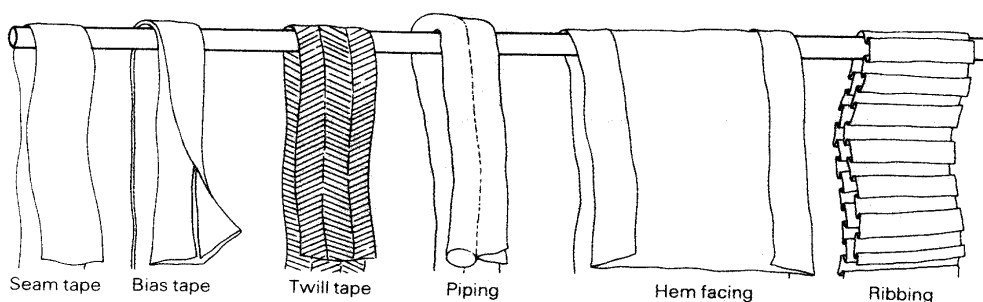
d. Special purpose elastic:

These are available for pyamas, lungies and swim-wear.

Read the label when purchasing any type of elastic to be sure that it will serve the correct purpose.

6. Tapes and cords:

Tapes and cords can be functional or decorative. They can be used to reinforce a seam, cover a fabric edge, or create a special design on the outside of a garment. Tapes and cords are available in variety of types, widths and colors. The Tapes may be made out of silk, cotton and other synthetic fibers. These may be thin or thick. Some are slightly stretchable others are not. They may be woven, knitted, braided or made of lace. The choice of which type of tape or trim to use depends upon how it will be used in a garment.



For areas where you want to prevent stretching, select a firm, non-stretchable tape or cord. Some of the common tapes and cords are:

a. Seam Tape:

Woven tape or lace used to finish hem and facing edges.

b. Bias Tape:

This is single or double-fold tape used for binding curved or straight edges and for casings.

c. Twill Tape:

This is firmly woven tape used for reinforcing seams.

d. Piping:

A narrow, corded bias strip of fabric that is inserted into a seam for a decorative trim.

e. Hem facing:

Wide bias tape or lace used for facing hems and binding edges.

f. Ribbing Tape:

A stretchable knitted band used to finish a neckline, armhole, sleeve, leg or waistline.

7. Velcro:

These have two tape strips, one with a looped nap surface and the other with a hooked nap. When pressed together, surfaces grip and remain locked until pulled apart. These are used on cuffs, plackets, mosquito nets and other such items. This is a good substitute for other closure in home decorating, as with upholstery. These tapes come in sew-on, iron-on and stick-on forms. These are usually made of Nylon and are available in yards or metres.

8. Buckles:

These features are available in a wide variety of shapes, sizes, and materials (Plastic, Iron, Brass, Steel, etc.). However, there are only two types of buckles—buckles with prongs and buckles without prongs. For a buckle with a prong, eyelets must be used. Ready-made metal eyelets can be applied with special plier or attaching tool, or eyelets can be hand sewn using a buttonhole stitch. Buckles can be purchased separately or in kits.

Questions:

PART – I

Objective questions:

1. Which placket is used for blouse?
(a) continuous bound placket (b) bound and faced placet
(c) miter placket (d) zipper placket

2. What is the other name for two piece placket?
 - (a) bound and faced placket
 - (b) continuous bound placket
 - (c) miter placket
 - (d) zipper placket
3. How a miter placket is otherwise called?
 - (a) zipper placket
 - (b) bound and faced placket
 - (c) continuous placket
 - (d) tailored placket
4. With which the button hole is used?
 - (a) press button
 - (b) buckle
 - (c) buttons
 - (d) hook
5. Name the elastic which is used for shirring.
 - (a) woven elastic
 - (b) braided elastic
 - (c) thread elastic
 - (d) special purpose elastic
6. Which elastic is recommended only for casing?
 - (a) woven elastic
 - (b) braided elastic
 - (c) elastic thread
 - (d) special purpose elastic
7. Which tape is a stretchable knitted band?
 - (a) seam tape
 - (b) twill tape
 - (c) piping
 - (d) ripping tape
8. Which tape is used to reinforce the seam?
 - (a) seam tape
 - (b) twill tape
 - (c) piping
 - (d) ribbing tape
9. How many types of buckles are there?
 - (a) 5
 - (b) 2
 - (c) 3
 - (d) 4
10. Which tape is single or double folded?
 - (a) bias tape
 - (b) twill tape
 - (c) piping
 - (d) ripping tape

Answer in one or two words:

1. Name the places where plackets can be attached?
2. How a finished placket must look like?
3. What is the other name for continuous bound placket?
4. What is the size of the placket piece for continuous bound?
5. Name the placket used for strength and decoration.
6. Write the correct lapping for women's garment.
7. How a cuff must be closed?
8. What is two piece plackets?

9. What are the types of fastener used in women's wear?
10. What are the types of fastener used in men's wear?
11. What is the stitch used to fasten a press button?
12. What is the stitch used for button hole?

PART – II

Answer in a paragraph:

1. What is a placket?
2. How many types of plackets are there ? What are they ?
3. Where can a continuous opening be used?
4. Where a miter placket can be used?
5. What is a two-piece placket?
6. What are the types of fastener used in a garment?
7. How a press button be stitched in a garment?
8. How will you stitch a hook and eye in a garment?
9. Explain about velcro.
10. Write about any one type of zipper with diagram.

PART – III

Answer in a page:

1. Explain the types of placket and explain any two with diagram.
2. Write about tailored placket with a neat diagram.
3. Explain about button and button hole.
4. Explain different types of elastic.
5. Explain about velcro and buckle.

PART – IV

Answer in detail:

1. Write in detail on continuous bound placket and bound and faced placket with diagram.
2. Explain about different types of zipper, elastic and tapes.
3. How will you fix press button, hook and eye and button, button hole to a garment. Explain with diagram.

Answers for objective questions:

1. (b) 2. (a) 3. (d) 4. (c) 5. (c) 6. (b) 7. (d) 8. (a) 9. (b) 10. (a)

15. DECORATING GARMENTS

15.1 INTRODUCTION:

Trimmings and details like frills, embroidery, applique, belts, bows, smocking, tucking, lace, ricrac etc., gives the interesting effects on simple dress designs.

15.2 DECORATING GARMENTS:

1. Bias trimmings:

Bias binding in contrasting material or self fabric can be used to finish neck lines, opening and hems in garments. Bias tubing can be used for making decorative button loops.

2. Ric rac:

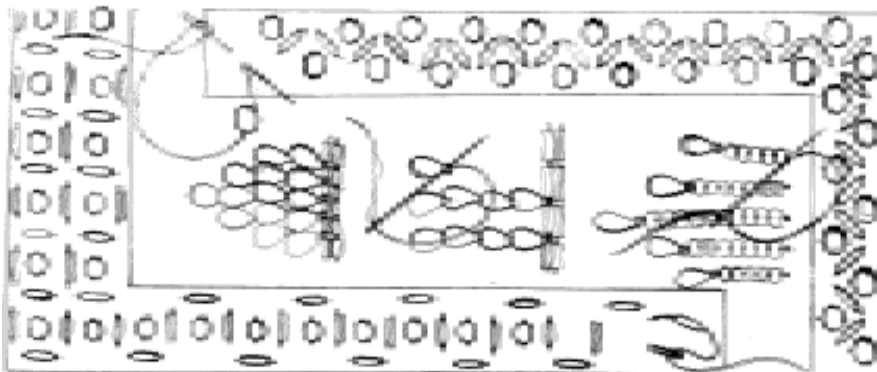
This is available in different colors at very low cost and is very durable. (It should be tested for color fastness before attaching to garment). Ric rac can be sewn flat on the garment through the centre or it may be attached around edges or between seams so that just one edge is show on the right side of the garment. A motif made of ric rac adds further decoration.

3. Ruffles:

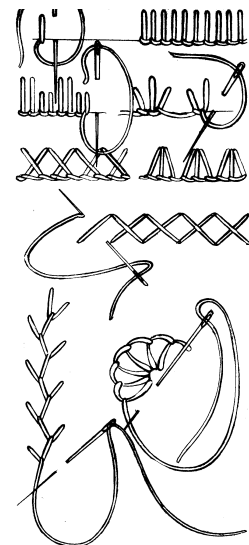
This is also a type of frill. To make a pattern for circular ruffle. Cut a piece of circular fabric with its inner circle equal to the circumference of the neckline and its outer circle 1"-2" away from the inner circle. Cut the circular fabric at any one point and attach it the inner circle to the neckline of the garment. Double ruffle can be attached to the armhole hemline on either sides. The placement of the double ruffle gives a panelled effect to the front of the garment.

4. Embroidery:

Simple embroidery designs enhance the appearance of



Attaching sequins and beads



Embroidery

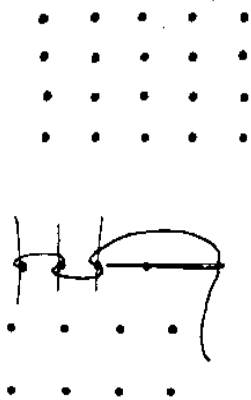
Stitch

children's garments. In the dress design chain stitch for couching stitch can be worked

to small motifs with lazy daisy stitches or bullion stitches are worked within the false yoke and godet. Instead of embroidery, beads or sequins can be applied.

5. Smocking:

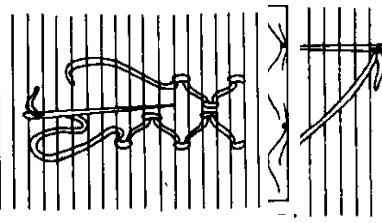
This is done by gathering and embroidering over the gathers. This can be worked only over a plain cloth. When this is done with practice this looks attractive. After knotting the thread work running stitches from right to left of equal width. Gather the fabric and wind it over the pin head. Then work desired stitch over the gathered fabric. This is used to decorate waistline, sleeve, neckline, Yoke and any other part of the garment. This stitch looks attractive and liked by many of them.



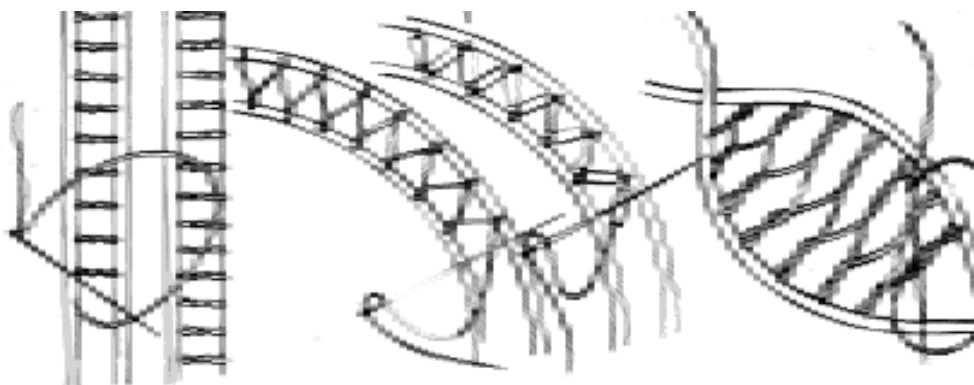
Smocking and its variations

6. Faggoting:

This trim is used between seams to g... width of garment. To executive the design cut... separately, with 1/2" seam allowances. Also c...



d the length or... n of the blouse... paper with one

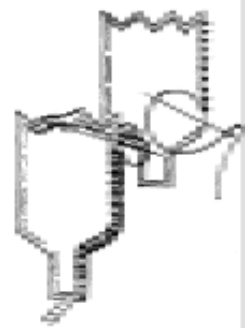


Faggoting

inch allowance. Fold under the allowance on edge of the yoke where faggoting is to be done and tack the folded edge to the prepared pattern. Now tack also the lower section of the blouse after folding in the seam allowance Then do the faggoting with zigzag stitches between foldings.

7. Applique:

Applique is a cutout piece of fabric that is stitched to a larger background for decoration. An applique can be purchased or made by cutting out a design from one or more fabrics. Fabrics that ravel easily should not be used. Applique is a very effective trim for children's garments. It can be applied on pockets, yokes, above the hemline etc. The applique work on the right front corner just above the hemline looks attractive.



Applique

8. Lace:

Lace can be used as edging, insertion and banding. Lace for edging has one straight edge which is to be applied to the fabric. It is commonly used at the neckline, armhole, sleeve hem, garment hem, yoke line etc. Lace may be gathered to give a frilled effect. Lace for insertion has its two edges finished symmetrically. A design with fine tucks and insertion of lace can be combined and applied in a horizontal direction. The bias tubing inserted in such lace can be tied into a bow. The tubing may also be pulled to produce gathers. An attractive band can be made by placing lace over contrasting or self colored ribbon or fabric slightly narrower than the lace. The ribbon is then attached to the garment in the desired portion.



Lace

9. Lace motifs:

Lace motifs are very effective when sewn over contrasting fabric. The motifs can be cut out from a wide lace or bought as such. Cut the outline of the motif in a contrasting colored lining fabric and tack it to the wrong side of the lace motif. Trim the lining fabric slightly smaller around the edge. Now, applique the lined motif on the garment in the desired place.

10. Belts and bow:

These have functional and decorative uses. In children's garments, fabric belts are most commonly used. Belts may be made out of contrasting material or the garment material itself. The belt may be tied with a bow at the back or at one side. Bows may be attached near the neckline, shoulder, hemline, along the centre front line etc.

11. Decorative fasteners:

Decorative fastenings include fabric buttons and loops eyelets and cord, fancy buttons, fabric buttonholes etc. On a plain dress with contrasting collar or piping, buttons covered with the collar piping material would be effective. Buttons may be fixed in groups to create design interest gradually progressing in size from small to big.

12. Pockets:

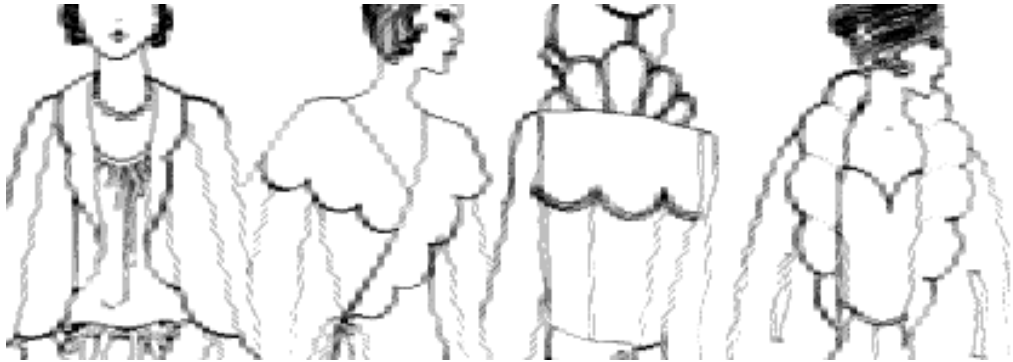
Pockets of different shapes, sizes and location with or without decorative details suited to the design of the garment can enhance the appearance of the garment.

13. Scalloped edging:

Scalloped shapes at garment edges (neckline, hemline openings etc.) are ordinarily made by cutting in the desired shape and finishing with bias binding or shaped facing. A similar effect may be produced however by the use of embroidery stitches. The effect of a scalloped front opening is obtained by drawing the scallops in uniform shape and working blanket stitch with contrasting colored thread along the lines drawn. This can be used in frocks, skirt, kids wear, neckline, sleeve and in table cloth.



Scallop



Application of scalloped edges on the garments

Questions:

PART – I

Objective questions:

1 Mark

1. With which a decorative button loop can be made.
(a) Bias binding (b) Ric rac (c) Bias tubing (d) Laces
2. This is available in different colors at very low cost and is very durable.
(a) Faggotling (b) Laces (c) Ric rac (d) Belts and bows
3. Embroidering over gathers is called
(a) Faggoting (b) Smocking (c) Lace (d) Applique
4. when the Belt is tied with a cord at the centre, then it is called
(a) Lace (b) Ric rac (c) Faggoting (d) Bow
5. Stitches between folded seam edges are called
(a) Applique (b) Faggoting (c) smocking (d) Ruffles

Answer in a one word:

1. Write the uses of ruffles.
2. Name any two embroidery stitches.
3. Write the uses of scalloped edging.
4. Write the use of lace.
5. Name any two decorative fasteners.

PART – II

Answer in a paragraph:

4 marks

1. Write about ruffles.
2. What is Ric rac?
3. Write about bias trimming.
4. What is lace?
5. Write about faggotting.

PART-III

Answer in a page:

10 marks

1. Write the uses and application of lace, Lace motif and scallop edging,
2. Briefly describe about faggoting, smocking and ruffles.

PART - IV

Answer in details:

20 marks

1. Give a detailed explanation of how to decorate a garment.

Answer for objective type Questions:

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

16. NECKLINES AND COLLARS

16.1 INTRODUCTION:

Necklines are perhaps the most conspicuous part of any dress design and for that reason deserve careful consideration, both while choosing a design as well as while sewing. Select a suitable and comfortable neck style and one suited to the fabric. The neckline can be of various shape and sizes.

16.2 NECKLINE:

Neckline is part of bodice, around the neck. In ladies garments, neckline can be shaped in different ways and styles to get a decorative effect.

16.2.1. Types of Neckline:

Some of the types of necklines are: 1. Boat neckline 2. Draw string neck line 3. Cowl neckline 4. Key hole neck line 5. Haltee neckline 6. Scoop neckline 7. Square neckline 8. Heart shaped neckline 9. 'V'-shaped neckline 10. Round neckline 11. 'U' shaped neckline 12. Wedge shaped neckline.

1. Boat neckline:

It is a boat shaped neckline, approximately following curve of the collarbone, high in front and back, wide at sides, and ending in or at shoulder seams. Its front neck depth is generally kept more than the other neck depths.

2. Draw string neckline:

It is a neckline with cord, threaded through a casing (i.e folded edge with gap to insert Tape) to be gathered and adjusted high or low. These are mostly used in Kid's wear like, Jabla, Nighty and in ladies skirt top

3. Cowl neckline:

A cowl neckline is developed by adding one or more folds to the neckline cowl necklines are always cut on the bias and have free and folded effect when worn cloth suitable for cowl necklines are sheer and light weight type fabrics such as chiffon, silk, crepe, crepe silk, soft satin, georgette, jersey etc. The Pattern prepared for particular fabric, say satin, cannot be used for chiffon, as each fabric is having different characteristics.

4. Keyhole neckline:

It is a high round neckline with inverted wedge shaped opening at front. These necklines look good when it is finished with fitted facing. The depth of round neckline and inverted wedge can be changed according to desire.

5. Halter neckline:

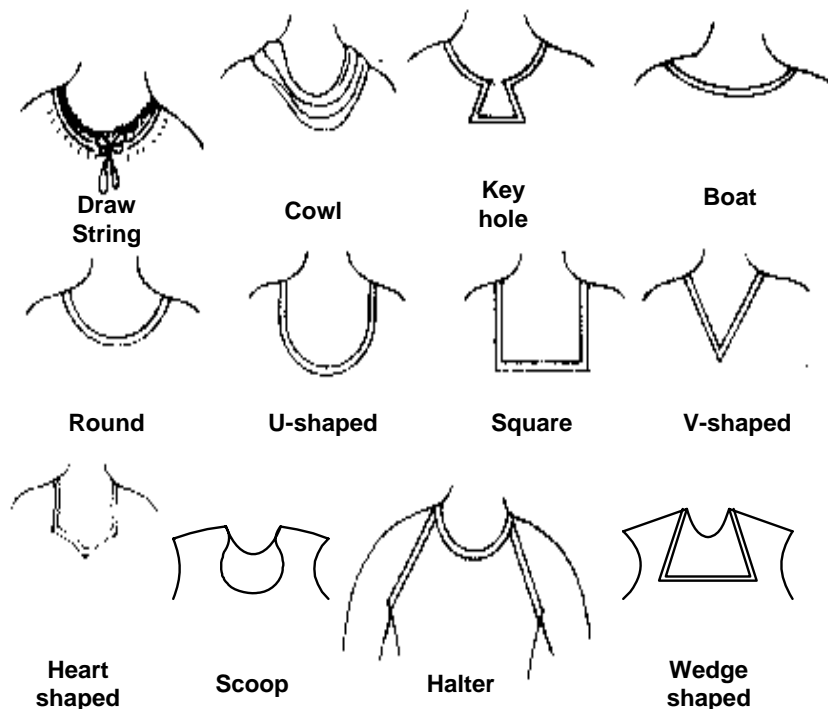
It consists of a strap, rope, or band around neck, attached to backless bodice (i.e. back and shoulders bare) It is tied in a bow at back neck. It is generally used in kid's party wear and frocks.

6. Scoop neckline:

It is a low curved neckline, It is cut deep in front or back or both. The shape of the neckline, more or less resembles the shape of pot and hence is also called as pot neck.

7. Square neckline:

This neckline shape resembles the square shape and has 4 corners, two in front and two at the back. This is used for kammez, frock, Tops and other ladies garment.



8. Heart shaped neckline:

It is a deeply cut neckline with its front lower edge in heart shaped curve. It is the variation of square neckline.

9. 'V' shaped neckline:

It is shaped in front to a sharp point like the letter 'V'. On the centre front of the pattern, mark a point for the depth desired and draw a line to this point from the neck end of the shoulder line.

10. Round neckline:

Because a round neckline is wider in effect than a 'V' shaped neckline, it is usually cut some what higher, its depth on the pattern being determined as suggested for the

'V' neckline when the depth has been noted, draw a line from the shoulder to this point, having the line extend downward with a slight slant for about two-thirds of the neckline depth and then curve abruptly towards the centre front.

11. 'U' shaped neckline:

It is cut in front in the shape of letter 'U'. It is the modification of round neckline. The Depth of neckline is more than the normal round neckline.

12. Wedge-shaped Neckline:

This is another variation of neckline where a straight line and curved line is combined to form a wedge-shaped opening. Mark points to indicate the depth wanted and the width at lower line, which is wider than the regular square opening, join these points by a straight line, and then draw the side line in the curved effect joining the straight line.

16.2.2 Prevention of Gapping:

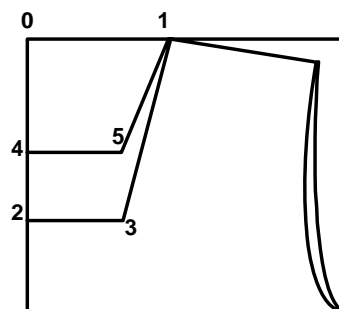
Deeper necklines may be used for party wear or evening wear. If they are very low, precautions will have to be taken to prevent them from gaping.

If a low curved neckline is used on the garment, this may need to be tightened. To do this, slash the basic pattern from neckpoint to near waistline and overlap or attach a placket to the garment.

16.2.3. Size of neckline:

The size of the neckline varies from person to person and pattern to pattern. The size of a neckline (i.e. the width and depth) of a neckline is to be fixed before drafting diagram. For a neckline, neck width and neck depth are required as explained below.

- 0-1 = Front and back neck width
- 0-1 = Front neck depth
- 1-3-2 = Front neckline
- 0-4 = Back neck depth
- 1-5-4 = Back neckline



Neck Proportions for ladies garments:

In ladies garments, neck proportions are generally kept as follows.

Neck proportion	For girls	For women
1. Front or back neckwidth	1/12th chest	1/12th the chest+1½"
2. Front neck depth	1/12th chest+1/2"	1/8 chest +2"
3. Back neck depth	2"-2½"	2"-5"

- Note:**
1. The above proportion vary according to fashion and customer's taste.
 2. The neckline width and depth of the under garment should always be kept below the out wear.

16.3 NECKLINE FINISHING:

The neatness with which the neckline is finished, is of vital importance, for it greatly effects the final appearance of the garment. Besides the neckline under goes much strain duing putting on or taking off the dress. Hence the mode of finish must be such that it allows one to retain the desired shape, pattern and must be durable.

Bias strips are generally used to finish the neckline, because of its stretchability. Necklines are usually curved and hence tend to stretch duing handling. A stretched neckline can spoil the apperance of garment. So great care must be taken in handling and finishing neckline.

Most necklines are finished in one of three ways-with facings, bindings or with a collar. Regardless of the type a well-made neck finish should conform to these standards:

1. Neck edges must not be stretched out of shape.
2. All seams and edges must be as thin and smooth as they can be made, without weakening the garment.
3. All edges must have good shape with accurate corners and curves.
4. Facing edges, whether beneath a neckline or collar, must be hidden from view.
5. Body and stiffness of collar must be sufficient for the design.

16.3.1 Bias piece:

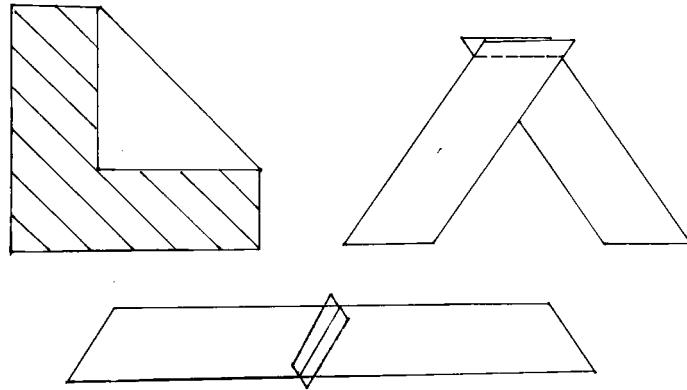
True bias which is otherwise called as cross piece or falls on a diagonal line at 45° to the lengthwise and crosswise grains. It has the maximum elasticity or in other word it stretches more than any other direction on cloth. True bias is used to finish raw edges. It is useful especially for finishing curved edges such as neckline, sleeveless armholes and scallops. A straight piece of material attached to a curve will look bulky and untidy. The elasticity of bias permits it to stretch or contract and thus takes the shape of any curved edge giving it a flat smooth finish. Bias strips can be applied as facings and bindings

1. Cutting bias strips:

Fold the fabric diagonally so that the lengthwise threads of the folded part fall parallel to the crosswise threads on the rest of the material. (If the grain lines cannot be clearly seen, mark the lines with chalk first). Using a gauge or ruler, measure from the fold to desired width of bias strip (usually 1 to $1\frac{1}{2}$ ") and draw parallel lines. Cut strips along the marked lines and trim off ends along the warp threads.

2. Joining of bias strips:

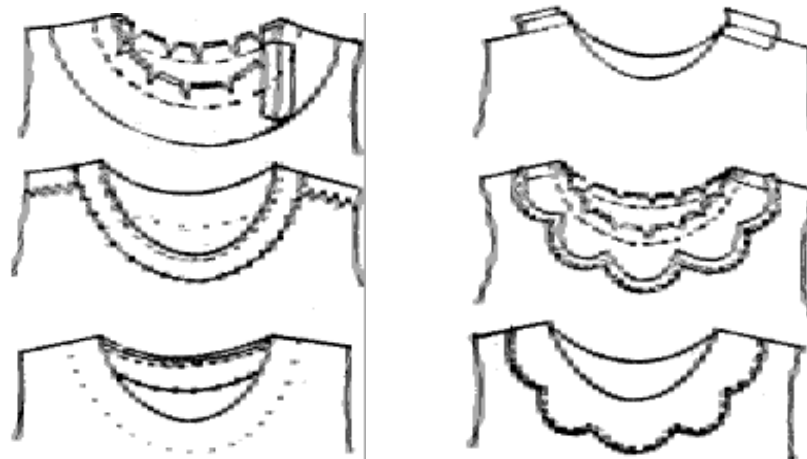
Place the two strips to be joined right sides facing and the edges of the cut ends coinciding. The strips will now be at right angles to each other. Shift the top strip $\frac{1}{4}$ " beyond the other so that the sharp points at the ends of the strips project on either side. Stitch a $\frac{1}{4}$ " seam joining the points where the sides of the two strips intersect. Press the seam open and trim the seam projection showing on right side.



Marking, Cutting & Joining of Bias Piece

16.3.2. Facing:

These are used to provide a neat finish to the raw edges in a garment and to support the shape of neck line, armholes, collars, etc. When the edge to be faced is a straight line, the facing may be cut in one piece with the garment section. If the shape of the neckline is a curved one a bias piece can be used. Usually facing are applied separately. The color of the facing piece must co-ordinate with the colour of the garment fabric.



Bias Facing

Decorative Facing

Facing appear on the right side of the garment. The right side of the facing must be matched to the wrong side of the garment to ensure that it will be right side out when finished. If this is to be applied to the neck line, shoulder seam of the garment, it should be reverse just inside the outer finished edge of the facing. This is to prevent raw edges of

shoulder seam from showing at the neck line. Decorative facing are usually made with scallops, points or other designs along the outer edge. Particular care should be taken to see that the right and left halves are symmetrical in design and shape.

Bias facing can also be applied on the right side of the garment for decorative effects, but no edge designs are possible with this facing because it cannot be made wide enough. The decorative effect has to be obtained by the use of material in some harmonizing color with prints like checks, stripes, dots etc.

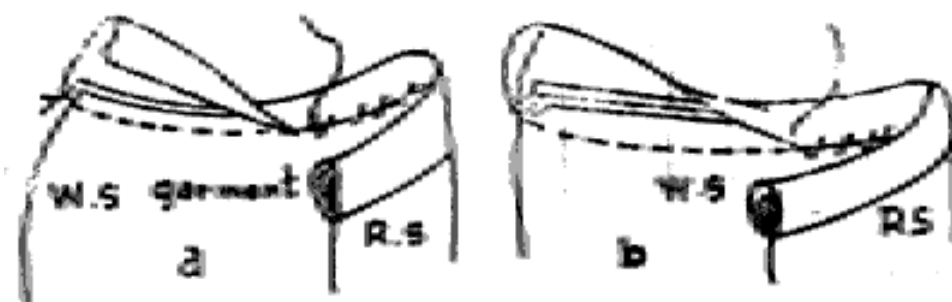
16.3.3. Binding:

Bias binding is used to finish and strengthen raw edges and to add a decorative trim to a garment. It shows both on the right and wrong side. It is used to finish necklines, armholes, sleeve edges, front closings, collars, cuffs and seams. It can be adapted equally well to straight, curved gathered and irregular edges (like scallops). When finished, bias binding should have uniform width (less than ¼") and should lie flat and smooth without any stitches showing on the right side of the garment.

There are two kinds of bias binding. Single binding and French binding or piping. Binding may be prepared or may be bought as commercial bias binding.

1. Single bias binding:

Cut a bias strip that is twice the finished width plus two seam allowances. Tack the strip to the garment right sides facing. Remember that bindings are handled in the opposite manner to facings at inward and outward curves. For bindings, stretch the bias on inward curves and ease it on outward curves. Stitch the binding to the garment with a plain seam. Trim the seam as wide as the finished binding. Turn under 1/8" to ¼" on the outer edge of the bias and fold it over the seam on the wrong side. Now hem the fold to the line of stitching using hemming stitches.



Single & Double Bias Binding

2. French Binding or Piping:

French binding or piping is used on sheer fabrics. For this you must cut bias strip that is six times the desired finished width. Fold the strip in half, wrong sides together and press. Stitch raw edges of binding to the garment on the right side and hem the folded edge to stitching line on the wrong side. It is also called double binding.

16.4 COLLAR:

A collar is added to the neckline of a garment in order to enhance its appearance. It also serves to finish the raw edges of the neckline. Collars are made of double layers of fabric. Since collars form a background for the face, great care has to be taken in designing collar styles which suit the wearer.

16.4.1 Factors to be considered while designing collar:

1. Design of the fabric:

The collar design should harmonize with the fabric design. Fabric with large checks or stripes are more suitable for making straight line or square shaped collars than collars with round or curved lines. Similarly you should avoid floral designs and curved designs when making collars where straight lines are predominant.

2. Color and texture of the fabric:

There should be harmony between the collar fabric and dress fabric with regard to color and texture. Standing collar like the Chinese collar will look best if made out of firm material, while rippled collars call for a soft material. Take care to use pleasing color combinations without too much contrast or too much similarity.

3. Pattern of the garment:

The design of the collar should suit the pattern of the dress. For example, certain collars like rippled collar, peter pan etc. are suitable for dresses with frilled skirts, while straight line collars are more becoming on A lined or straight lined styles. The size of the collar should be proportionate to the size of the dress. The design of the collar should harmonize with other structural details (pockets sleeves etc.).

4. Purpose and use of the garment:

For school uniforms, casual wear, sports wear etc. select simple collar designs without decorative details. Flat collars are more comfortable than standing or roll collars and are therefore advised for garment like casual wear.

5. Sex and age of the wearer:

Certain collars like Peter Pan collar, rippled collars etc, give a feminine touch to the garment. Straight line collars are masculine in appearance and are more suited to men's garment. Sailor collar, cape collar etc., look effective and becoming only on children's garments. Older women should avoid collars in unusual shapes and sizes and collars with decorative details.

6. Appearance of the wearer:

Facial shapes, size of the neck etc., are important factors to be considered while designing collars. For example a round face will appear rounder in a very round collar, but

a very pointed or squares collar also accents the roundness because of the marked contrast in shape. A medium oval shaped collar will be the best choice for this type of face. For people with thin long necks select standing collars or collars with slight roll and avoid low neck lines. Long pointed collars are flattering to men with broad faces and short necks. Whereas a collar with short points and broad spacing between the points is more suitable for a long slender face. (The broad spacing gives the impression of width desirable in the case).

16.4.2 TYPES OF COLLAR:

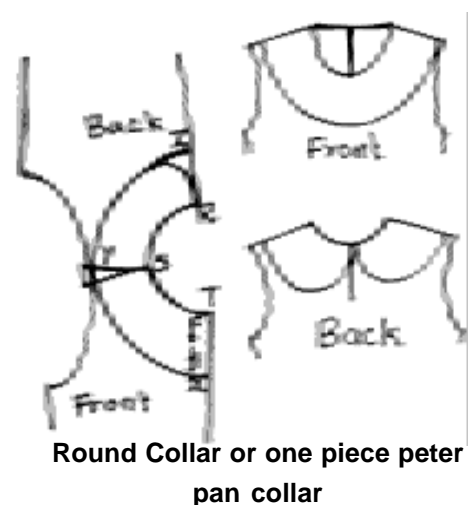
A collar could be made close to or away from neckline and the collar edge could be round, curved, square, or pointed (long or short) depending upon design variation.

Collars may be attached to a garment fabric or may be finished separately. They can be cut on bias, lengthwise or crosswise grain depending upon the effect desired according to the style. There are four main types of collar such as flat, stand, roll and shawl. All collars take on one of these shapes and needs interfacing to stiffen them, and must fit accurately to the neckline. Even slight alteration to the neck edge can throw out the fit of the collar unless these alterations have been allowed for when making up the collar.

Collars need careful trimming and layering so, If they are curved make snipping otherwise they will neither turn well have a neat, sharp finish. Pressing is also very important. A collar should be pressed to its shape. eg., roll collar should be pressed in a roll-it should not be pressed flat. Always press the neck join after attaching and before proceeding to finish. Some of the types of collars are 1. Round collar 2. Peterpan collar 3. Scalloped collar 4. Sailor collar 5. Roll collar 6. Shirt collar 7. Band collar 8. Shawl collar

1. Round Collar or one piece peter pan collar:

This is used for children's dresses. In front, the collar is continuous and at back, it is divided with rounded ends. To make the pattern for this collar, first duplicate the neckline area of the garment as explained below. Keep the front and back bodice patterns together on a paper, with neck points of shoulder lines touching and with the patterns overlapping ¼" near the shoulder as illustrated in figure. Trace the outline of the upper part of the bodies. Label the front neck line as shoulder-S and back neckline R. Now mark X, Y, Z, 1½" to 2" away from T, S and R respectively. Join XYZ as shown. Mark a notch at S, to indicate shoulder points, Label the collar as shown and cut out the collar pattern. This is a flat collar.



2. Peter Pan Collar:

This is similar to Round collar. This is used in children's dresses and has rounded ends at back and front. To prepare the pattern take the pattern of round collar pattern and round off the collar at the back and front. This is also a flat collar.



Peter pan collar

3. Scalloped collar:

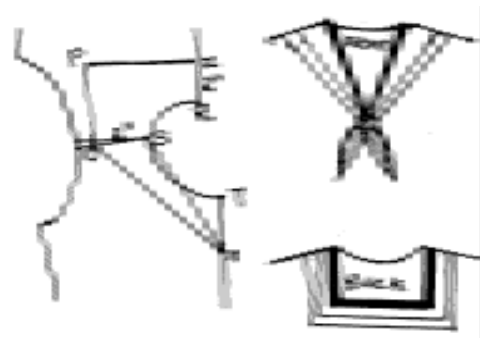
Draft collar of 2" to 3" width following the same as peterpan. Modify the shape of the outer edge of collar to scallop. These can be attached in frocks. This will also come under flat collar.



Scalloped collar

4. Sailor Collar:

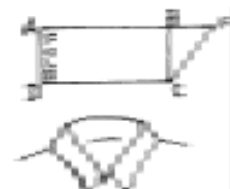
It is rounded, turned-down collar with a roll effect at the neckline. This flat collar is suitable for baby suits and little girls's dresses. It has a 'V' shape in front and square shape at the back. First of all modify the bodice front neckline to 'V' shapes by marking X, 3" to 4" below T and connect SX. Now trace on a sheet of paper the neckline area of back and modified front bodice patterns after overlapping the shoulder points near arm hole. Draw the R to Z = 2", S to O = 2" Draw a line from O and Z the interesting point is marked as P. Join all the lines for new patterns.



Sailor Collar

5. Roll collar:

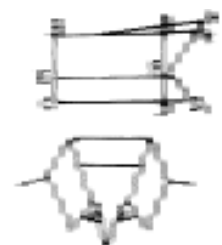
This type of collar is used mainly on men's and boy's shirt. T-Shirts and sports wear. It can be used on children's garments and ladies tops also. Draw a rectangle ABCD, mark BC = width of collar, AB = 1/2 neck measurement. BF = 1 1/2" Join CF and BF. AF is the outer edge of the collar and DC is the seam line.



Roll Collar

6. Shirt collar:

This collar has two parts the band or stand and the collar pattern. Pattern can be with stand and collar combined. Draw rectangle ABCD with the following dimension, leaving 2" extension all round AB = 1/2 neckline measurement and BC = 3 1/2" to 4". Mark CE = 1 1/4" and AG = 1 1/4".

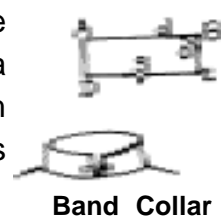


Shirt Collar

7. Band collar:

This is a narrow collar (about 1" wide) that stands up above the neckline of the garment all around. It is usually applied to front open garment. This is also called as kurta

collar. This is used in kurtas, kids wear and kameez. It should always be interfaced, if it needs a smart appearance of its upright line. Draw a rectangle ABCF, where AB= $\frac{1}{2}$ neck circumference, BC= collar width (1"- 4") curve the top edge by keeping point $\frac{1}{2}$ " before B and mark as 'd'. Join d to c.



8. Shawl collar:

For this type, the collar and reverse are cut all in one, thus forming the shawl over the shoulders. (eg. a dressing gown, night dress etc. Generally, the under collar is cut in one with the front garment, being extended at the neckline to meet at the centre back. There is generally a joint at the centre of both the under and top collar.



Questions:

PART – I

Objective questions:

1. Which is the part of bodice pattern that is around the neck.

(a) Sleeve	(b) Neckline	(c) Skirts	(d) Cuffs
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2. Which neckline approximately follows the curve of the collar bone high in front and back.

(a) Boat neckline	(b) Cowl neckline
(c) Keyhole neckline	(d) Square neckline
3. This type of neckline is used in Jabla with cord.

(a) Boat neckline	(b) Square neckline	(c) Draw string neckline	(d) Scoop neckline
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4. This neckline is otherwise called as pot neck.

(a) Square neckline	(b) Scoop neckline
(c) Heart-shaped neckline	(d) 'V' shaped neckline
5. Which neckline consist of a strap, rope or band around neck, attached to backless bodice.

(a) Halter neckline	(b) Scoop neckline
(c) 'U'-shaped neckline	(d) 'V' shaped neckline
6. Which will be the measurement of front neck depth for a girls garment?

(a) $\frac{1}{12}$ th chest	(b) $\frac{1}{12}$ chest + $\frac{1}{2}$ "
(c) $\frac{1}{8}$ chest + 2"	(d) 2 - $\frac{1}{2}$ "

7. How are necklines mostly finished?
(a) with facing (b) with binding (c) with collar (d) all the three
8. A fabric which falls on a diagonal line at 45° to the lengthwise and cross wise grain is called
(a) Bias piece (b) Straight piece (c) diagonal piece (d) none of the above
9. Which is added to the neckline of a garment in order to enhance its appearance?
(a) Neckline (b) facing (c) Binding (d) collar
10. Which collar is similar to Round collar?
(a) Sailor collar (b) Band collar (c) Peter pan collar (d) Roll collar
11. This collar is 'V' shaped in front and square shape at the back.
(a) peter pan collar (b) Round collar (c) Sailor collar (d) Roll collar
12. Which collar can otherwise be called as Kurta collar?
(a) Band collar (b) Round collar (c) Roll collar (d) Sailor collar

Answer in a one word:

1. Name the any two types of neckline.
2. Write the other name for scoop neckline.
3. Which collar has four corners.
4. How will you finish a neckline?
5. Write the use of Bias Strip.
6. Name any two factors to be considered while designing collar.
7. Name any two types of collars.

PART – II

Answer in a paragraph:

4 marks

1. Name any eight types of necklines.
2. Write an introduction about neckline and collar.
3. Write about 'V' shape and 'U' shaped neckline
4. Write about size of neckline.
5. How will you prevent gapping of neckline.
6. What is bias piece? Write its uses.
7. Give an account on cutting and joining of bias piece.

8. Write about the standard of well-made neck finish.
9. What is binding? Name its types.
10. Explain any two types of collars with diagram.

PART – III

Answer in a page:

10 marks

1. Write about any four types of neckline with diagram.
2. Explain about facing and its types with diagram.
3. Explain about binding and its types with diagram.
4. What are the factors to be considered while designing collar?
5. Write about any five types of collars.

PART – IV

Answer in details:

20 marks

1. Write in Detail on different types of neckline with diagram.
2. Describe in detail on different types of collars with diagram.
3. Discuss in detail about any three types of neck finishing with diagram.

Answers for objective questions:

1. (b) 2. (a) 3. (c) 4. (b) 5. (a) 6. (b) 7. (d) 8. (a) 9. (d) 10. (c) 11.(c) 12. (a)

17. SLEEVES

17.1 INTRODUCTION:

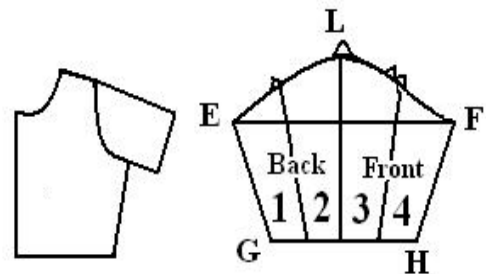
These are part of a garment which covers the arm of the body and are usually attached to armhole of bodice pattern. Today's garments are designed with a wide variety of sleeves, which differ greatly in look and in method of construction. It is possible to develop a variety of sleeve styles from the plain sleeve pattern. By choosing a sleeve style that suits the figure of wearer, design of the fabric, design of the dress and current fashions, you can enhance the appearance of the dress. The instructions on making patterns for a variety of sleeve styles are given below.

17.2 SLEEVE TYPES:

There are different types of sleeve. These can be applied to the garment according to the taste of the wearer, and design of the garment. Some of the types are 1. Plain sleeve 2. Sleeve with gathers at top only 3. Sleeves with gather at top and bottom 4. Bell sleeve 5. Leg-o-mutton 6. Raglan sleeve 7. Kimono Sleeve 8. Magyar sleeve 9. Sleeves till elbow 10. Full Sleeve.

1. Plain Sleeve:

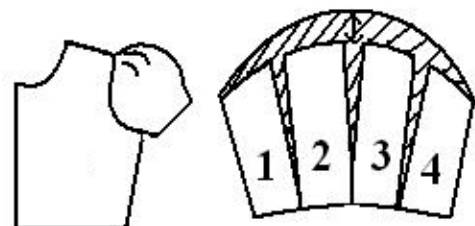
This type of sleeve has no fullness at lower edge or top edge and is commonly used on sari blouses. ELFGH is the pattern for a short plain sleeve. HG is the lower edge of the sleeve. EG and FH are side seams. ELF is the top edge of the sleeve (sleeve cap seam line) which is attached to the armhole edge of the bodice. This pattern can be used to develop various sleeve styles. The vertical lines drawn within the sleeve pattern are the lines through which the sleeve can be slashed or cut to develop it into other types of sleeve styles.



Plain Sleeve

2. Sleeve with gathers at top only:

This type of sleeve is sometimes used in dresses. The lower edge of this sleeve has no fullness, but the top edge has fullness in the form of gathers. To prepare the pattern, take the basic short sleeve pattern and draw slash lines as explained earlier. Now slash along these lines from top to almost near the bottom edge. Keep the slashed pattern on another sheet of paper and spread open

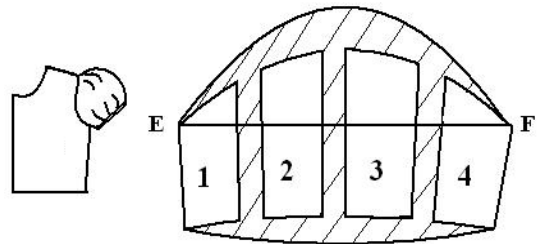


Sleeve gathered at top

the upper edge, the required amount of fullness as shown in figure. You may spread the sleeve so that E to F is about 17" (i.e. 1" less than half width of dress fabric so that two sleeves can be cut from one length of sleeve). Increase the length of the sleeve by 1" to 2" as shown for puffing. Draw the outline of the new sleeve on the new sheet of paper. (The top edge is shown with dotted line).

3. Sleeve with gathers at top and bottom:

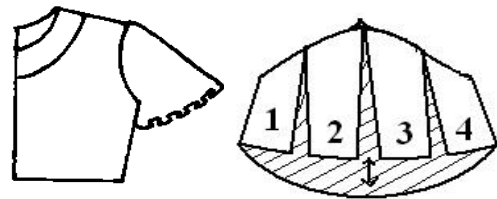
This is the most common type of puff sleeve. The sleeve is finished with a band and with a frill. To prepare the pattern, draw the straight line EF and then cut right through all the slash lines. Spread apart the different sections keeping the sleeve cap line EF on a straight line. Redraw adding 1" to 2" extra length at top and bottom as shown in figure. This pattern can also be used to make a sleeve with gathers at top edge but with fullness at lower edge is gathered and finished with band.



Sleeves gathered at top & bottom

4. Bell Sleeve:

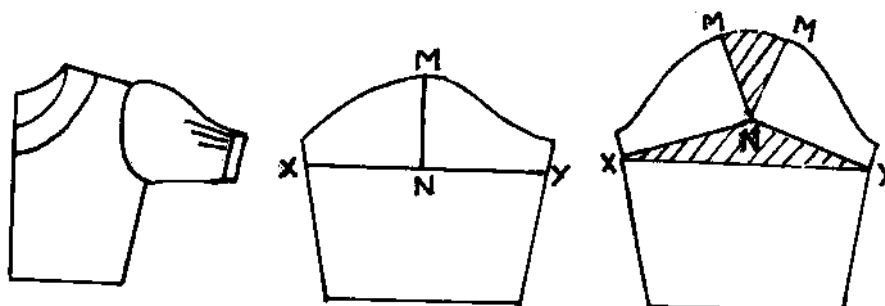
This is cut with flare at the lower edge with extra fullness left as such. To prepare the pattern, slash from bottom upwards and spread open the lower edge. The lower edge must not be gathered.



Bell Sleeve

5. Leg-O-mutton Sleeve:

This sleeve is tight fitted at bottom and puffed with gathers. Prepare a sleeve pattern and draw line XY. Now draw MN through middle of sleeve. Slash along XY and MN and spread the top edge apart and prepare a new pattern.

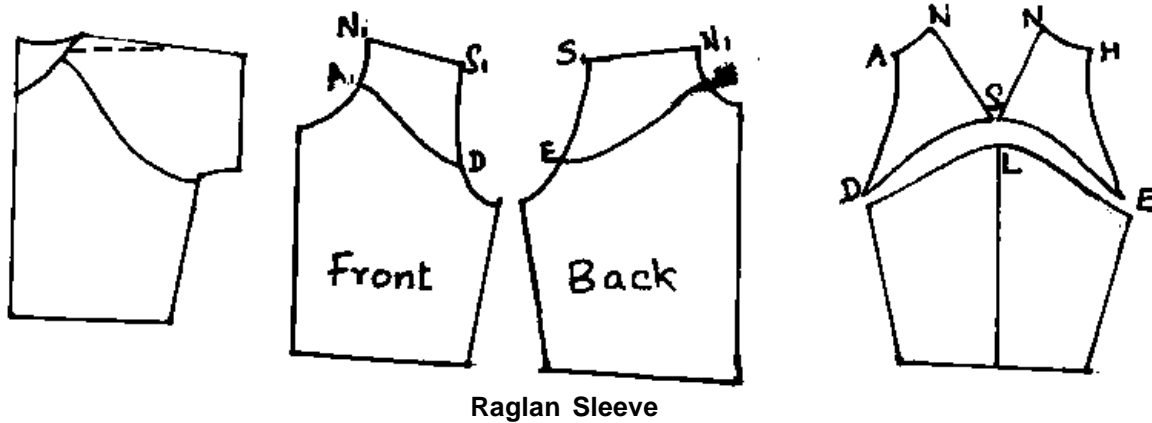


Leg-O-Mutton Sleeve

6. Raglan Sleeve:

This is used where shoulder seam and armhole seam are not needed. These sleeves are more comfortable than other sleeves. These are used in sports wear, kid's wear and T-Shirt. On the back bodice pattern, mark D 1" above underarm point. Mark A, to

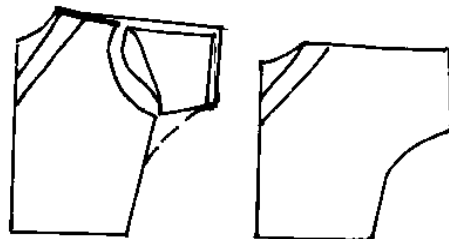
1" away from N. Connect AD and draw a gentle curve line ABD over it. Mark a matching notch on this curved as shown. Following the same procedure, draw curved line EH on the front pattern and mark a double notch on this curve. Cut away raglan sections from the bodice patterns by cutting along ABD and EFH. Trace the sleeve pattern on a large paper



and mark L, mid point of sleeve cap seam line. Keep the cut out raglan sections over the top of the sleeve with shoulder tips S touching L, and points D and E resting on sleeve cap line. NSNI forms a large dart. The original sleeve pattern with this extension added will be the pattern for the raglan sleeve. The finished appearance of a raglan blouse is shown in the figure. The seam for the seam runs from neckline to armhole line.

7. Kimono Sleeve:

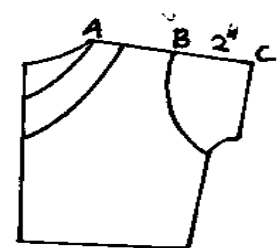
The shoulder seam and armhole s absent in the sleeve runs from side seam of s side seam of bodice. This sleeve is used whe comfortability is needed. This is used in costumes, sports wear, kids wear skirt top anc Top. This can be decorated with embroidery suturies at the edges.



Kimono Sleeve

8. Magyar Sleeve:

Take the bodice pattern extend the shoulder line 2" from the tip of the shoulder. According to lower arm circumference draw the line perpendicular to bodice pattern and attach the edge to bodice pattern.



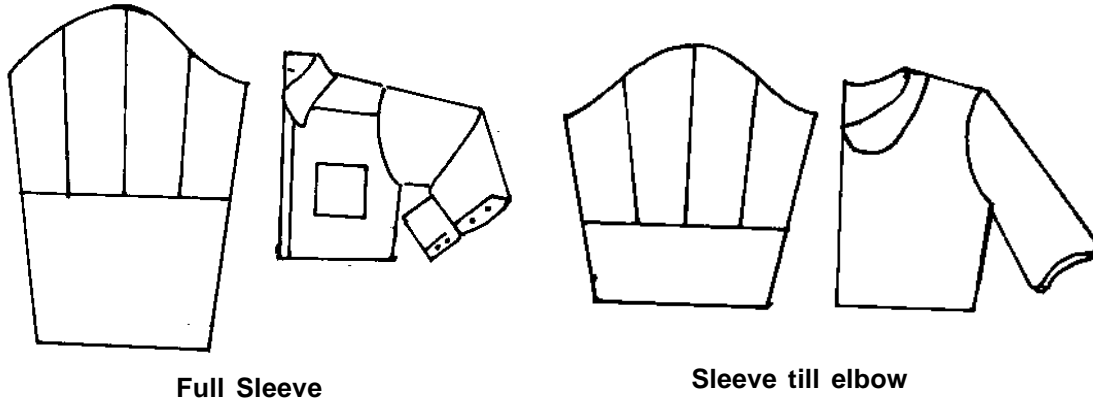
Magyar Sleeve

9. Full Sleeve:

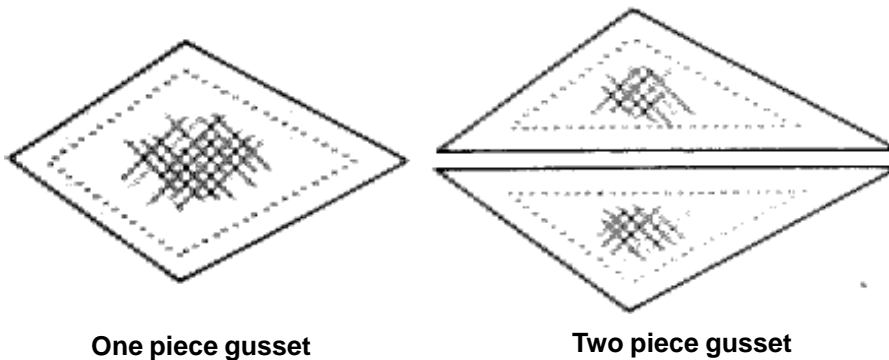
The pattern preparation for this is similar to $\frac{3}{4}$ th sleeve preparation. But the height must be extended till wrist and circumference can be changed accordingly. These are mostly used in Gents shirt, in which the lower edges finished with a cuff.

10. Sleeve till elbow:

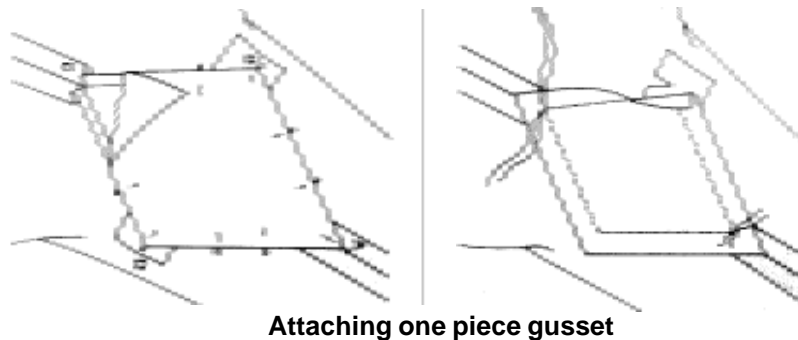
This sleeve are used in Kameez Tops and Kid's wear. To make this pattern extend the Hem line of Plain Sleeve according to height and circumference of wearer elbow. These are sometimes gathered or left as such and finished with or without band.



17.3 Gusset:

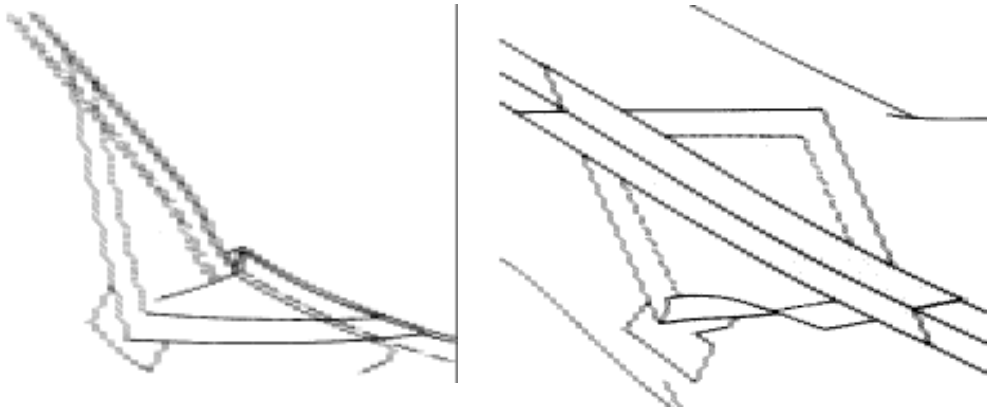


A Gusset is a small fabric piece inserted into a slashed opening, usually under the arm of a close-fitting Kimono sleeve, to provide ease for comfortable fit. Although gusset shapes vary, there are basically two gusset types, one piece (usually diamond shaped) and two-piece (usually triangular). The one-piece type is the more difficulty to insert because the entire gusset must be sewed into an enclosed slashed opening after underarm and



side seams have been stitched. In the two piece gusset, each piece is separately inserted

into a slashed opening on each bodice piece underarm, both gusset sectors and side seams are then stitched in one seam.

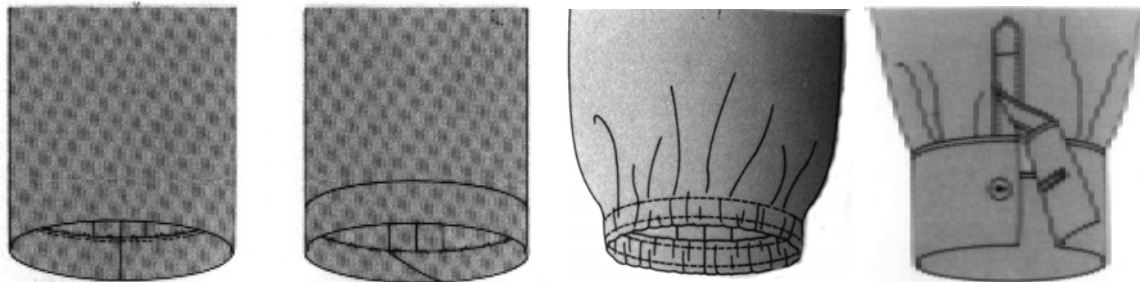


Attaching two piece gusset

Gusset placed in underarm position is called as arm gusset. A gusset placed in different position is named accordingly as Gusset placed to conceal the placket edge is called as opening gusset, Gusset placed in knickee or bottom is named as Knickee or salwar gusset and a gusset placed at the edge seam is called as seam gusset.

17.4 TYPES OF SLEEVE FINISHES:

The finishing of a sleeve edge usually depends on the pattern design. It may be a simple self-hem or faced finish (shaped or bias) or decorative double binding made from self or contrasting fabric. The finish is sometimes attached with casing or with cuff. For successful completion of any sleeve, follow the general guidelines as below.



<p>A self-hemmed edge is a simple sleeve finish. A facing can also be used</p>	<p>A double binding applied to a sleeve edge gives a decorative finish to the sleeve</p>	<p>A casing sewed at the sleeve edge can be self-faced or it can be separately applied</p>	<p>A cuff can have a placket opening or be loose-fitting with no opening</p>
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1. Mark hemline to a length becoming to the wearer.
2. Practice good pressing techniques throughout the finishing process.
3. Reduce bulk wherever possible.

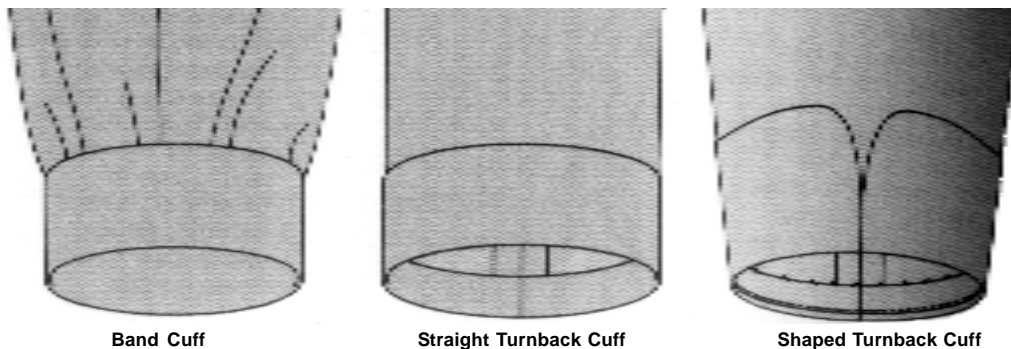
17.5 CUFF:

Cuffs are fabric bands at the bottoms of straight, gathered, or pleated sleeve edges. Although cuff styles vary according to the garment design, any cuff will basically be one of

two general types. The first type cuff without placket can be used on both long and short sleeves, and is made large enough around for the hand or arm to slip in and out easily without a cuff-and-placket opening. The second type cuff with placket of cuff is generally attached to a long sleeve and, different from the first type, requires a cuff-and-placket opening fastened snugly around wrist.

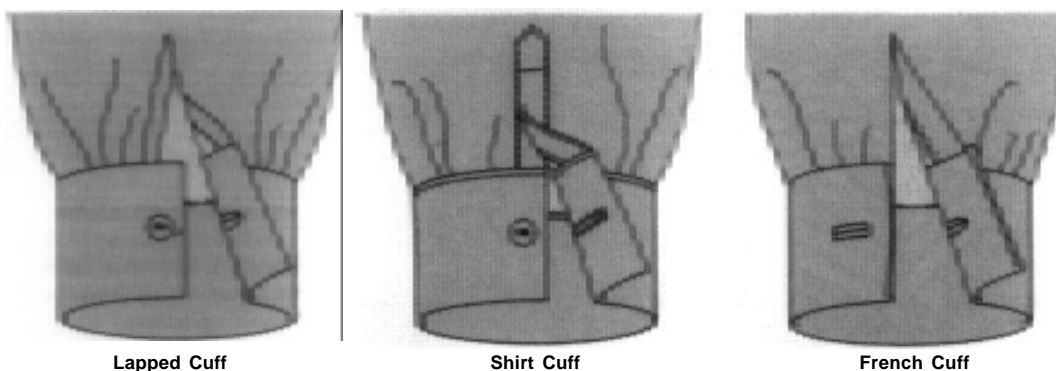
1. Cuffs without plackets:

Because cuffs without plackets have no openings they are cut large so the hand or arm can slip easily in and out. There are three basic styles of this cuff type. The straight band cuff, straight turn-back cuff and shaped turnback cuff. The straight band cuff is made with a separate cuff attached to the sleeve bottom. The straight turnback cuff is made by turning up the deep finished hem of a sleeve. Sometimes, instead of the deep self-hem, a separate extension piece is added to the sleeve bottom to form the turnback cuff. The shaped turnback cuff is a separately constructed cuff that is a separately constructed cuff that is attached to the sleeve with a facing.



2. Cuff with placket:

The three most popular styles are the lapped cuff, shirt cuff, and french cuff. Each is constructed and applied to the sleeve after the placket opening is made at the sleeve edge. The three most commonly used plackets, are the faced placket, continuous bound placket, and Tailored or shirt placket. Note that edges of the faced placket, meet at the



opening, while edges of the other two plackets lap. The continuous bound placket is finished with a single fabric strip to create a narrow lap; the shirt placket is finished with two separate pieces to create a wider lap.

The lapped cuff, with a continuous bound placket has one end projecting from placket edge. The shirt cuff is sewed with its ends aligned to the underlap and overlap edges of the shirt placket. The french cuff, with a faced placket, is sewed to the placket edges so cuff ends meet rather than lap, the cuff is cut wide to double back onto itself.

Questions:

PART – I

Objective questions:

1. Which part of the garment will covers the arm of the body?
(a) Skirt (b) collars (c) sleeve (d) Yoke
2. Which sleeve dose not have any fullness at both edges?
(a) Plain sleeve (b) Raglan sleeve (c) Bell sleeve (d) Leg-o-mutton sleeve
3. In which sleeve, the flare at the lower edge is left as such.
(a) Plain sleeve (b) Raglan sleeve (c) Bell sleeve (d) Leg-o-mutton sleeve
4. The shoulder seam and armhole seam is absent in this sleeve.
(a) Raglan sleeve (b) Bell sleeve (c) Puff sleeve (d) Full sleeve
5. This type of sleeve has a seam which runs from side seam of sleeve to side seam of bodice.
(a) Bell sleeve (b) Kimono sleeve (c) full sleeve (d) plain sleeve
6. The height of this sleeve extends till wrist.
(a) Bell sleeve (b) Raglan (c) Full sleeve (d) Plain sleeve
7. This is a small piece of fabric inserted into a slash, under the arm to provide ease for comfortable
(a) Sleeve (b) Gusset (c) Cuff (d) Casing
8. What is the shape of one-piece Gusset.
(a) Rectangle (b) Square (c) Triangle (d) Diamond
9. Gusset place to conceal a placket edge is called as
(a) Armhole gusset (b) opening Gusset (c) Salwar gusset (d) Seam gusset
10. Fabric bands attached the sleeve edge called as
(a) cuff (b) sleeve (c) placket (d) skirt

Answer in a one word

1. Which sleeve type in easier to make?
2. In which sleeve the shoulder seam extends the shoulder line beyond two.

3. Name the types of gusset.
4. Name any two type of cuffs.
5. Name any two types of sleeve.

PART – II

Answer in a paragraph:

1. What is a gusset? Name its types write any one.
2. Write about magyar sleeve with diagram.
3. Name any four types of sleeve. Explain plain sleeve with diagram.
4. Write about any one gathered sleeve.
5. What is kimono sleeve? Explain with diagram.
6. Give a brief note about types of sleeve finish.
7. Write about the general guidelines for successful completion of sleeve.
8. Mention the types of cuffs with placket and write about any one type.
9. Name the placket commonly used for cuffs.
10. Write about cuffs without placket.

PART – III

Answer in a page:

1. Write short notes on plain sleeve and gathered sleeve types with diagram.
2. Briefly write about kimono, Raglan and magyar sleeve with diagram.
3. Write about sleeve till elbow and full sleeve.
4. Explain about gusset and its types.
5. Write about cuffs.

PART – IV

Answer in details:

1. Write in detail of different types of sleeves with diagram.
2. Write in different types of sleeve finishes with diagram.

Answers for objective type Questions:

1. (c) 2. (a) 3. (c) 4. (a) 5. (b) 6. (c) 7. (b) 8. (d) 9. (b) 10. (a)

18. SKIRTS

18.1 INTRODUCTION:

A skirt is a garment which covers the lower part of a figure from the waist to the hem, ending at any desired length. A skirt can be decorated with any type of fullness or it can cling to the body. It is generally simpler to design a skirt pattern than a bodice, because skirts are less intricately shaped. Skirt outlines and lengths vary tremendously with fashion. The silhouette can be narrow, flared or bouffant; even straight skirts can vary from extremely tight and narrow at the hem to slightly A-lined.

The length of a skirt is always important. To a certain extent it depends upon the wearer's age and the occasion on which the garment is worn, but the length should always be in line with current trends.

18.2 SKIRT TYPES:

The skirt can be classified depending upon its length and its design.

a. Skirt types based on length:

1. Micro Mini:

In this type of skirt the length of skirt extends 10" from the waist above the mid thigh.

2. Mini Skirt:

If the skirt's length ends at mid thigh level then it is called mini skirt. (3"-5" below crotch).

3. Normal Skirt:

The length of the normal skirt is 2-3" just below the knee.

4. Ballerina Skirt:

The skirt which ends at mid calf level is called ballerina skirt.

5. Maxi Skirt:

This type of skirt's extends till the ankle or floor level. The above proportions vary slightly, according to fashion and customers taste.

b. Skirt Types based on design:

There are many types of skirt designs as given below:

1. Basic Skirt:

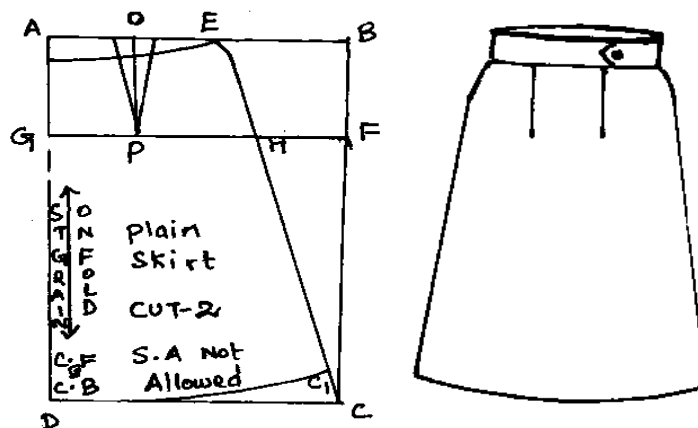
This skirt will have the darts of equal lengths in the form of fullness at the waist line in the front and back. The pattern obtained can be used as the base for any other skirt with a hemline sweep that is equal on the front and back.



Basic Skirt

2. Skirt with minimum flare:

This type of skirt fits the waist tightly with only two darts and has only 1" to 2" ease allowance on the hipline. About 2" flare is added on the side seam of skirt for freedom of movement.



Skirt with minimum flare

Instruction of Drafting :

Draw rectangle ABCD, where $AB = \frac{1}{4} \text{ hip} + 2\frac{1}{2}"$ ($\frac{1}{2}"$ - ease; 2" - flare at hemline) & $BC = \text{skirt length}$. Mark $AG - BF = \text{Waist to hip measurement (usually - 6" to 9")}$. Join GF. $AE = \frac{1}{4} \text{ waist} + 1\frac{1}{4}$ (1" for dart; $\frac{1}{4}"$ for ease allowance). $AA_1 = \frac{1}{2}"$. Join A_1E ; $GH - \frac{1}{4} \text{ Seat} + \frac{1}{2}"$ for ease allowance. Join EHC Mark $CC_1 = 1"$. Mark points $\frac{1}{2}"$ on either side of O and connect to P.

3. Gathered Skirt:

Skirts with gathers at waistline requires extra width in the pattern frame and at the side seams. Amount of increase in the width depends upon the amount of gathers required and the fabric thickness. Bulky fabrics can have limited fullness as there will be difficulty in stitching it to the waistline. If amount of gathers are more, light weight fabrics can be used. If amount of gathers are more, take the length of fabric according to the length of the skirt + 2" (for folding) and width of the skirt must be twice the amount of waist circumference for gathering. Finish the side seam and do casing and insert tape or elastic. Finish the hem edge using machine stitch. Take care to keep the sleeve edge in lengthwise direction.



Gathered Skirt

4. Pleated skirt:

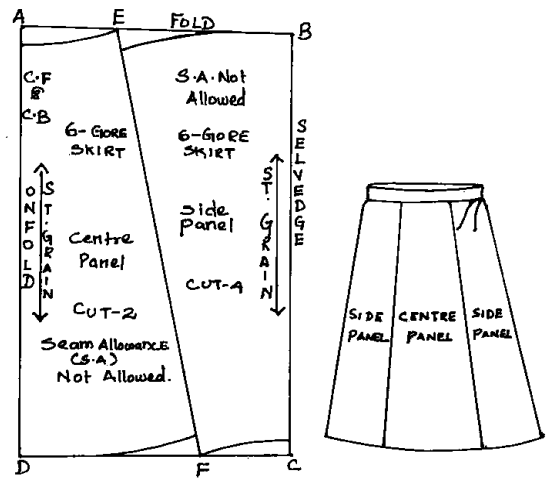
A skirt in which extra fullness at the waistline is accommodated in the pleats. A pleat is a fold in the fabric that releases fullness. Skirt can have pleat at different positions all over. They may be folded and left unpressed or pressed, may be grouped or left ungrouped with or without even spacing. Pleats may be formed in a variety of ways and named accordingly, for eg. knife pleated skirts, box pleated skirt, inverted pleat skirt, accordion pleated skirt and sunburst pleated skirt.



5. Gored Skirt:

A gored skirt is one with panels which are narrow at the waistline and wider at the hemline. It can have any number of gores which can be equally or unequally spaced as 'desired' by the wearer. The gore may be angled, flared, pleated or may be straight from the hip level. The common types of gore skirt are usually 6-gore and 4-gore skirt. The instructions for drafting 6 gore skirt is given below:

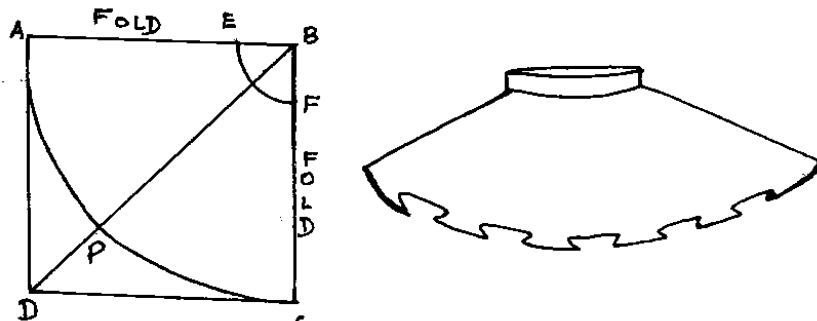
Draw a rectangle ABCD, where AD = Skirt length; AB = 16" (Remove 4" for band along the width of the fabric and remaining 32" in folded). AE = CF = 1/8 waist + 1/2" ease allowance. Join EF Leave 1/2" below A, E, C, F. Draw curved lines on all these points to make a skirt.



6-gore skirt

6. Circular skirt:

Select a fabric of maximum width for this type of skirt. This will not have any side seam. The fabric must be folded lengthwise as well as crosswise of same size square for this Skirt. To prepare the pattern draw a square ABCD, where = AB = CD = 1/6 waist +

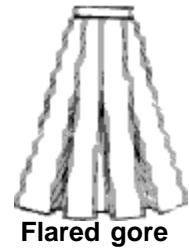


Circular skirt

Skirt length AE = AF = 1/6 waist. Join BD Diagonally. Join EF. AE = OP = FC = Skirt length. Join APC.

7. Skirt with extra flared gore:

If extra fullness is required at hem level. eg. sports skirt, or a long evening dress, it can be added to each gore. This addition is usually made from the hemline, but on A line skirt it could start from about knee level. A long 6-gored skirt can be flared out below the knee.

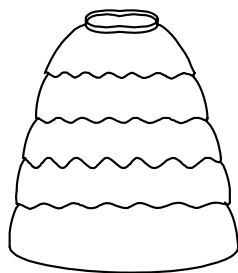


8. Layered Skirt:

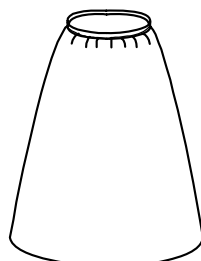
These are also called tiered skirts which has rows or layers of fabric attached to each other at the hemline. The width of each layer may be graduated or of even lengths. Length as well as width of each tier may vary. The layers of frills can also be attached separately one below the other over the basic skirt. Frills lay over each other and conceal stitch line. The hemline of each tier may be trimmed by adding fringes, colored, binding, ribbons etc.

9. A-line skirt:

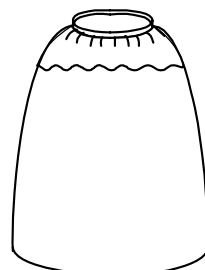
This skirt follows the shape of the 'A' where the hemline measurement is greater than the hipline circumference. The waistline measurement remains the same as in plain skirt but fullness is added to hem so that its circumference increases. For this the basic pattern is slashed and spread apart a few distance to bring the shape of 'A'. If more fullness is added at the waistline then it becomes a flared skirt.



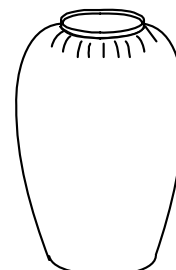
Layered Skirt



A-line Skirt



Skirt with peplum



Pegged Skirt

10. Skirt with peplum:

This is as straight skirt with flounce or short, flared frill, added or attached at the waistline or waistband. Peplums extend from the waist, down till the hip.

11. Pegged skirt:

It is also known as peg-top or inverted skirt as it has fullness introduced at the waistline and with no fullness at the hemline. The skirt may be gathered, pleated or cowed into the waistband.

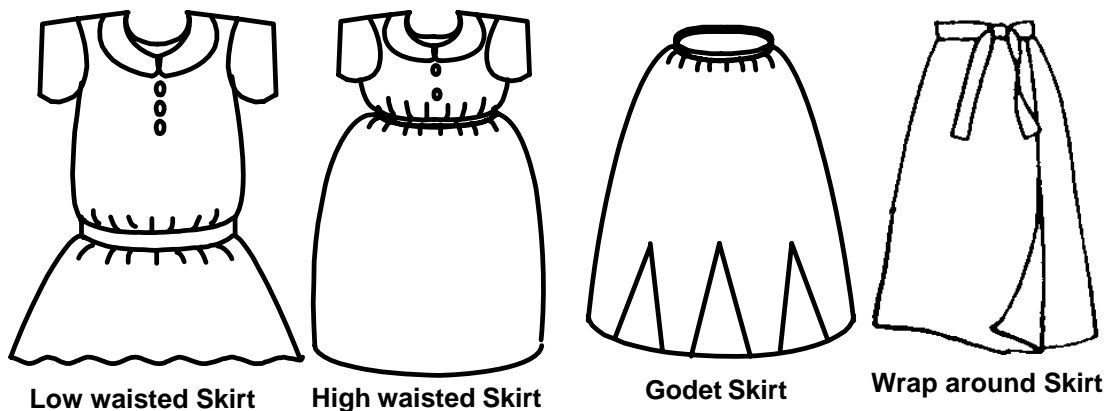
12. Low waisted and high waisted skirt:

The waistline of the skirt can be altered so that it falls below or raised above the natural waistline which are actually developed from basic skirt foundation. Low waisted skirt is $3\frac{1}{2}$ " down from the natural waistline and a high waisted skirt has extended waistline

at any desired amount. The low waisted hugs the hipline below the waistline whereas the high waisted skirt extends above the natural waistline.

13. Godet Skirt:

This is a skirt which has godets at the hemline which are generally triangular shaped wedges of fabric placed between seems, into slits or as a replacement for cutout sections. Godets provide additional added fullness at the hem or simply be a design feature. Godets can be equally placed of same or varying widths. They may extend evenly to the hemline or may be graduated in lengths.



14. Wrap around skirt:

The basic skirt can be modified to make the pattern for a wrap around skirt. Trace the basic pattern kept on the folded edge. Cut of the traced pattern and open it. Determine the amount of the overlap and mark this, making a curve at the hem line. The edge must be finished with a facing. So extend the front edge. This facing can be turned to the outside when making up and machine around the curved edge, then turned to the inside and the hem completed in the usual way. To complete the pattern for the left side, cut another one from the original pattern and extend this at least 3" beyond the centre front line.

18.3. FINISHING WAISTLINE:

Waist line may be finished with waistband. Waistband is a mean of finishing raw edge of a skirt or pants. These are attached to the waistline after all construction details. (pleats, darts, gathers, plackets, gores etc) are completed. When waistband is completed, the garment should fit comfortably and look smooth and pressed.

As attached waistband should be larger than the true waistline measurement to compensate for fabric bulk and thickness of the darts and seam allowances that are stitched into the band. The amount of ease varies, the general allowance is ½". Ease is essential as it helps the waistband, to bear the abdominal stress and also prevents rolling of skirt just below the band.

Questions:

PART – I

Objective questions:

1. This garment is mostly worn by women.
(a) Frock (b) Skirt (c) Jabla (d) Pant
2. Layered skirt is otherwise called
(a) gathered skirt (b) gored skirt (c) tier skirt (d) pegged skirt
3. Pegged skirt is also called by this name.
(a) goded skirt (b) a-line skirt (c) inverted skirt (d) plain skirt
4. The height of micro mini skirt from waistline is
(a) 10" (b) 5" (c) 7" (d) 12"
5. The calf length is called by this name
(a) mini skirt (b) ballerina (c) micro mini skirt (d) maxi skirt

Answer in one or two words:

1. What are the measurements needed for the skirt?
2. In which skirt is the fullness absent in the waistline?
3. Name the types of gore skirt.
4. What is peplum?
5. How will you finish the waistline of skirt?

PART – II

Answer in a paragraph:

1. Write about layered skirt with diagram.
2. What is gathered skirt with diagram.
3. Write about pegged skirt with diagram.
4. Write about low waisted skirt and high waisted skirt.
5. Write the instructions for drafting skirt with minimum flare.

PART – III

Answer in a page:

1. Write about skirt types based on length.
2. Explain about finishing waistline.

PART – IV

Answer in detail:

1. Write about any 10 of skirt types based on design.

Answers for objective questions:

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

19. POCKETS

19.1 INTRODUCTION:

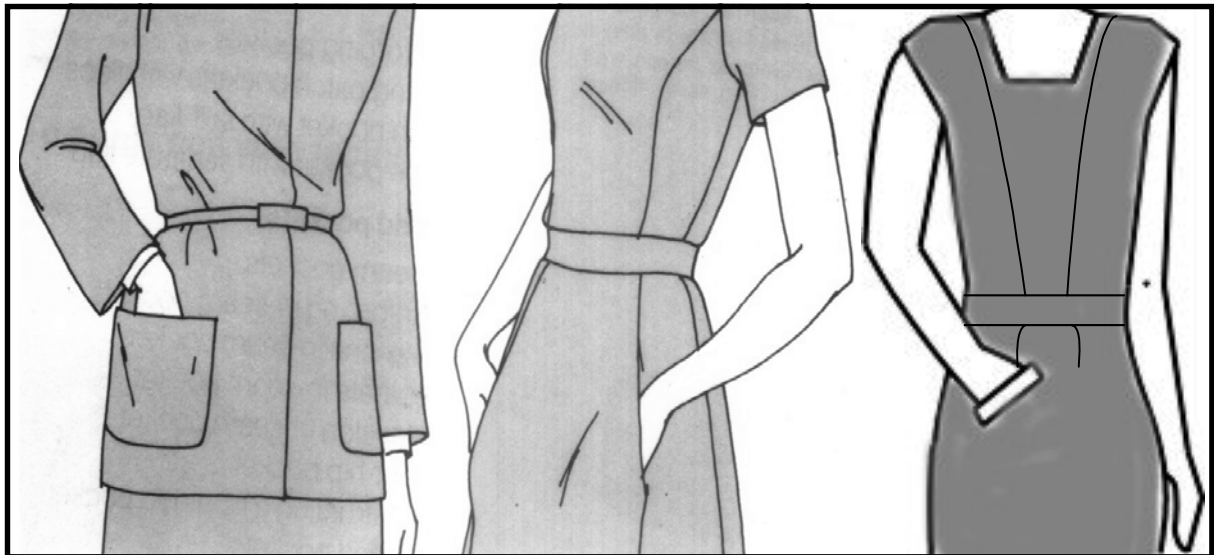
In men's and boys' clothes, pockets are used mainly for utilisation purposes rather than for decoration. The chief purpose of pockets in women's clothing is to add design interest. They should be planned in giving considerable attention to the design of the dress and the figure of the wearer. Children love to have pockets in their dresses. Appearance of children's garments can be enhanced to a great extent by designing pocket of varied shapes, sizes, and locations with decorative details such as bias binding, lace, ruffles, tucks, pleats, applique, embroider etc. suited to the design and purpose of the dress.

19.2 TYPES OF POCKET:

Pockets may be classified into 3 types. 1. Patch pocket 2. In seam pocket 3. Set in pocket.

1. Patch pocket:

These are attached to the outside of the garment and may be cut in various shapes. A patch pocket may be furnished with a flap which holds it shut or mere appearance of a flap may be given by trimming the top of the pocket with a shaped band that looks like a working flap. Sometimes flaps are used without any pocket, purely for decoration.



Patch pocket

Inseam pocket

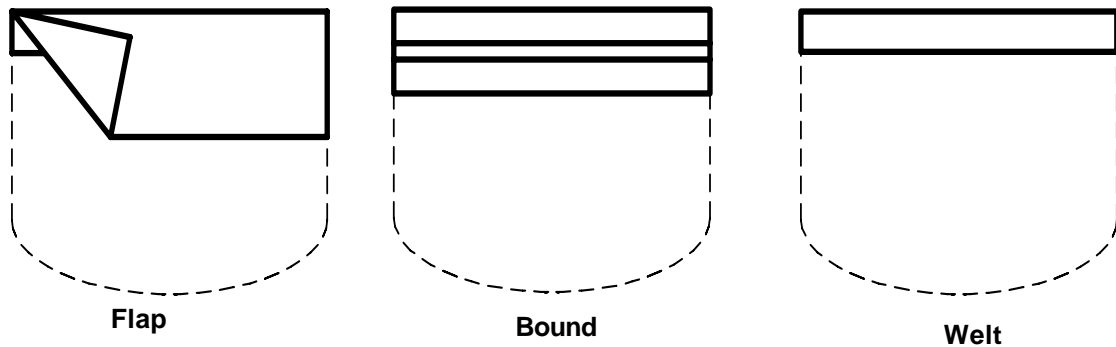
Slash pocket

2. In seam pocket:

Any type of pocket in which the opening falls along a seam line of the garment is referred as 'pocket set into seam'. This type of pocket is used in pants of men and women, skirts, trousers, shorts, kids' wear, kurtas and pyjamas.

3. Slash pocket:

This type of pocket is inside the garment with a slash of some type for its opening. There are three types of slash pockets bound, welt and flap. In the bound pocket each edge of the slash is finished with binding of even width pocket has one wide end called the welt extending above the pocket opening. The flap pocket has a flap of extension turned down over the opening.



19.3 SELECTION OF POCKET DESIGN:

Plan pocket designs that harmonize with the design of the fabric as well as the design of the garment and its components (collar, sleeve, cuff etc.) For the striped dress the rectangular shaped pockets cut on crosswise grain and finished with bias edging is a good choice. The scalloped pocket in look becoming because they harmony with the scalloped collar and heart shaped pocket of the dress.

The sex and age as well as the figure and personality of the wearer should also be considered while designing pockets. Choose the pocket designs that suit for children's dresses. Scalloped and rounded pocket are becoming only for girls dresses. Straight line pockets are suitable for men's and boys garments. For older women and short women, inconspicuous designs such as set-in pocket are advisable. Women with a large bust line should avoid designs with breast pockets. The pocket designs should be appropriate for the type of garment and the purpose and use of the garment. For example, simple straight line pockets are suitable for school uniforms and casual wear garments, while conspicuous pocket styles with decoration trimmings (suited to the wearer) may be used on party wear dresses.

19.4 CREATING VARIETY IN POCKET DESIGN:

1. Variety in shape, size, location and number:

Pockets can be of varied shapes—rectangular, triangular, heart shaped, oval shaped, scalloped, round. They may be placed at different positions in the garment. A pocket design can be with two breast pockets and two hip pockets, the size of the hip pocket being about $1\frac{1}{2}$ times more than the size of the breast pockets.

2. Variety in material and grain:

Interesting effects can be achieved by planning pockets of material different in color, design, texture or grain from the garment material. A design with the pocket flap (also the collar and buttons) can be made out of contrasting coloured material. A design with printed pockets on a plain garment and vice versa. A striped dress design where the pocket is cut on crosswise grain and finished with bias edging while the rest of the garment is cut on lengthwise grain.

3. Variety in decorative details and trimmings used on the pocket:

The outer edge of the pocket may be finished with ruffles, bias binding lace decorative stitches, applique, tucks, pleats, embroidery, patch work etc.

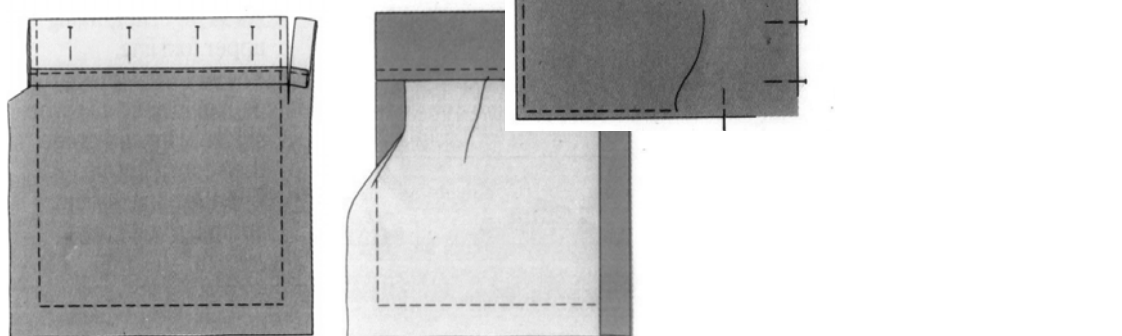
19.5 CONSTRUCTION OF POCKET:

1. Patch Pocket:

Patch pocket may be lined or unlined. A lining is needed for fabrics that stretch or sag. Fabrics that are firm enough to hold their shape can be used without a lining. The steps in constructing a patch pocket are as follows.

a. Construction details:

1. Turn under top edge of pocket hem $\frac{1}{4}$ " (6mm), press and stitch.
2. Turn the hem to the right side of the pocket along fold line and pin.
3. Stay stitch around the pocket on the seam line. The stay stitch will act as a guide for turning and pressing.
4. Trim and grade hem seam allowances. Clip up to the stay stitch.



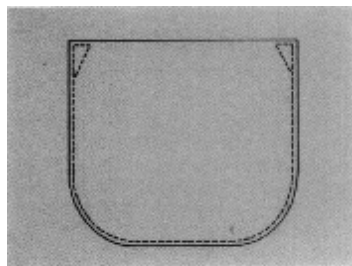
Construction of patch pocket

5. Fold in seam allowances along stitching and press. Square corners must be mitered; rounded corners must be notched.
6. Stitch the edge of the hem to the pocket by hand, or top stitch from right side.
7. Pin the pocket to the garment. Slip stitch around the pocket by hand. Or topstitch edges in place. Reinforce corners by backstitching or by stitching a small triangle or square.

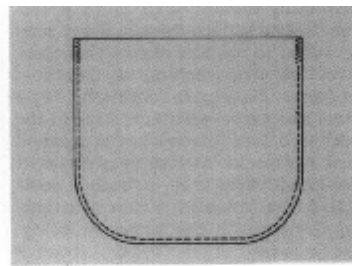
Both the top corners of the pockets must be reinforced properly to add strength. This can be done by the following methods.

b. Corner reinforcement of patch pocket:

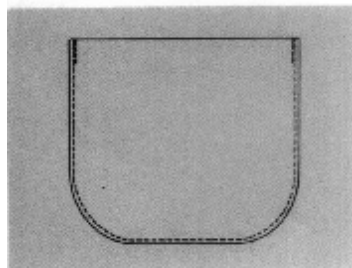
1. **Small, identical triangles stitched at each top corner:** This is the pocket reinforcement seen most frequently on shirts.
2. **A zigzag stitch:** This stitch about $\frac{1}{8}$ " wide and closely spaced, runs down $\frac{1}{2}$ " from the top of each side. Good for children's clothes.
3. **A backstitch:** This is used for $\frac{1}{2}$ " on each side of the pocket's opening edge, with thread ends tied. This method is often used on kid's wear.
4. **Patched fabric:** A patch of fabric or fusible interlacing, placed on the wrong side of garment under reinforcement stitching, adds strength.



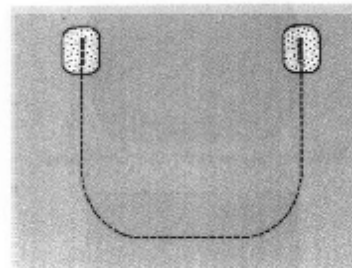
1. Identical triangular stitch



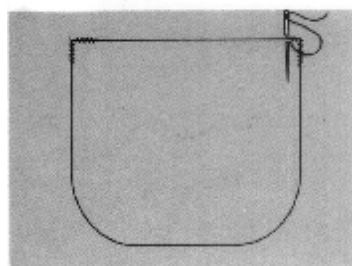
2. Zigzag stitch



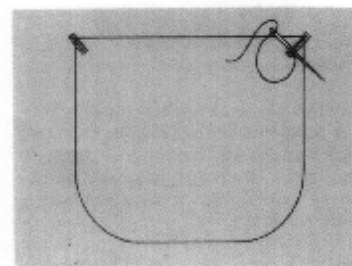
3. Back stitch



4. Patched fabric



5. Hand reinforcement



6. Bar tacking

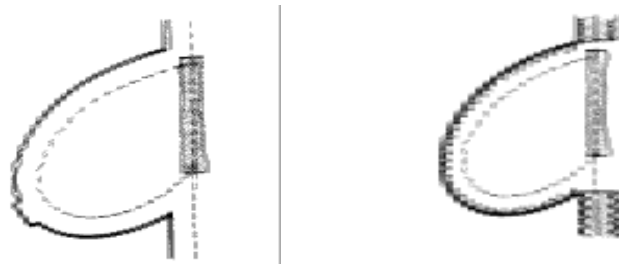
5. **Hand reinforcement:** Hand reinforcement is done with Whip Stitch, invisibly for $\frac{1}{4}$ " on each side of top corners.
6. **Bar-tacking:** Another hand method in bar tacking $\frac{1}{4}$ " long straight stitches diagonally corners with blanket stitches worked over them.

2. In-seam pocket:

This is the easiest type of pocket to make. The pocket is attached to the side seam of the garment. It can be cut as part of the garment front and back, or it can be cut from a separate pattern piece and stitched to the seam. If the outer fabric is bulky or heavy, cut the pocket pieces from lining fabric.

a. Construction details:

1. Stitch a piece of seam tape or twill tape along the front and back fold line or seamline to prevent stretching.
2. If the pocet is cut separately, stitch pocket pieces to front and back opening, right sides together. Press seam allowances toward pocket pieces.
3. Pin the garment fron to garment back, matching markings at seamline and pocket.
4. Stitch directionally along seam and around pocket in one step. Use reinforcement stitches, 15 to 20 stitches per inch at the coreners. Press seam allowances flat.



Construction of in-seam pocket

5. Turn the pocket toward the front of the garment. Clip back seam allowances above and below pocket so that the seam allowances of the garment can be pressed open. Piping material would be effective. Buttons may be fixed in groups to create design interest gradually progressing in size from small to big.
6. Seams can be finished if necessary.

Questions:

PART – I

Objective questions:

1. Children like to have this detail in their garment.
(a) pocket (b) cuff (c) collar (d) sleeve
2. Which is attached for decoration without pocket?
(a) patch (b) flap (c) welt (d) pocket
3. Welt pocket belongs to this type.
(a) patch pocket (b) in seam pocket (c) bound pocket (d) slash pocket

4. How many types of slash pocket are there?
(a) Two (b) Three (c) Four (d) Five
5. This pocket will be more suitable for girls' dresses.
(a) round pocket (b) straight pocket (c) both (d) none

Answer in one or two words:

1. What is the use of pockets in women's wear?
2. What is the use of pockets in men's wear?
3. What is used to cover the pocket?
4. Name the types of pocket.
5. Name the types of slash pocket.

PART – II

Answer in a paragraph:

1. Name types of pocket. Write about any one.
2. Write about creating variety in pocket through decorative details.
3. How will you create variety in pocket by changing shape, size, location and number?
4. What is patch pocket? Explain.
5. How will you create variety by changing material and grain?

PART – III

Answer in a page:

1. How will you select a pocket design?
2. Write about creating variety in pocket design.
3. Write about different types of pocket.

PART – IV

Answer in detail:

1. Explain in detail on construction of pocket.
2. Explain in detail on construction of patch pocket and corner reinforcement of patch pocket.

Answers for objective type questions:

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

20. YOKES

20.1. INTRODUCTION:

A yoke is a segment of a garment usually placed at the shoulder, above the waistline (at midriff) or below the waistline for controlling and supporting fullness needed over the bust, chest, hips etc. Yokes help to keep the upper area of the waistline of a garment trim and smooth. Yokes are sometimes designed just for decoration and may not have any fullness.



Hip yoke

Midriff yoke

Shoulder yoke

20.2 SELECTION OF YOKE DESIGN:

The yoke design to be used on a garment will depend on various factors, The important factors are listed below with examples.

1. Design of the fabric:

There should be harmony between the shape of the yoke and design of the fabric. For eg, material with large checks or stripes are not really appropriate for yokes with round or curved shapes. They are suitable for straight line yokes, Floral designs or curved line fabric will be more suitable for round or curved yoke.

2. Design of the garment:

The design of the yoke should harmonies with the design of the garment. Yoke can be designed, which repeats the shape of the design details of the dress. (Such as collar, cuff, pockets ect.) but with slight variations to avoid monotony. To relieve the mono of curved lines. Straight line tucks are stitched on the lower section of the garment.

3. Purpose and use of the garment:

Yokes are the best for school uniforms and home wear garments. Select simple yokes style. For party wear garment, the yoke design can be of noval and decorative shapes such as scalloped, asymmetrical etc. with contrasting material and decorative edging of lace, frills etc.

4. Sex and Age of the wearer:

Round and curved yokes are more suitable for girls while straight yokes are more suited to boys. Older women should select simple yoke designs and avoid style which are too decorative.

5. Figure and personality of the wearer:

Deep narrow yokes with vertical decorations include vertical eye movement giving an impression of added height and less width, thus making a person look taller and slimmer. Hence select such yoke designs for a short plump figure. Horizontal lines in yokes make a person look shorter and fatter and are suitable for thin figures. A yoke wide at the shoulder and pointed towards the waistline gives the impression of a narrow waist and wide shoulder. A person with round face should avoid very round yokes as well as straight line yokes because repetition and contrast both emphasise the roundness.

20.3 CREATING VARIETY IN YOKE DESIGN:

1. Variety in shape and size:

A yoke can be designed with various shapes such as square, round straight line, scalloped, triangular and asymmetrical etc. Sometimes part of a yoke may extend to the full length of the garment. This type of yoke is referred to as yoke with panel. Sometimes



Yoke with panel



Partial yoke

the yoke may extend into the sleeve, or it may extend only part of the way across the garment as in a partial yoke. A yoke can be deep or shallow, broad or narrow according to the effect desired.

2. Variety in material and grain:

If the garment is of light colour, the yoke may be made of a contrasting coloured fabric for a dark coloured garment the yoke may be white or light coloured. A yoke with prints is attached with the plain garment or vice versa would give a good appearance. With regard to grain, a design in a design in which the yoke is cut on bias and the garment on lengthwise grain.

3. Designing seamline of yoke:

The yoke can be joined to the body of the garment in a decorative way by insertion of ruffles, lace, ricrac, faggoting, decorative stitches or top stitches in contrasting colored thread.

4. Decoration within the yoke:

The yoke can be beaded, quilted, embroidered, shirred, smocked, tucked, pleated.

5. Introducing the yoke at different position:

The yoke may be introduced at the top of the dress (shoulder yoke) above the waist line (midriff yoke) below the waist line (hip yoke)

6. Designing yokes which release fullness in various forms:

Fullness is released in the form of gathers, pleats, tucks etc. from the edge of the yoke.

20.4 PREPARING PATTERNS OF DIFFERENT TYPES OF YOKES:

1. Yoke without fullness:

This type of yokes can be of variety with different shapes and size. To prepare the pattern for this, take the front bodice pattern and draw the yoke line from shoulder to center

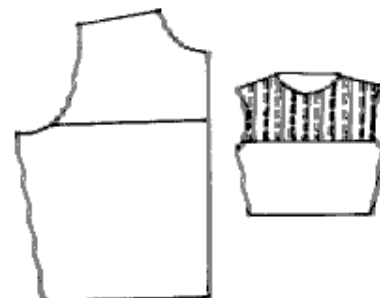


Yoke without fullness

front as desired. For a curved or 'V' shaped yoke, this method must be followed, for a straight line yoke, draw line from armhole to centre front of bodice pattern. Label both the section.

2. Yoke with fullness:

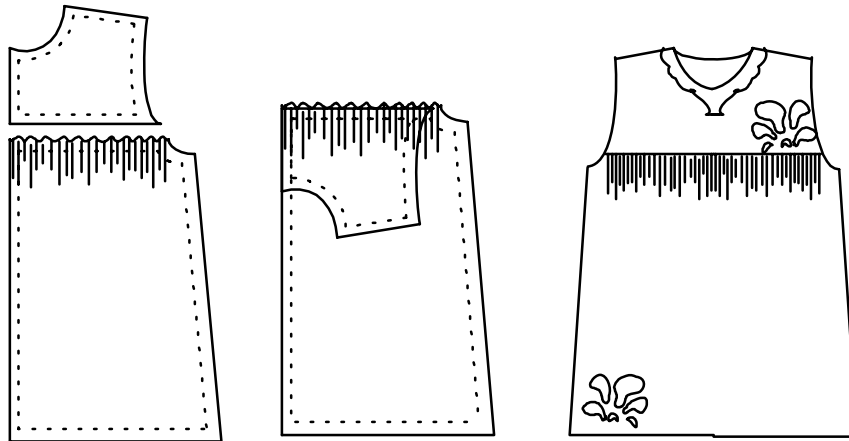
For this types of yoke, decorate the fabric with (tucks pleats, gathers, shirring and embroidery) any fullness must be finished first place the yoke pattern over the decorated fabric. Cut the required amount of fabric and stitch tucks according to the design. Keep the paper pattern on the tucked fabric and cut in the correct shape including seam allowance and attach it with the other patterns.



Yoke with fullness

20.5 Attaching yokes:

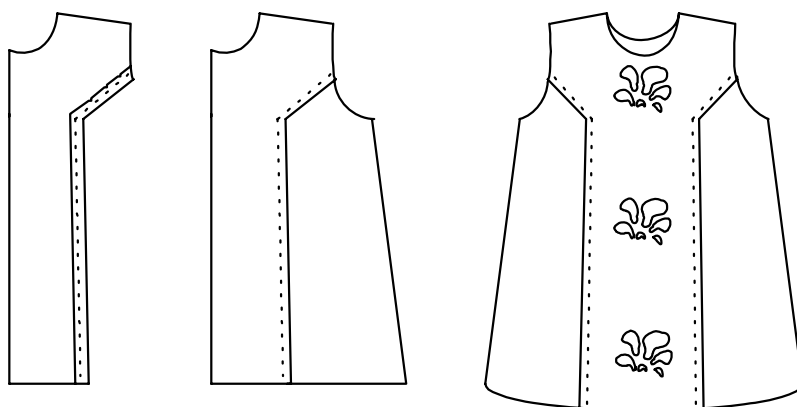
A yoke maybe attached to the lower section by either a plain seam or a lapped seam. Lapped seam cuff the yoke and the skirt including seam allowances, on the fabric. Gather the skirt making sure that the width of the yoke and skirt are equal after the skirt has been gathered . Now place the yoke over the skirt right side facing and matching notches.



Straightline yoke

Pin and tack distributing gathers evenly. Machine on the wrong side of the yoke along the seam line as shown. Finally remove the tacking and turn up yoke on the right side and press.

Yoke which has curve and straight line as in skirt with panel the seam runs almost at the right angles to the corner. First of all prepare the lower section of the garment by working the gathering stitches. Next take the yoke, and work machine stitches just near the seamline and reinforce the corners, fold the seam allowance to the wrongside and tack with small stitches close to the fold. To enable the seam to be flat, cuff notches into the seam allowance.



Decorative yoke

Next keep the yoke on top of the lower section, matching seam lines. Tack in position and top stitch. Close to the folded edge of the yokes. A tucked seam effect can be got, if desired, by doing the top stitching away from the folded edge of the yoke.

Questions:

PART – I

Objective questions:

1. Which yoke will be more suitable for school uniforms
(a) simple plain yoke (b) yoke with pin tuck
(c) yoke with shirring (d) 'V' shaped yoke
2. Which style of yoke must be used in dresses of old women
(a) simple plain yoke (b) yoke with pin tuck
(c) yoke with shirring (d) 'V' shaped yoke
3. To increase the height of wearer which yoke must be used
(a) Deep narrow yoke (b) Broad Deep yoke
(c) Straight line yoke (d) Round yoke
4. Yoke which extend to the full length of the garment
(a) partial yoke (b) yoke with panel
(c) Yoke with fullness (d) Yoke without fullness
5. This yoke which is placed above the waistline is called by this name.
(a) shoulder yoke (b) midriff yoke
(c) hip yoke (d) yoke with fullness

Answer in one or two words:

1. Name the yoke suitable for girls dress.
2. Name the yoke suitable for boy's dresses.
3. Name three types of yoke.
4. Name the seams used to attach yoke.
5. How will you decorate the yoke part.

PART – II

Answer in a paragraph:

1. How will you vary the shape and size of the yoke and create variety?
2. Define yokes.
3. What is partial yoke.

4. What is panel yoke?
5. How will you choose a yoke depending on purpose and use of the garment?

PART – III

Answer in one page:

1. Write Briefly on selection of yokes design.
2. Write about creating variety in yoke design.
3. Describe about preparing patterns for different types of yokes.
4. Explain about attaching yokes with garment.

PART – IV

Answer in detail:

1. Describe about selection and creating variety in yoke design.
2. Describe about preparing patterns and attaching yokes with garment.

Answer for objective type Questions:

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