GOVERNMENT POLYTECHNIC, PUNE
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"MODEL ANSWER"
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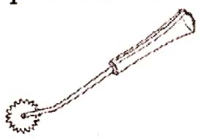
Semester:-First Sem. | **Name of Faculty: - Mrs.S.M.Waghchaure**

MODEL ANSWER	MARKING SCHEME
Q1 **a)Measuring tools are essential for accurate sewing, they are as follows** **1 Measuring Tape-** smooth surface tape,clearly marked with increments of inches and centimeters on both sides, not stretch after use,about ½ inch to ¼ inch wide and 60 inches long, and has 1/8 divisions. **1.2 Rulers-** two types of rulers, small ruler of 1 inch wide and 6 inches long divided into 1/8" or 1/16" divisions on one side and centimeters on the other side, second one is of 2 inches wide and 18 inches long. small rulers are made of clear plastic and larger rulers with metal, wood and plastic. Small rulers are used for measuring small distances for tucks, hem facings, etc. and used at the sewing machine. The larger rulers are used at the work table. **.3 Yard stick or Meter scale-** wooden, plastic or metal, available in 36 inches or 45 inches in length,useful for checking grain lines, drawing long seam lines on fabric or paper. **4 L – Scale-** arms or sides made of metal giving it a L-Shape; long arm measures 24 inches, short arm 14 inches.perfect right angle corner and used to draw lines at right angles at the time of drafting. It is helpful during the process of straightening the fabric to check whether the corners of the fabric have got the right angled structure. **5 Hem Gauge-** 6 inch gauge,made of cardboard or brought from a shop, measuring guide for marking width of the hems, pleats, and seam allowances accurately. Notches are provided at regular intervals along the gauge. One edge of the notch is at right angles to the straight edge of the gauge while the other edge is slanted. **6 Hem Marker**-It is used for mark out a completely level hem line in chalk. It can be adjusted to any hem length. This is commonly used for professional hem marking	Enlist-1M Explain-3M
b) Working principal of conveyor- used to move materials,wheel conveyors, roller conveyors, roller conveyors, belt conveyors, magnetic conveyors, screw conveyors, pneumatic conveyors, inclined conveyors, and vertical conveyors.	1Principal-1Mark

c)Packaging- The meaning of packaging is wrapping, compressing, filling or creating of goods for the purpose of protection and their appropriate handling. It is also use to get lot of attention from the customer. **Purpose-** coordinated system of preparing goods for transport, warehousing, logistics, sale, and end buyer instruction, the garments are poly-packed dozen-wise, color wise, size ratio wise, bundled and packed in the carton. with important information in printed	
d) Steps of Threading- **Winding the bobbin** Bobbins wind differently on 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 clock wise 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 winder lever down until the rubber ring touches the hub of the fly wheel 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. **Upper threading** Raise the take up lever to its highest point by turning the balance wheel towards you for upper thread. Place the spool of the thread on spool pin. Lead the thread into thread guide, then pass through tension discs and into small wire spring and finally through the eye of the needle from left to right. Draw about 2 inches of thread through the needle. For the lower thread hold the bobbin between thumb and fore finger of the left hand with the thread leading on top, into the slot or shuttle race. **Drawing the bobbin thread** Raise the take up lever to its highest point. Holding the end of the top thread with your left hand, slowly turn the fly wheel around once so that the needle goes down and then comes up to its highest position. Pull the end of the needle thread. Then a bobbin thread will appear through the needle hole. Pull the loop to bring the end of the bobbin thread out.	Each step half mark
e) Material handling system- transporting work (like fabrics, cuttings, bundles, finished garments and general items) from one place to another, storing materials and protecting material, device or procedures. For better material handling, role in improved material flow and increasing production performance.	Explain-1 -1 M
f) Functions of fully automatic machine-Automatic positioning of needle, cutting of top and bottom thread, pressure foot lifting technique, Vacuum system is available to extract cloth waste and thread ends.	1 Function-1M
g)i)Die cutting machine- Involves pressing a rigid blade through the lay of fabric. It is useful where small motifs with particular shape and pattern are needed for cutting. Die cutting is most useful to cut sharp and small parts. **ii)Steam dolly-** This equipment is known as a form press or a 'dolly' press. It has a	Die cutting machine-2M Steam dolly-2M

compressed air system, frame for a steam distribution system and a pressing form made of a canvas bag in the suitable silhouette of the garment to be pressed.	
Q2 A) Pinning Equipment's- Straight pins or Silk Pins or seamstress – Straight pins come in several lengths and thicknesses. Generally the longer pin have more thickness. Standard length for dressmaking pin is 1 .1/6 inches which is known as seamstress or silk pins. Pin heads are of three types i.e. flat, color- ball or ball point pins and T pins. • Flat pins- These are extra fine pins suitable for light weight to medium weight fabrics. • color- ball or ball point pins- The color- ball is easy to handle so comfortable to use over the flat head .Ball points are rounded which slips between the yarns and makes them good choice for knitted fabrics. • T- pin- T-pin is convenient for heavy pile fabrics and loose knits, the head will not disappear or slip through these fabrics. **Pins Cushion-** A small stuffed cushion made of wool or felt, filled with wool or hair to hold the pins while working near the table is more useful. A wrist pin cushion is made with an elastic strap that can be fastened to wrist to work faster and convenient when you are fitting a garment.	Use-2M Importance-2M
B) Straight Knife Cutting Machine- 1. large number of fabric lays can be cut by the machine due to high length of knife & r.p.m. of the motor. So, productivity is high. 2. Automatic grinding. 3. Automatically lubrication. 4. Comparatively cheep. 5. Can be moved easily by wheel. 6. Suitable for straight line & curve line. 7. Can be cut high curve line than round knife. 8. Fabric can be cut from any angle.	Each function-1 mark
C) Hand Pressing Equipment- Charcoal Iron- irons that hold embers from wood or coal fires. They are difficult to use and require some technical know-how when it comes to not smudging the clean clothes or avoiding getting burned by stray ashes. A handheld **iron** a basis of which is a metal container that can be filled hot coals, a metal brick or slug. **Dry Iron-**An automatic iron is handy for pressing fabric before cutting, during construction and after the garment is completed.	Exaplain-4M
D) **Button fixing machine**- Button with two holes, four holes or shanks can be stitched by this machine by simple adjustments to the button clamp and the spacing mechanism. The sewing action consists of series of parallel stitches whose length is equal to spacing between centers of the holes. The needle has vertical movement only and the button is moved from side to side by the button clamp. Buttons can be stitched with one or two	1Difference-1M

threads. Each machine has maximum number of stitches depending upon type of machine used. The maximum number of stitches are 16, 24 or 32. Generally decorative buttons would be sewn with half stitches than the stitches used for the functional buttons. **Button hole machine**-A buttonhole is a straight or shaped slit cut through the garment and then stitch its edges to prevent fraying and stretching. On non-fray fabrics the buttonhole is cut before sewing but with fabrics which have a marked tendency of fraying, the sewing is performed before the cutting. Standard types of garments such as shirts, buttonholes are automatically sewn and spaced at predetermined distances. The operator simply position the work in the machine and starts the cycle.	
E) Types of packaging- Stand up pack: Shirt (90° angle),Flat pack: Sport wear/Shirt/Trouser, Hanger pack: Blazer, Coats, Pants,Semi stand up pack: Shirt,Half fold pack: Pant .	1Type-1M
Q3 A)Marking equipments-These are generally used for transferring the paper pattern on to the fabric. **Tracing Wheel**-This is a sharp toothed wheel used with dress maker's carbon to transfer pattern markings to cloth. It transfers the pattern markings-including seams, darts, and pocket placements to the wrong side of the fabric. The small serrated edge tracing wheel is appropriate for most fabrics. A smooth edge tracing wheel is used on fine or knit fabrics to avoid pulling of the yarns. Test it to make sure that it does not bend easily and that the points are not blunt.  **Fig. 1.7 Tracing wheel** **Dress Maker's Carbon or Tracing Paper**-It is a wax-coated paper on one side and is available in different colors. It is used with the tracing wheel to transfer pattern markings such as lines, darts, pleats, etc. from paper patterns to the fabric being cut. **Tailors Chalk**-It is made of wax or stone chalk, is used to transfer seam lines and other pattern details to fabric. It is also used for marking fitting adjustments and hems. A wax chalk is acceptable only for woollen fabric. Stone chalk is also available in pencil form. This is available in assorted colors and in rectangular or triangular shapes.	Enlist-1M Explain-3M
B)Powered scissors-Electric Scissors-These are used in most sample rooms. They are ideal for cutting silk, nylon,and soft, hard-to-cut fabric .These are light in weight and easy tooperate. It is used for rapid cutting available in battery or electrical plug in model. **Rotary Cutter**-It requires more handling skill than shears. It cuts patterns and samplesfaster than scissors do. The rotary cutter cuts all fabrics as well as leather and vinyl. Rotary cutters are used in commercial garment industries.	Explain-4M

C) Automatic pressing machines are more convenient than any other machines **Because-** To flatten out the undesirable wrinkles, creases and crush marks,To make creases where the garment design needs it,To mould the garment to the silhouette of the body,To prepare garments for further sewing,To refinish the garment after completion of the production process, Easy to handle, fast and accurate output	1Reason-1M
D)Working features of embroidery machine- Most modern embroidery machines are computer controlled and specifically engineered for embroidery. Industrial and commercial embroidery machines and combination sewing-embroidery machines have a hooping or framing system that holds the framed area of fabric taut under the sewing needle and moves it automatically to create a design from a pre-programmed digital embroidery pattern.	1Feature-1M
E) Functions of cartoon packing: **Protection:** The main function of packaging usually involves protecting the products from the any environmental hazards and others. It helps to protect the goods from loss, damage and stealing. During transport, handling and storage operations different types of protections are needed. They are two types like Physical and Barrier protection. **Physical:** Physical protection from vibration, mechanical shock, electrostatic discharge compression, climatic conditions, temperature etc. **Barrier:** A barrier from humidity, precipitation and solar radiation, oxygen water vapor, dust, etc. **Storage:** Packaging products must be stored in many different locations. So, to fill up this storage function all the packaging materials and packaging containers are should be checked before packaging the product or garment. **Loading and transport:** During the loading and transportation time packaging product may be lifted, moved, set down and store in a warehouse manually or mechanically. To complete this process easily, efficiently and safely the perfect external shape and strength of the packages should be required. • **Promotional function:** The packaging is the important promotional functions to attract the customer's and buyers attention and to have a positive impact upon the purchasing decision. **Sales:** It helps to promote the sales process and to make it more feasible. **Information transmission:** Packages and labels give the detail information about product like how to use, ingredients, transport, nature, composition, weight, quantity, storage, recycle or dispose of the package or product. **Security:** Packaging can play an important role in reducing the security risks of shipment.	1Function-1M

Q4) A)Types of Sewing threads- Linen thread,Silk thread,Soft cotton thread,Mercerized cotton thread,Glaced cotton thread,Viscose thread,Polyester thread,Nylon thread. (The natural fibre threads available in the market are cotton and silk. Cotton thread comes in two varieties mercerised and un-mercerised. Mercerised cotton is stronger and has lustre. Silk thread is an all-purpose thread and combines strength with elasticity, but is not easily available in India in small spools. The synthetic threads are usually made from polyester and terylene. Cottons or linens should not be stitched with synthetic thread, as the thread will not be able to withstand the heat while being ironed. Cotton sewing thread comes in a great range of sizes, from number 8 (very heavy for work on canvas, etc.) to number 100 (very fine). Wool and silk should preferably be stitched either with mercerized cotton or silk threads only. Blended fabrics may be stitched with synthetic thread suitable to the dominant fibre in its content. Threads whether natural or synthetic are produced in various thickness: higher the number, finer is the thread and smaller the number, coarser is the thread. It is important to remember that the same thread should be used for the bobbin and top spool. The thread used for stitching a garment must of course blend in with the fabric and be inconspicuous. If the thread is just a shade darker than the fabric, it will blend in well; a good test is to lay a single strand of the thread over the fabric. If a fabric is plaid or printed, the colour of the thread should match the dominant colour of the plaid or print. If a print, stripe, or check is composed of equal amounts of two colours, the thread should match the darker colour.)	1Type-1M
B)Scissors and Shears- Scissors have symmetrical, equally sized finger holes and are generally under 6" in blade length, while shears have one smaller finger hole and one larger finger hole and are more than 6" in blade length.Example- Pinking shear and Paper cutting scissor.	1Difference-1M (1Example is compulsory)
C) Trouser pressing- Trousers include a wide variety of garments, ranging from jeans, women's trousers with simpler construction and requiring a less sharp crease, men's trousers including four pockets, and suit trousers. The trouser pressing is carried out in two operations along with underdressing of the seam. The first operation is done for legging on a flat press to set and crease the legs and the second operation for topping in a series of lays around the top of the trouser on a contoured press. Double legger-pressing machine: Double legger-pressing machine is used for pressing trousers, and in this machine both the legs are pressed simultaneously with the top hanging down between two separate bucks. These machines consist of vertically acting heads, carousels and microprocessor controls. Heat resistant silicone foam is used for covering bucks of steam presses and tables used with irons and vacuum boards and the outside being covered with a woven polyester cover. Sometimes stretch nylon is used with the highly contoured bucks.	1Function-1M

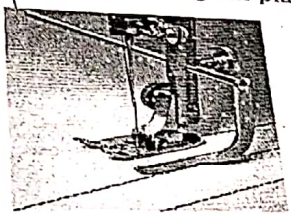
D) working principals of gauges- — 1Principal-1M

Guides and gauges

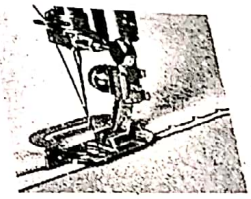
Among the most useful supplements to the sewing machine are the gauges that help you to stitch a consistent distance from an edge or another line.

Another valuable aid is the guide that is used when blind-hemming by machine. It holds both garment and hem edge in place for stitching.

Seam gauge is attached to the machine bed, then adjusted to be a specific distance from needle.



Quilter guide-bar extends out from foot to fall along a guiding line.



Blind-hemming guide is attached to foot to hold garment and hem in place.

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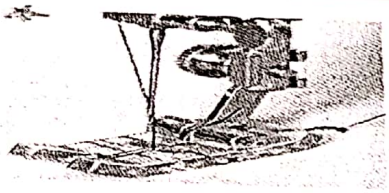


Buttonhole foot is used when stitching machine-worked buttonholes. It may be of metal or see-through plastic. Guidelines are usually etched into foot to help with stitch placement.

E) Each category of tools has their own purpose in garment construction and finishing. Proper selection and use of tools require more care as they improve the appearance of the finished garments and reduce the time taken in their construction. — 1Purpose-1M

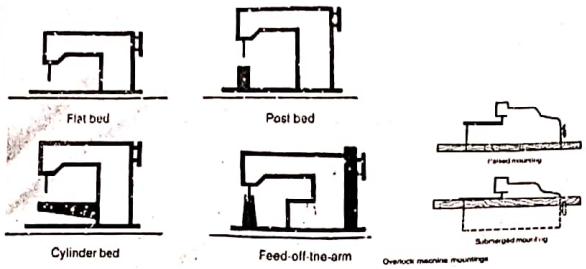
Q5) **A) Functions of fully automatic cutting equipment-** — 1Function-1M

- It can be easily transferred from one place to another.
- Higher lay of fabric can be cut easily
- Excellent efficiency in cutting cut more precisely.
- Fabric can be cut from any angle.
- Production

B) **Working type of Beds of sewing machine are-** — 1Type-1M

1) Flat bed- The most widely used type of machine bed for flat sewing.
2) Cylinder bed- The shape of this bed allows for the easy rotation of tubular parts such as the cuffs of an assembled sleeve during a felling operation.
3) Post bed- The upright arm has relatively small sewing area and this is combined with height, allows for a part to be grasped and turned without difficulty. A typical operation for this bed shape is sleeve setting.
4) Feed of the arm- Built expressly for closing cylindrical parts, this bed shape is

used for lap seaming the outside leg seams of trousers after the inside leg seam has been closed.



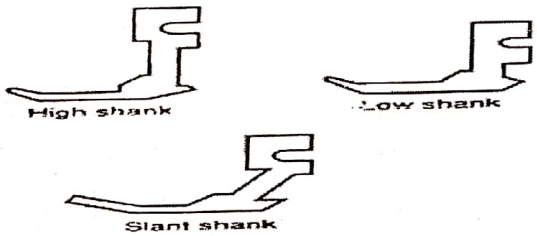
Explain-4M

C)Material handling system- The means used for transporting work (like fabrics, cuttings, bundles, finished garments and general items) from one place to another, storing materials and protecting material from damage, are called material handling system. It may be an equipment, device or procedures. For better material handling, equipment are engineered according work place design.

At the time of new garment factory set up or improvising production system and factory layout, material handling system is taken into account for better factory performance and smooth material flow. A right material handling system across the factory departments reduces material transportation time, waiting time at work and delays.

Enlist-1 M
1type-1M

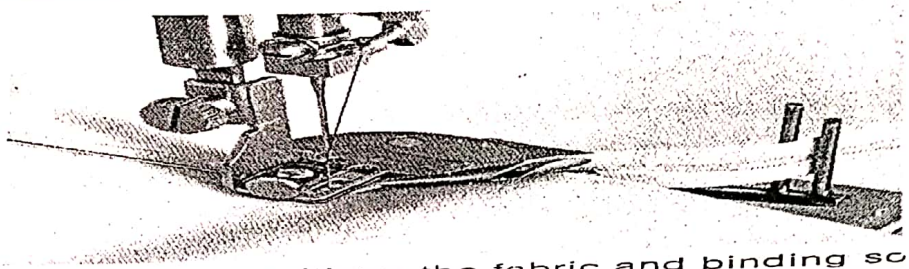
D) Enlist and explain Types of pressure foots-- A presser foot is an attachment used with sewing machines to hold fabric flat as it is fed through the machine and stitched. Sewing machines have feed dogs in the bed of the machine to provide traction and move the fabric as it is fed through the machine, while the sewer provides extra support for the fabric by guiding it with one hand. A presser foot keeps the fabric flat so that it does not rise and fall with the needle and pucker as it is stitched. When especially thick work pieces are to be sewn, such as quilts, a specialized attachment called a walking foot is often used rather than a presser foot. Presser feet are typically spring-hinged to provide some flexibility as the work piece moves beneath it. Presser feet have two toes, one to hold the fabric down on either side of the needle. Shank:-



1) Roller foot-

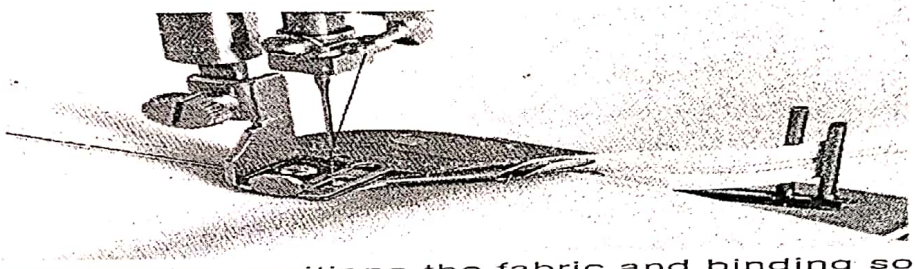
The roller foot grasps and rolls along with the top layer of fabric so it will feed at the same rate as the bottom layer.

2) Binding foot-



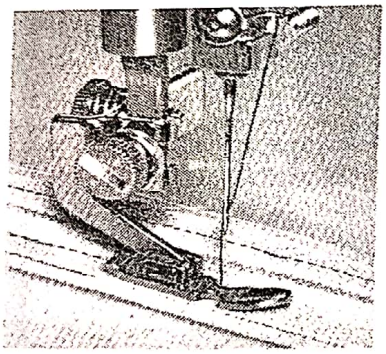
The binder positions the fabric and binding so that they can simultaneously be fed under the needle and stitched together.

3) Binding foot-

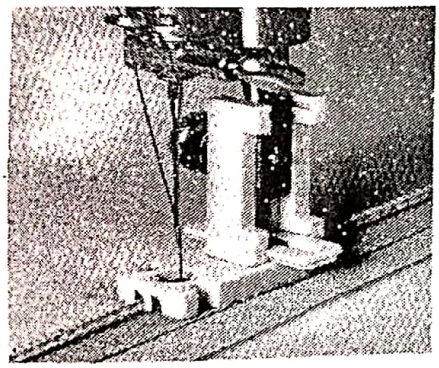


The binder positions the fabric and binding so that they can simultaneously be fed under the needle and stitched together.

4) Zipper foot-

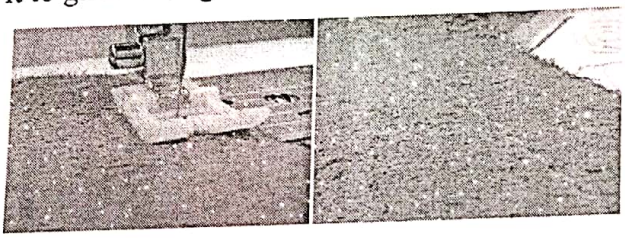


Zipper foot is used to stitch any seam with more bulk on one side than the other. Examples of such instances: zipper insertion, covering cord, and sewing bound buttonholes.

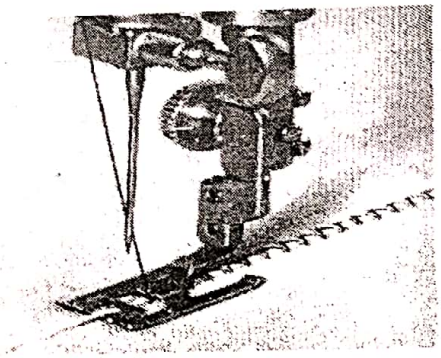


Invisible zipper foot is used only for insertion of invisible zippers; each zipper brand has its own. Bottom of foot has two channels through which zipper coils pass while zipper is being stitched.

5) Teflon coated foot-This teflon coated foot can be used for both straight and decorative stitching on leather, vinyl, suede, or other fabrics that would stick to a regular presser foot. The coated backing prevents the fabric from tugging against the foot and allows it to glide through the machine with ease.

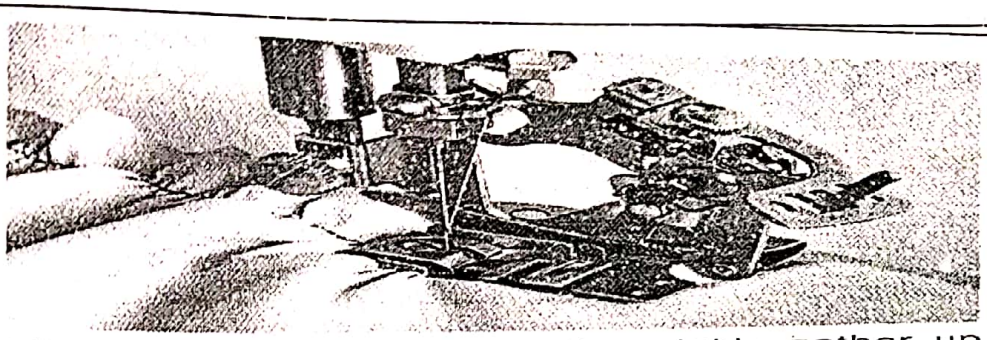


6) Cording Foot-



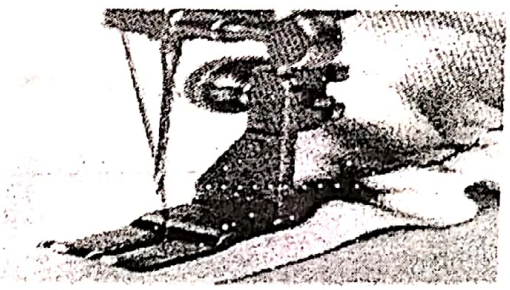
Cording foot has a built-in device that provides for a steady supply of cord to be fed with and attached to the fabric. Sometimes they are incorporated into buttonhole foot.

7) Shirring foot---



The ruffler attachment will quickly gather up a length of material. It is especially helpful with home decorating projects.

8) Gathering foot-



Gathering foot gathers up a length of fabric as it is being stitched. Some gathering feet will simultaneously gather one layer of fabric while stitching it to another flat piece of fabric.

1Difference-1M

E) Differentiate-) Storage Equipment and packing equipment-

Storage Equipment's –

1. **Boxed Goods**
2. **Hanging Goods.**

Boxed goods-These are generally stored in racked shelves systems or in cartons. Because of the compactness of the packed unit and the protection afforded by the outer covering, the storage density is high compared to that of hanging goods. The rail system used for moving the goods can be manual or power operated.

Hanging good-There are two types of hanging goods storage system i.e. Static system and Dynamic system. Static system consists of rails to move the garments. In Dynamic system they break down the large order for different styles into small amounts for distribution.

Packaging Equipment's –

1 Bagging

2 Boxing

Bagging- Most garments are packed in plastic bags, either at the end of production or

when they enter the finished goods stores. Products like shirts and underwear are usually bagged and boxed directly after final inspection and enter the stores in pre-packed form. For these and similar types of product there are many automatic machines available. Boxing-When boxed or hanging garments have to be transported in bulk packed form, the most commonly used medium is a carton made of strong corrugated material. The garments or boxes are packed into the carton which can either be sealed by contact adhesive paper tape or bound with a plastic tape. There are manual and automatic machines available for both.	
ii) Drill machine and notcher machine- Drill marker is used for marking pocket positions, dart lengths, etc. The mark itself can be a very small hole or a mark made by a chalk – based liquid taken through the spread by the drill A punching tool which produces a ¼ inch (6.35mm) narrow V- Shaped cut. It is used to make notches on the edge of a sloper or paper pattern.	1Difference-1M
Q6)A) **Round Knife cutting machine-** 1. Suitable for **cutting** single ply as well as multilayer (say 20-30layers). 2. Easy to handle & operate. 3. Suitable for small scale cutting. 4. Suitable for gentle curve line cutting. 5. To cut the larger part of the garments. 6. With a same r.p.m. its efficiency is 10 times greater than the **straight knife.** **Bend knife cutting machine-** 1. Suitable for any types of line. 2. Very large productivity for limited products, such as collars, cuff, placket, etc. 3. Automatic grinder grinds the knife instantly. 4. Air blower helps to reduce the fabric weight which increases smooth movement of fabric. 5. Possible to cut 90° angle of the lay. 6. Intensity of accident is low.	1Difference-1M
B) Sustainable packaging- • is beneficial, safe, and healthy for individuals and communities throughout its life cycle • meets market criteria for both performance and cost	Explain-2M Material-2M

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- is sourced, manufactured, transported, and recycled using renewable energy
- optimizes the use of renewable or recycled source materials
- is manufactured using clean production technologies and best practices
- is made from materials that are healthy throughout the life cycle
- is physically designed to optimize materials and energy
- is effectively recovered and utilized in biological and/or industrial closed loop cycles

Example of Material-

- Ball head pin
- Butterfly
- Carton
- Inner box
- Paper board
- Plastic clip
- Plastic collar
- **Poly bag**
- Scotch tape
- Tag pin
- Rope
- Tissue paper
- Thin paper sheets
- Wooden Boxes and Crates (For bulky exports)

C) Working of Industrial Pressing Equipment-

i) Electric Steam Iron-Steam presses commonly consist of a static buck and a head of complementary shape closing onto it, thereby sandwiching the garment to be pressed. It consists of a frame housing the buck which is normally in round shape for pressing different garments and linkages to close the head by a scissor action.Steam is passed to head and buck using a pipe system. Adequate controls are provided for controlling head closure and vacuum. Vacuum is created to provide suction through the buck using a vacuum system. The typical pressing cycle is as follows:

A garment need to be pressed is fixed in the buck
↓
The buck head closes and locks
↓
Then steam is applied to the head or the buck to press the garment for a predetermined time
↓
The buck head is released

Electric Steam Iron-2M
Tunnel finishing-2M
Pleating Iron-2M

↓

Vacuum is applied to the garment to cool and dry it

↓

The garment then moved around the buck for the next part of it to be pressed

ii) Tunnel finishing-Tunnel finishers are used for finishing knitted goods. They can be used for manmade fiber garments and their blends also. This garment finishing process involves no pressure application and reduced handling of garments in steam tunnel. In this finishing process, the garments are put on hangers and fed through a cabinet using a motorized rail. The garments pass through sections with superheated steam and it is dried by blowing air. In some cases garments are loaded onto frames and passed through the tunnel on a conveyor.

Steam helps to relax the fibers in the garment and the tunnel helps in avoiding the need for any other pressing process before or after this operation. In some cases, it completely eliminates the other pressing processes. These tunnels are incorporated with infrared drying in some cases. As the garments are vertically hung, the turbulence of blown air provides additional energy to remove wrinkles in woven fabrics. Proper care should be taken during pressing operation for fibers where excessive agitation causes fabric deformation.

iii) Pleating Iron- Pleating is the process of creating pleats in the garment. Pleats are a type of fold actually formed during stitching by doubling fabric upon itself and securing it in place. However, these pleats can also be introduced in pressing by creating a set of creases in the garment and making it set by pressing. The pleats can even be according to a geometrical pattern. Pleating is done by using pressure, moisture and heat. There are two types in machine pleating.

One is a blade machine in which pleats are formed by the action of blades and then set by heat and pressure when they pass through a pair of rollers and the other type is a rotary machine in which the rollers are fitted with complimentary dies. Crystal pleating, hand pleating, box pleats and fan-shaped pleats are some of the examples shown in below figure.

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