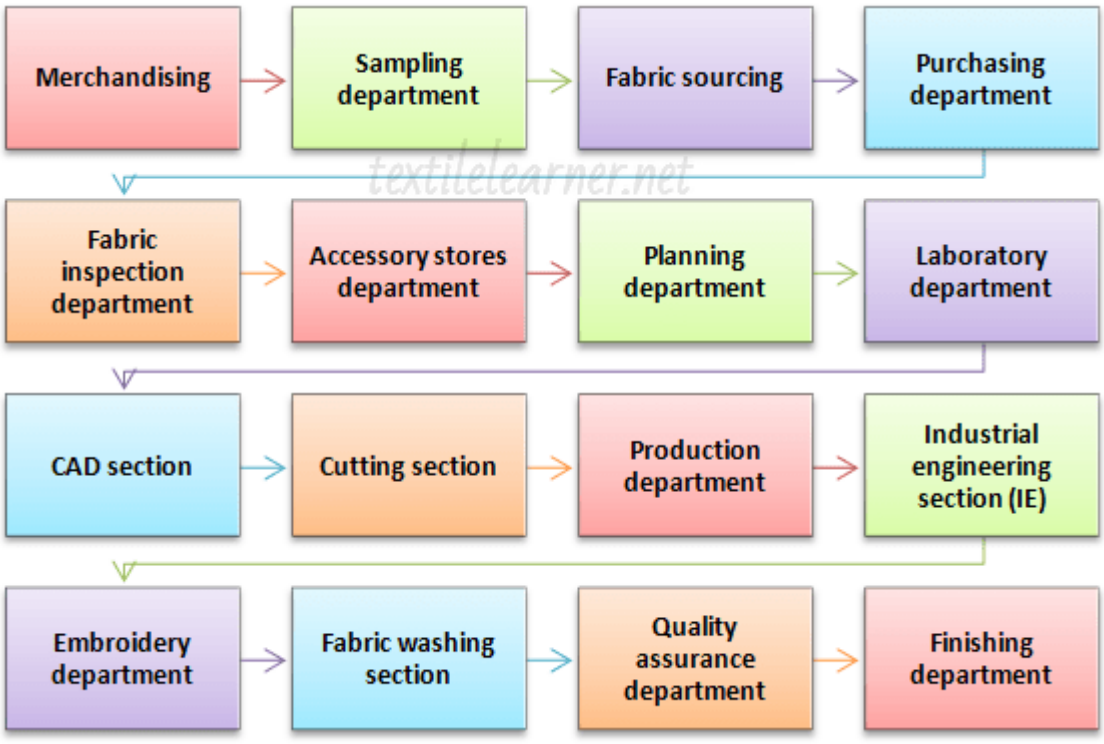
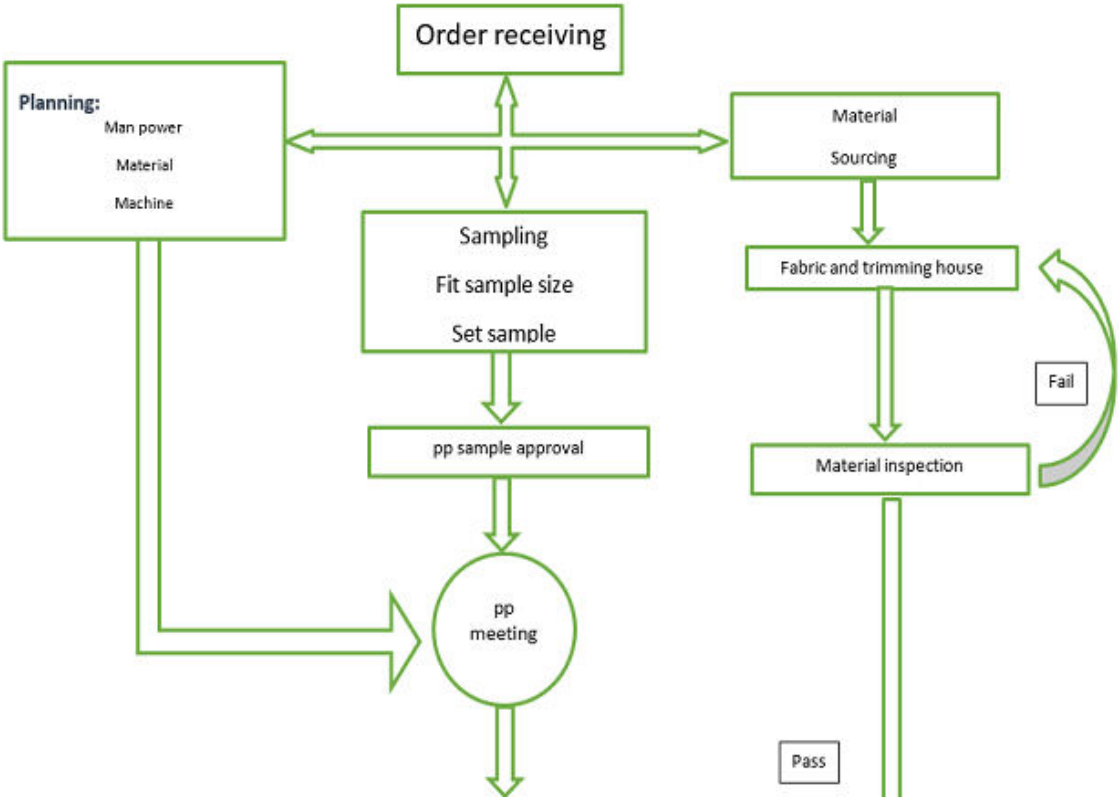
Unit 1

Garment Export Houses

FLOWCHART OF APPAREL EXPORT INDUSTRY





Flowchart of Garment Production in an Export House:

1. **Design & Development**
    - Concept creation
    - Sample design and approval
2. **Sourcing**
    - Fabric and trim sourcing
    - Material inspection
3. **Pre-Production**
    - Pattern making
    - Size grading
    - Sample approval
4. **Cutting**
    - Fabric spreading and cutting
    - Marker making
5. **Sewing**

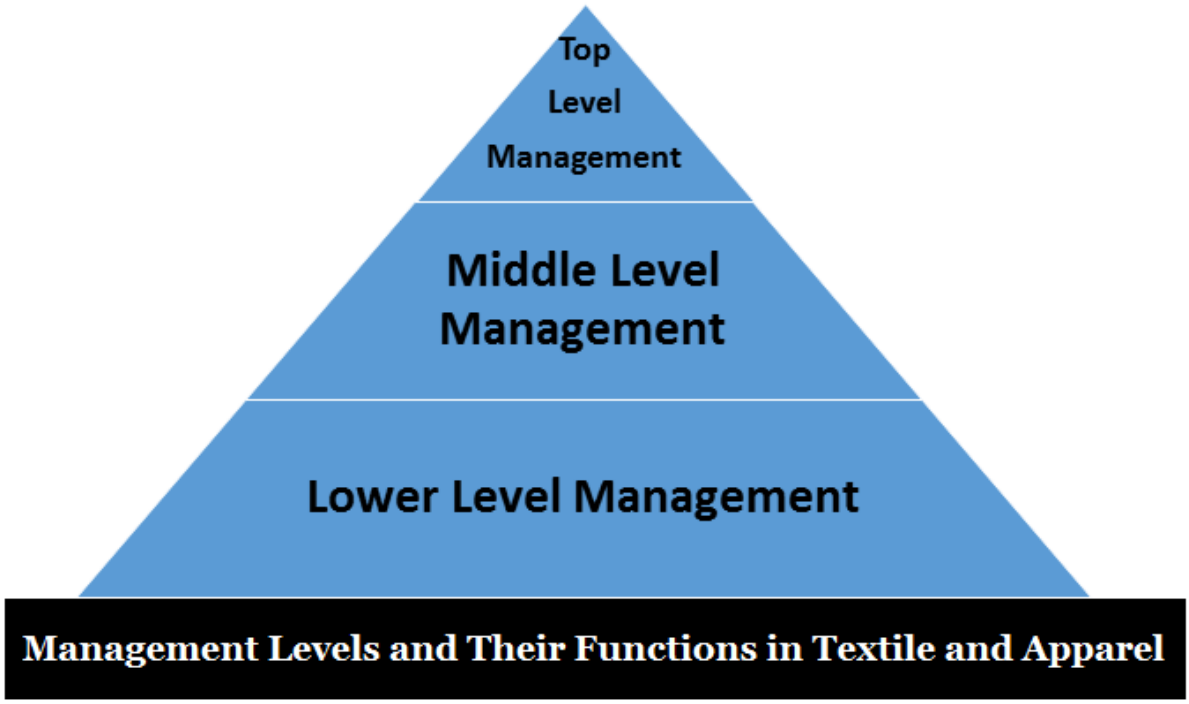
- Assembly of cut pieces
- Stitching operations

6. **Quality Control (QC)**
    - In-line and end-line inspection
    - Defect rectification
7. **Finishing**
    - Ironing and pressing
    - Trimming of threads
8. **Packing**
    - Folding and tagging
    - Carton packing
9. **Shipment**
    - Logistics and export documentation
    - Shipment to buyer

Types of Garment Export Houses:

1. **Manufacturer Export House:**
    - Owns the production unit and handles all stages of garment manufacturing.
    - Direct control over quality and timelines.
2. **Merchant Export House:**
    - Doesn't own production units but outsources manufacturing.
    - Primarily involved in marketing and export activities.
3. **Buying House:**
    - Represents overseas buyers and works with multiple factories to meet orders.
    - Acts as an intermediary between buyers and manufacturers.
4. **Sub-Contractor:**
    - Takes orders from larger export houses and fulfills part of the production.
    - May specialize in specific tasks like embroidery, printing, etc.

Designations and Responsibilities in Garment Export House Management:



Higher-Level Management:

1. **CEO/Managing Director**
    - Responsible for overall strategy and decision-making.
    - Sets long-term goals and oversees the entire organization.
2. **General Manager (GM)/Vice President**
    - Implements business strategies.
    - Manages different departments (production, marketing, HR).
3. **Production Director**
    - Oversees the entire production process.
    - Ensures quality, efficiency, and cost-effectiveness.

Middle-Level Management:

1. **Production Manager**
    - Responsible for the daily operation of the factory.
    - Ensures the production schedule is followed and deadlines are met.
2. **Merchandising Manager**
    - Coordinates between buyers and production units.
    - Responsible for pricing, sampling, and order execution.
3. **Quality Control Manager**
    - Ensures quality standards throughout production.
    - Leads QC teams and addresses any production defects.
4. **Sourcing Manager**
    - Manages procurement of fabrics, trims, and accessories.
    - Negotiates with suppliers and ensures timely delivery of raw materials.

Lower-Level Management:

1. **Supervisors/Line In-Charges**
    - Monitor daily production lines and workforce.
    - Ensure production targets are met and quality is maintained.
2. **Quality Inspectors**
    - Conduct inspections at various production stages.
    - Report defects and work on corrections.

3. **Store In-Charge**
    - Manages inventory of raw materials and finished products.
    - Ensures proper record-keeping and availability of materials.

UNIT II

Garment Industry Formats

Garment Industry Formats Overview:

In the garment industry, various documents and formats are used to manage and streamline the production process. Below are the descriptions of essential formats:

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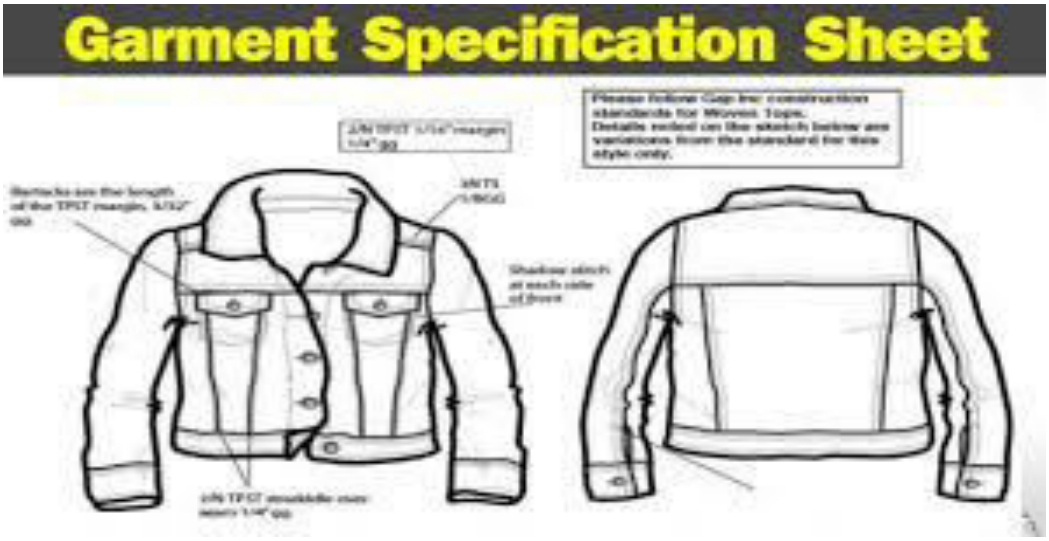
1. **Design Spec Sheet (Specification Sheet):**



- **Purpose**: Provides detailed information about the garment design, materials, and construction.
- **Contents**:
    - Technical sketch of the garment.
    - Fabric details (composition, weight, color).
    - Trim and accessories details.
    - Construction details (seams, stitching, etc.).
    - Measurement chart (sizes and tolerances).
    - Wash and care instructions.
2. **Purchase Order (PO):**

PURCHASE ORDER

TemplateLAB

Store Name:	**T-Shirt Dreams**
Buyer:	Nancy Doe
Phone:	000 - 1234 - 5678 - 9000
Email:	tshirtdreams123@eunet.com

PO#: 10238-102
Order Date: 02/05/2022
Date Required: 05/05/2022

Ship To: **John Doe**
185 Military Street, Westminster, 21588 NY
(555) 125 - 1252 - 2544

Bill To: **Nancy Doe**
202 White Avenue, Westminster, 21588 NY
(555) 125 - 1252 - 2544

Item #	Colour (Code)	Item Description	Unit Price	Quantities by sizes S	M	L	XL	2XL	TOTAL PRICE
154285	#FF5733	Bike riders T-shirt with logo	$14.00	2	4	5	5	2	**$252.00**
154586	#76D7C4	Valentino	$12.50			8	8		**$200.00**
154287	#D5DBDB	New Age with longer sleeves	$11.00		3	10	10		**$253.00**
155200	#CA6F1E	Street Art	$10.00	3	3	4	4	2	**$160.00**
155202	#1E8449	Funky Prints	$13.00		8	10	15		**$429.00**
155203	#D5DBDB	Urban Hero	$8.00	5	10	15	15	10	**$440.00**
155204	#1E8449	Graphix	$10.00		6	8	9		**$230.00**

SHIPPING CALCULATOR

1-50 Items.....$0.10/pc
50+ Items.....$0.05/pc

SUBTOTAL:	**$1,964.00**
TAX:	$196.40
SHIPPING:	$9.20
TOTAL:	**$2,169.60**

THANK YOU!

IMPORTANT ORDER NOTES

Delivery can be received at the specified address only on Tuesdays and Thursdays. Please take this into account when arranging delivery. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim.

- **Purpose**: Official order document used to procure goods or services from suppliers.
- **Contents**:
    - Buyer and supplier information.
    - PO number and date.
    - Item description, quantity, and price.
    - Delivery date and shipping method.
    - Payment terms.

3. Bill of Materials (BOM):

lilly Clothing Company

Bill of Material

Buyer	Reebok					Prepared by	Sushmita		
Style	#2345JK					Date	12/12/2012		
PO#	JK-240								
Order Qty	5000								
Seq. No.	**Item Description**	**Consumption**	**Extra Purchse**	**Qty.**	**Unit of measure (UOM)**	**Rate (Rs.)**	**Unit of price**	**Amount (Rs.)**	**Remarks**
1	Shell fabric Single Jersey 160 GSM	0.260	5%	1365.00	Kgs	260.00	Kgs	354,900.00	
2	Rib (2/2) 260 GSM	0.002	2%	10.20	Kgs	350.00	Kgs	3,570.00	
3	Sewing Thread	200	7%	2675.00	Tube	6.00	tube	16,050.00	
4	Size Labels	1	3%	5150.00	unit	3.00	unit	15450.00	nominated vendor
5	Hang tags	2	3%	10300.00	unit	5.00	unit	51500.00	
6	Cartons			50.00	unit	50.00	unit	2500.00	
7	Polybag	1	1%	5050.00	unit		Kgs	0.00	
								0.00	
							Total Amount	443,970.00	

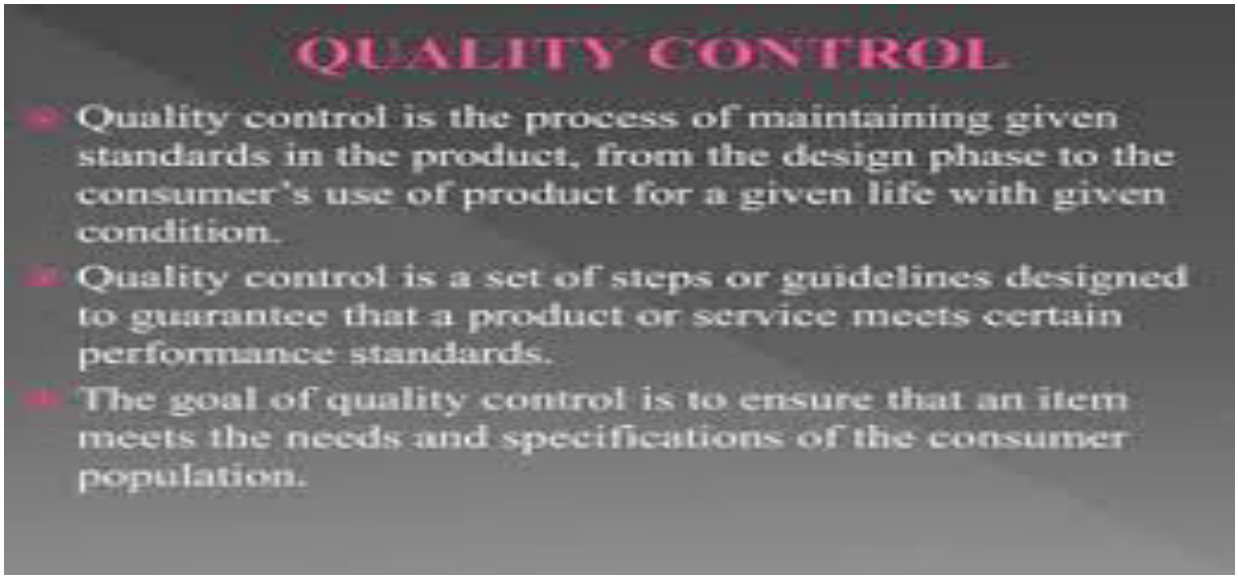
Approved By

Sourcing Department

- **Purpose**: Lists all raw materials and components required to manufacture a garment.
- **Contents**:
    - Fabric type and quantity (meters/yards).
    - Trims (buttons, zippers, labels).
    - Interlining, threads, and other accessories.

- Packaging materials (tags, bags, boxes).
- Total material cost.

4. **Quality Control Tickets:**



Factory Name & Logo	Traffic Light System Report									
Operation Name	Shoulder seam creation					Floor		3	Month:	May 2023
Operator	Mahendran P					Line No		C		
Date	Hour 1	Hour 2	Hour 3	Hour 4	Lunch Break	Hour 5	Hour 6	Hour 7	Hour 8	Remarks	QC
1										Improper sewing margin	
2											
3											
4											
5											
6											
7											
Line Supervisor					Production Manager					Quality Manager	

- **Purpose**: Used to record quality checks at different production stages.
- **Contents**:
  - Inspection stage (fabric, in-line, final).
  - QC inspector details.
  - Date of inspection.
  - Defects found and corrective action.
  - Approval or rejection status.
  -

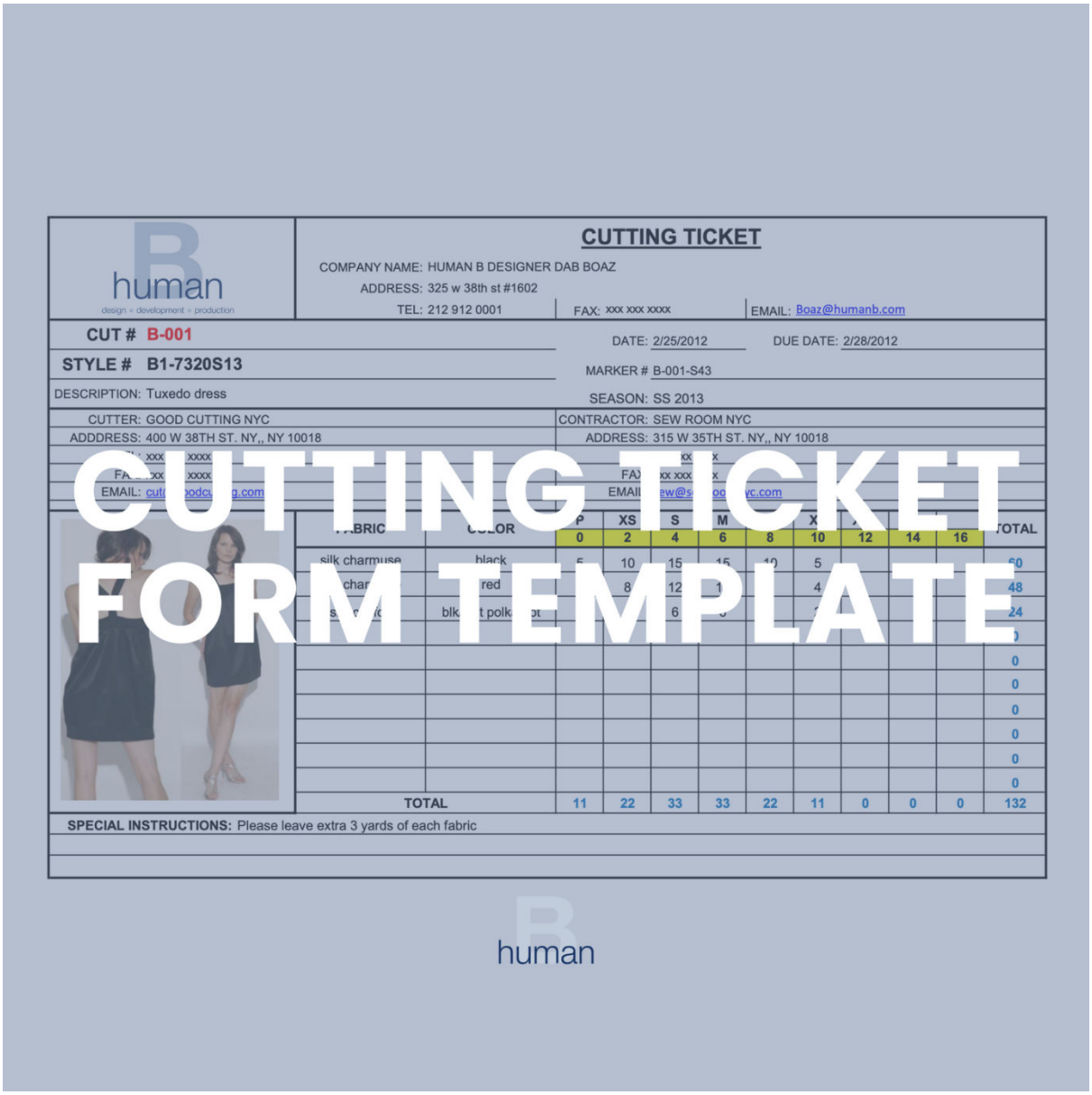
5. Cutting Ticket:

Details of Cut to Ship quantity

Order#	Shipped on	Order quantity	Cut quantity	Extra cut qty @ 3%	Issue to sewing department	Stitched quantity	Garments damaged in stitching	Quantity issued to finishing dept.	Finished quantity	rejected/damaged garment in finishing	Packed quantity	Shipped quantity	Excess quantity
#KSP235	5-Jan	10000	10300	300	10300	10251	49	10251	10187	64	10187	10100	87

Breakdown of Packed Quantity

	Sizes					
Color	S	M	L	XL	XXL	Total/color
Red	2	10	6	5	7	30
Navy	3	5	12	2	3	25
White	5	8	10	4	5	32
	10	**23**	**28**	**11**	**15**	**87**

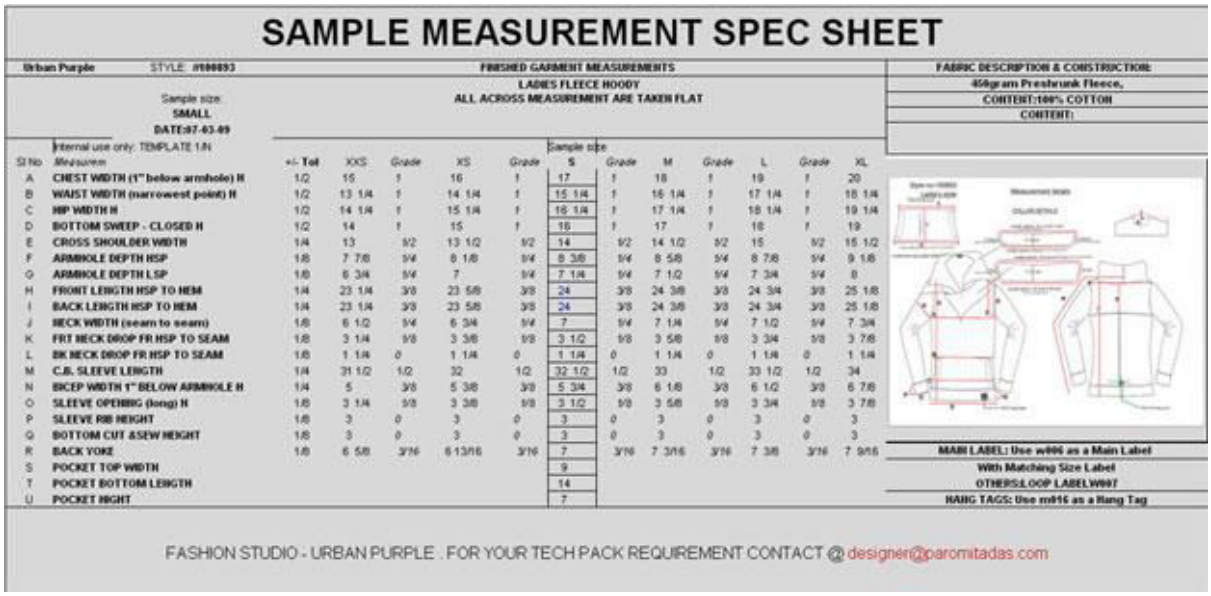


- **Purpose**: Document authorizing the cutting of fabric according to the production plan.
- **Contents**:
    - Style number and description.
    - Fabric details (type, color, lot number).
    - Size breakdown (quantity per size).
    - Marker length and fabric usage.
    - Cutting date and cutter's name.

6. Labour Worksheet:

- **Purpose**: Tracks labor hours and tasks for cost estimation and productivity analysis.
- **Contents**:
    - Employee name and ID.
    - Job/operation performed (sewing, cutting, finishing).
    - Number of pieces completed.
    - Hours worked.
    - Wage calculation (per hour/piece).

6. Measurement Sheet:



SAMPLE MEASUREMENT SPEC SHEET

Urban Purple STYLE: #000893

Sample size: SMALL
DATE:07-03-09

FINISHED GARMENT MEASUREMENTS
LADIES FLEECE HOODY
ALL ACROSS MEASUREMENT ARE TAKEN FLAT

FABRIC DESCRIPTION & CONSTRUCTION:
450gram Preshrunk fleece,
CONTENT:100% COTTON
CONTENT:

Internal use only: TEMPLATE I.N

Sl No	Measurem	+/- Tol	XXS	Grade	XS	Grade	Sample size S	Grade	M	Grade	L	Grade	XL
A	CHEST WIDTH (1" below armhole) H	1/2	15	1	16	1	17	1	18	1	19	1	20
B	WAIST WIDTH (narrowest point) H	1/2	13 1/4	1	14 1/4	1	15 1/4	1	16 1/4	1	17 1/4	1	18 1/4
C	HIP WIDTH H	1/2	14 1/4	1	15 1/4	1	16 1/4	1	17 1/4	1	18 1/4	1	19 1/4
D	BOTTOM SWEEP - CLOSED H	1/2	14	1	15	1	16	1	17	1	18	1	19
E	CROSS SHOULDER WIDTH	1/4	13	1/2	13 1/2	1/2	14	1/2	14 1/2	1/2	15	1/2	15 1/2
F	ARMHOLE DEPTH HSP	1/8	7 7/8	1/4	8 1/8	1/4	8 3/8	1/4	8 5/8	1/4	8 7/8	1/4	9 1/8
G	ARMHOLE DEPTH LSP	1/8	6 3/4	1/4	7	1/4	7 1/4	1/4	7 1/2	1/4	7 3/4	1/4	8
H	FRONT LEIGTH HSP TO HEM	1/4	23 1/4	3/8	23 5/8	3/8	24	3/8	24 3/8	3/8	24 3/4	3/8	25 1/8
I	BACK LEIGTH HSP TO HEM	1/4	23 1/4	3/8	23 5/8	3/8	24	3/8	24 3/8	3/8	24 3/4	3/8	25 1/8
J	NECK WIDTH (seam to seam)	1/8	6 1/2	1/4	6 3/4	1/4	7	1/4	7 1/4	1/4	7 1/2	1/4	7 3/4
K	FRT NECK DROP FR HSP TO SEAM	1/8	3 1/4	1/8	3 3/8	1/8	3 1/2	1/8	3 5/8	1/8	3 3/4	1/8	3 7/8
L	BK NECK DROP FR HSP TO SEAM	1/8	1 1/4	0	1 1/4	0	1 1/4	0	1 1/4	0	1 1/4	0	1 1/4
M	C.B. SLEEVE LEIGTH	1/4	31 1/2	1/2	32	1/2	32 1/2	1/2	33	1/2	33 1/2	1/2	34
N	BICEP WIDTH 1" BELOW ARMHOLE H	1/4	5	3/8	5 3/8	3/8	5 3/4	3/8	6 1/8	3/8	6 1/2	3/8	6 7/8
O	SLEEVE OPENING (long) H	1/8	3 1/4	1/8	3 3/8	1/8	3 1/2	1/8	3 5/8	1/8	3 3/4	1/8	3 7/8
P	SLEEVE RIB HEIGHT	1/8	3	0	3	0	3	0	3	0	3	0	3
Q	BOTTOM CUT &SEW HEIGHT	1/8	3	0	3	0	3	0	3	0	3	0	3
R	BACK YOKE	1/8	6 5/8	3/16	6 13/16	3/16	7	3/16	7 3/16	3/16	7 3/8	3/16	7 9/16
S	POCKET TOP WIDTH						9						
T	POCKET BOTTOM LEIGTH						14						
U	POCKET HIGHT						7						

MAIN LABEL: Use w006 as a Main Label
With Matching Size Label
OTHERS:LOOP LABEL W007
HANG TAGS: Use m016 as a Hang Tag

FASHION STUDIO - URBAN PURPLE . FOR YOUR TECH PACK REQUIREMENT CONTACT @ designer@paromitadas.com

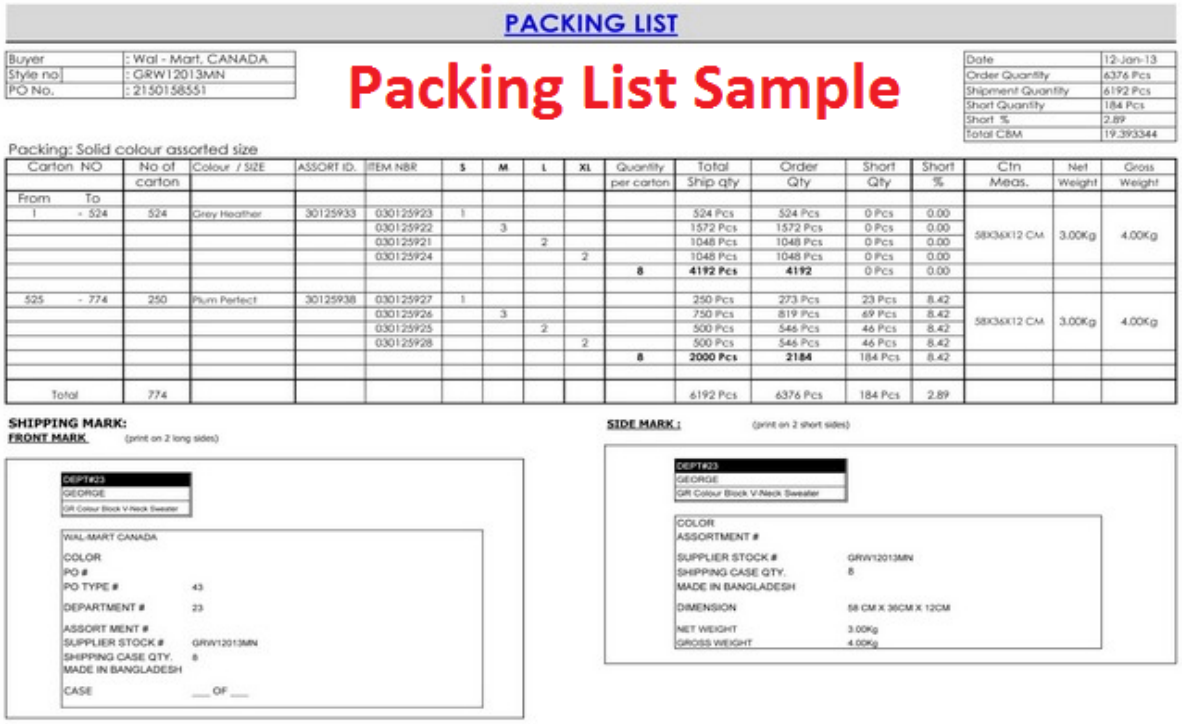
- **Purpose**: Details the specific measurements for each size of the garment.
- **Contents**:
    - Style number.
    - Measurement points (chest, waist, sleeve length, etc.).
    - Measurements for each size (XS, S, M, L, XL, etc.).
    - Tolerance range for each measurement.

8. Assembly Diagram Sheet:

- **Purpose**: Visual guide showing the steps and order of garment assembly.
- **Contents**:
    - Diagram or flowchart of each construction step.

- Operation descriptions (seaming, hemming, button attachment, etc.).
- Machine type required for each step.
- Special instructions, if any.

10. Packing List:



PACKING LIST

Packing List Sample

Buyer	: Wal - Mart, CANADA
Style no.	: GRW12013MN
PO No.	: 2150158551

Date	12-Jan-13
Order Quantity	6376 Pcs
Shipment Quantity	6192 Pcs
Short Quantity	184 Pcs
Short %	2.89
Total CBM	19.393344

Packing: Solid colour assorted size

Carton NO	No of carton	Colour / SIZE	ASSORT ID.	ITEM NBR	S	M	L	XL	Quantity per carton	Total Ship qty	Order Qty	Short Qty	Short %	Ctn Meas.	Net Weight	Gross Weight
From To																
1 - 524	524	Grey Heather	30125933	030125923	1					524 Pcs	524 Pcs	0 Pcs	0.00	58X36X12 CM	3.00Kg	4.00Kg
				030125922		3				1572 Pcs	1572 Pcs	0 Pcs	0.00			
				030125921			2			1048 Pcs	1048 Pcs	0 Pcs	0.00			
				030125924				2		1048 Pcs	1048 Pcs	0 Pcs	0.00			
									8	**4192 Pcs**	**4192**	0 Pcs	0.00			
525 - 774	250	Plum Perfect	30125938	030125927	1					250 Pcs	273 Pcs	23 Pcs	8.42	58X36X12 CM	3.00Kg	4.00Kg
				030125926		3				750 Pcs	819 Pcs	69 Pcs	8.42			
				030125925			2			500 Pcs	546 Pcs	46 Pcs	8.42			
				030125928				2		500 Pcs	546 Pcs	46 Pcs	8.42			
									8	**2000 Pcs**	**2184**	184 Pcs	8.42			
Total	774									6192 Pcs	6376 Pcs	184 Pcs	2.89			

SHIPPING MARK:
FRONT MARK (print on 2 long sides)

DEPT#23
GEORGE
GR Colour Block V-Neck Sweater

WAL-MART CANADA
COLOR
PO #
PO TYPE # 43
DEPARTMENT # 23
ASSORT MENT #
SUPPLIER STOCK # GRW12013MN
SHIPPING CASE QTY. 8
MADE IN BANGLADESH
CASE ___ OF ___

SIDE MARK : (print on 2 short sides)

DEPT#23
GEORGE
GR Colour Block V-Neck Sweater

COLOR
ASSORTMENT #
SUPPLIER STOCK # GRW12013MN
SHIPPING CASE QTY. 8
MADE IN BANGLADESH
DIMENSION 58 CM X 36CM X 12CM
NET WEIGHT 3.00Kg
GROSS WEIGHT 4.00Kg

- **Purpose**: Document that accompanies shipments, detailing the contents of the shipment.
- **Contents**:
  - Buyer and supplier information.
  - PO number and style number.
  - Total number of cartons.
  - Quantity per carton (pieces, sizes, colors).
  - Gross and net weight.
  - Shipping method and destination.

10. Cost Sheet:

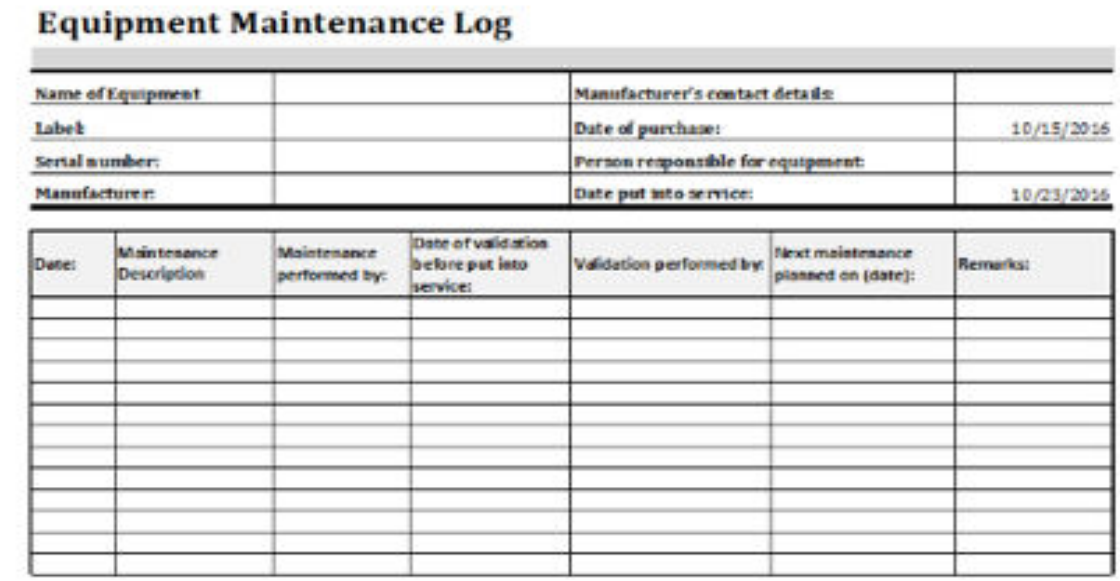
- **Purpose**: Summarizes the total cost incurred in producing a garment.
- **Contents**:
  - Fabric cost.
  - Trims and accessories cost.
  - Labor cost.

- Overheads (utilities, rent, etc.).
- Profit margin.
- Final selling price.

11. Compliance Checklist:

- **Purpose**: Ensures adherence to regulations and standards (safety, ethical, environmental).
- **Contents**:
  - Safety compliance (fire exits, protective gear).
  - Labor law adherence (wages, working hours).
  - Environmental standards (waste management, pollution control).
  - Certifications required (ISO, Fair Trade).

11. Machine Maintenance Log:



Equipment Maintenance Log

Name of Equipment		Manufacturer's contact details:	
Label:		Date of purchase:	10/15/2016
Serial number:		Person responsible for equipment:	
Manufacturer:		Date put into service:	10/23/2016

Date:	Maintenance Description	Maintenance performed by:	Date of validation before put into service:	Validation performed by:	Next maintenance planned on (date):	Remarks:

Image Source – bromleytowing.com

- **Purpose**: Tracks maintenance schedules and repairs for machines.
- **Contents**:
  - Machine ID and type.
  - Maintenance date and type (routine/repair).
  - Problem reported and corrective action taken.
  - Technician's name.
  - Next maintenance due date.

UNIT III

Fabric, Trims and Accessory Selection

Fabric, Trims, and Accessory Selection Overview:

Selecting the right fabric, trims, and accessories is a critical part of the garment production process. It impacts the final product's quality, aesthetics, and cost.

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1. **Fabric Selection:**

- **Factors to Consider**:
    1. **Fabric Type**: Knit or woven, based on the design and function.
    2. **Weight**: Light, medium, or heavy based on the season and purpose.
    3. **Fiber Content**: Natural (cotton, wool) or synthetic (polyester, nylon).
    4. **Drape**: How the fabric falls or flows on the body.
    5. **Durability**: Resistance to wear and tear.
    6. **Colorfastness**: Ability to retain color after washing and exposure to light.
    7. **Shrinkage**: Potential to shrink after washing.
    8. **Cost**: Fabric price in relation to the garment's target price point.

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2. Steps of Fabric Sourcing:

- **Step 1: Market Research**
    - Research fabric suppliers and trends based on the garment's requirements.
    - Attend fabric trade shows, fairs, and exhibitions to meet potential suppliers.
- **Step 2: Vendor Selection**
    - Shortlist vendors based on quality, price, minimum order quantity (MOQ), and lead time.
    - Check the vendor’s past reputation and certifications for fabric quality and sustainability.
- **Step 3: Sample Procurement**
    - Request fabric swatches or samples from vendors to evaluate color, texture, and performance.
    - Test the fabric for shrinkage, color-fastness, pilling, and stretching.
- **Step 4: Negotiation**
    - Negotiate fabric prices, lead times, and payment terms with vendors.
    - Set expectations for quality standards, minimum orders, and delivery schedules.
- **Step 5: Finalization of Supplier**
    - Select the supplier based on sample approval, price, and other negotiated terms.

- Sign contracts or purchase agreements with the supplier.

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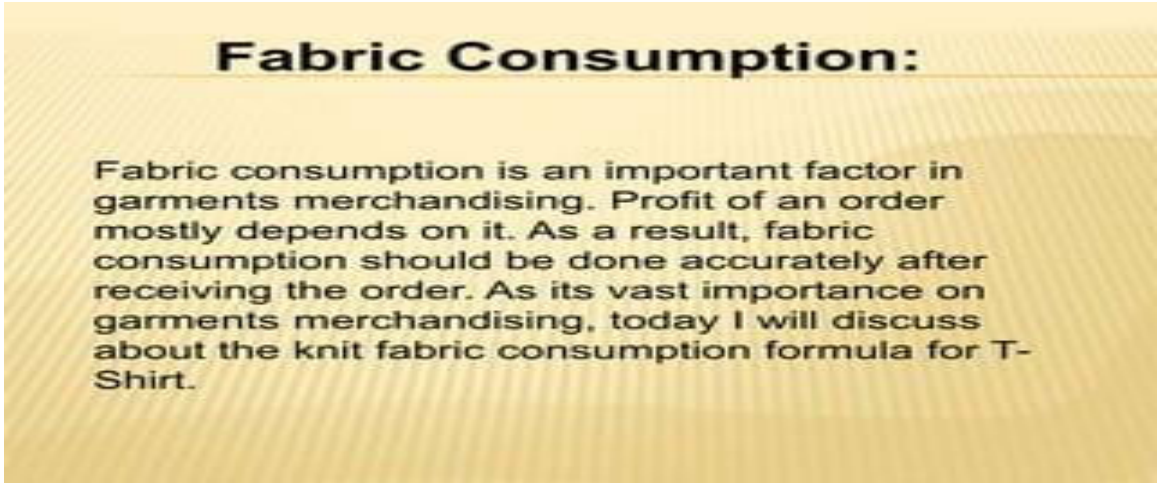
4. **Fabric Ordering and Receiving:**



- **Fabric Ordering Process**:
    1. **Create a Purchase Order (PO)**: This includes the fabric type, color, quantity, price, delivery date, and payment terms.
    2. **Confirm Production Details**: The supplier confirms the production schedule, including dyeing, finishing, and expected delivery time.
    3. **Deposit Payment**: Depending on terms, a deposit may be required before production starts.
- **Receiving Process**:
    1. **Quality Inspection**: Upon receiving the fabric, inspect it for color consistency, texture, defects (holes, stains), and measurements (width, length).
    2. **Lab Testing**: Perform tests on a sample of fabric for quality verification (shrinkage, colorfastness, etc.).
    3. **Storage**: Store the fabric in a climate-controlled warehouse to prevent damage from moisture or sunlight.

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4. **Trims and Notions Distribution:**

- **Types of Trims and Notions**:
    1. **Functional Trims**: Zippers, buttons, elastic, snaps, etc.
    2. **Decorative Trims**: Lace, ribbons, appliques, sequins, etc.
    3. **Labels and Tags**: Brand labels, size labels, care labels, and price tags.
- **Distribution Process**:
    1. **Inventory Management**: Keep a detailed log of trims and notions to track usage and stock levels.
    2. **Pre-Production Allocation**: Before production begins, distribute the necessary trims and notions to the sewing department.
    3. **Requisition Forms**: Use requisition forms to request trims from the inventory team, ensuring accurate distribution.
    4. **Stock Reordering**: Continuously monitor stock levels and reorder trims as needed to prevent production delays.

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5. **Accessories Sourcing Procedure:**

- **Types of Accessories**:
    - Belts, buckles, embellishments, shoulder pads, lining materials, etc.
- **Sourcing Procedure**:

1. **Identify Accessory Requirements**:
    - Based on the design, identify necessary accessories, including their style, size, color, and function.
2. **Find Reliable Suppliers**:
    - Look for suppliers with a reputation for providing high-quality accessories that match the brand's standards.
    - Verify that suppliers meet the required lead time and minimum order quantities (MOQ).
3. **Request Samples**:
    - Obtain samples of accessories (like buckles, belts, or buttons) for approval before ordering in bulk.
4. **Negotiation**:
    - Negotiate prices, MOQs, and payment terms.
    - Discuss delivery schedules and how to handle defective items.
5. **Place Orders**:

- Create and send a purchase order (PO) outlining accessory details, quantities, costs, and shipping instructions.
- The vendor will then confirm the order and provide a production timeline.

6. **Receiving and Inspection**:
    - Upon receiving the accessories, perform a quality check to ensure they match the specifications.
    - Record the quantity received and compare it against the PO.
7. **Storage**:
    - Properly store accessories in a safe, organized area to ensure they remain undamaged and easily accessible.

UNIT IV

Garment Industry Operations

Garment Industry Operations

The garment production process involves several assembly operations that vary based on the type of garment being manufactured. Let's explore the assembly operations for a full-sleeve men's shirt and men's trousers, common problems on the shop floor, and the importance of ergonomics in the garment industry.

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1. Assembly Operations of a Full Sleeve Men’s Shirt:

Main Steps:

Item: Trouser	
Total SMV: 15.75	

SL.	Operation	Type of Machine	SMV	Target 100%	Target 80%
1	Back Yoke Join	4T O/L	0.30	200	160
2	Back Yoke Top Stitch	F/L	0.30	200	160
3	Back Rise Join	4T O/L	0.30	200	160
4	Back Rise Top Stitch	F/L	0.30	200	160
5	J-Stitch Mark & Stitch	DNCS	0.35	171	137
6	Front Rise Join	4T O/L	0.30	200	160
7	Front Rise Top Stitch	F/L	0.30	200	160
8	Inseam Gusset Attach	4T O/L	0.30	200	160
9	Inseam Gusset Top Stitch	F/L	0.30	200	160
10	Zipper Guard Tack &	SNLS	0.35	171	137
11	Zipper Placement Mark	Manual	0.30	200	160
12	Zipper Attach	SNLS	0.50	120	96
13	Pocket Corner Cut	Manual	0.35	171	137
14	Pocket Attach at Zipper & Label Attach.	SNLS	0.45	133	107
15	Zipper Top Stitch	SNLS	0.55	109	87
16	Pocketing Tuck	SNCS	0.35	171	137
17	Pocket Back Closing	4T O/L	0.35	171	137
18	Pocket Barteck	B/T	0.25	240	192
19	Front Dart Placement Mark	Manual	0.35	171	137
20	Front Dart Sewing	SNLS	0.75	80	64
21	Back & Front Number	Manual	0.30	200	160
22	Inseam Join	4T O/L	0.55	109	87
23	Inseam Top Stitch	F/L	0.50	120	96
24	Side Seam Join	4T O/L	0.65	92	74
25	Elastic Mark & Cut	Manual	0.35	171	137
26	Elastic Ring Tuck	SNLS	0.30	200	160
27	Waist Rib Ring Tack	SNLS	0.30	200	160
28	Elastic Tuck With Rib	SNCS	0.35	171	137
29	Waist Rib Edge Closing	SNLS	0.30	200	160
30	Waist Belt Number Match	Manual	0.25	240	192
31	Waist Belt Attach	SNLS	0.50	120	96
32	Waist Top Stitch	F/L	0.50	120	96
33	Label Attach	SNLS	0.30	200	160
34	Inside Loop Attach	SNLS	0.15	400	320
35	Cuff Rib Ring Tack	SNLS	0.30	200	160
36	Cuff Rib Edge Closing	SNLS	0.35	171	137
37	Leg Cuff Number Match	Manual	0.30	200	160
38	Leg Cuff Attach	4T O/L	0.65	92	74
39	Leg Cuff (1/4)Top Stitch	F/L	0.55	109	87
40	Output Thread Cut	Manual	0.65	92	74
41	Heat Seal Attach	HT	0.35	171	137
	Total		**15.75**		

1. **Fabric Cutting**:
    - Lay fabric on cutting table.
    - Cut the shirt's parts (front, back, sleeves, collar, cuffs) using patterns.
2. **Collar Assembly**:
    - Attach fusible interlining to collar pieces.
    - Stitch collar pieces together.
    - Turn and topstitch the collar.
3. **Cuff Assembly**:
    - Apply fusible interlining to cuff fabric.
    - Stitch the inner and outer cuffs together.
    - Turn the cuffs and topstitch.
4. **Shoulder and Side Seams**:
    - Join front and back panels at the shoulder seams.
    - Sew side seams from underarm to bottom hem.
5. **Sleeve Attachment**:
    - Sew sleeve seams.
    - Attach the sleeves to the armholes using set-in sleeve techniques.
6. **Placket and Buttonholes**:
    - Construct the front placket (buttonstand).
    - Create buttonholes on the right placket.
    - Attach buttons on the left placket.
7. **Yoke and Back Pleat**:
    - Assemble the back yoke and attach it to the back piece.
    - Add pleats or darts to the back, if required.
8. **Hem and Finishing**:
    - Sew bottom hem.
    - Press the shirt and conduct quality checks.

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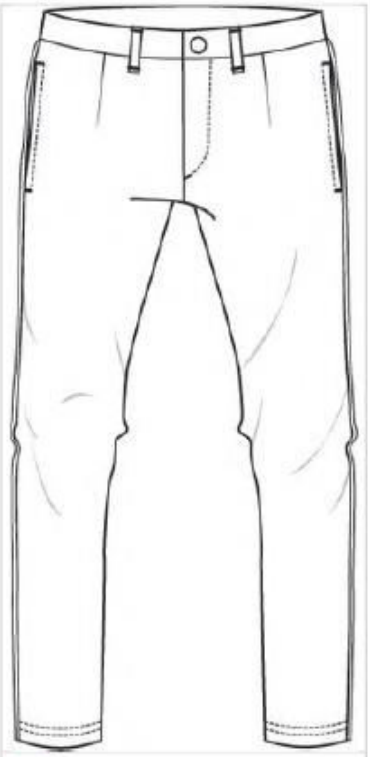
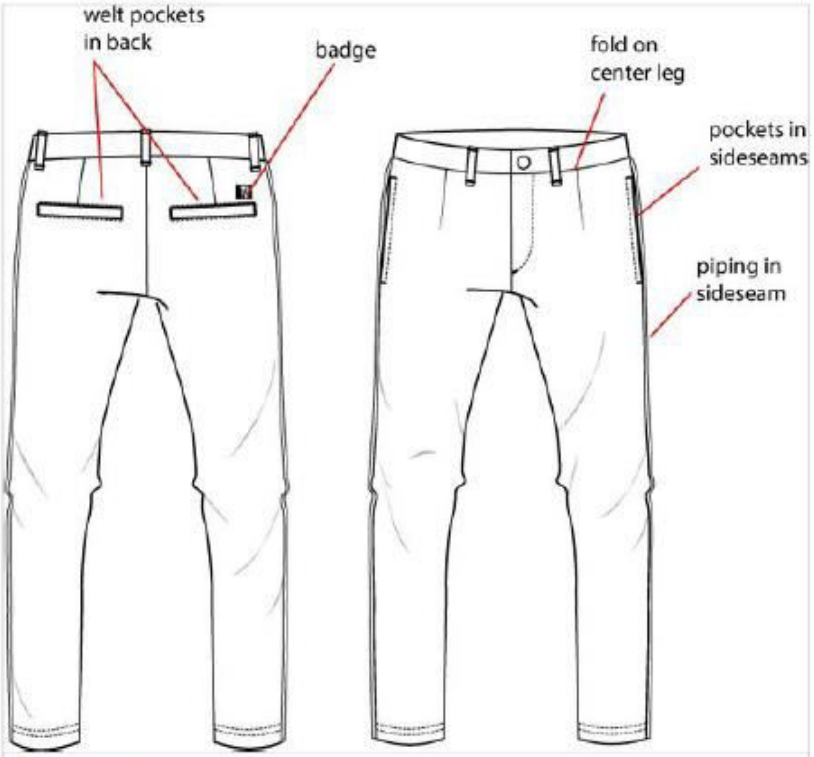
2. Assembly Operations of Men’s Trousers:



Front



Main Design Instructions

Operation Breakdown/Bulletin and SMV of a Men's Chino Pant						
SL NO	OPERATION	Machine	No. of Machine	SMV	Target @ 100% efficiency	Target @ 80% efficiency
	FRONT PART					
1	FNT FLY FUSING	IRN	1	0.2	300	240
2	FNT PART KNEE MARK	H	1	0.25	240	192
3	SEAM + COIN PKT MARK	H	1	0.35	171	137
4	COIN BK PKT ROLLING	DNL	1	0.3	200	160
5	COIN PKT JOIN & 2ND STC	SNL	1	0.15	400	320
6	SEAM I/R	IRN	1	0.25	240	192
7	S/FLY+ D/FLY+ FNT RISE SERGING	3OL	1	0.35	171	137
8	THREAT CUT	H	1	0.5	120	96
9	FNT PKT FACING JOIN	SNL	1	0.25	240	192
10	FNT PKT SEAM JOIN	SNL	1	0.25	240	192
11	FNT PKT JOIN	SNL	1	0.25	240	192
12	FNT PKT MOUTH ROLLING	DNL	1	0.3	200	160
13	THREAD CUT	HP	1	0.6	100	80
14	FNT FNT TACK (HORI.VS VERTICAL)	SNL	1	0.4	150	120
15	FNT PKT BAG SERGING	3OL	1	0.75	80	64
17	FNT PKT BAG TOP 1/4	SNL	1	0.35	171	137
18	S/FLY JOIN+T/S	SNL	1	0.2	300	240
19	ZIPPER JOIN	SNL	1	0.35	171	137
20	J-TOP STC MARK	H	1	0.25	240	192
21	J-TOP STC	DNL	1	0.4	150	120
22	D/FLY JOIN	SNL	1	0.35	171	137
23	ZIPPER CLOSE	SNL	1	0.25	240	192
24	ZIPPER T/S	SNL	1	0.25	240	192
25	FNT RISE T/S	DNL	1	0.25	240	192
26	FNT PART WAIST MARK	HP	1	0.25	240	192
27	BTM LEG ZIPPER O/L	3OL	1	0.25	240	192
28				0.25	240	0
29	**FNT PART CHEACK**					
30	**BK PART**					
31	FNT PART KNEE MARK	H	1	0.2	300	240
32	BK PART DART+ BON JOIN MARK	H	2	0.5	120	192
33	BK BON FACING SERGING	3 OL	1	0.3	200	160
34	BK PART DERT MAKE	SNL	1	0.35	171	137
35	BK PART TACK+ BK PKING TACK	SNL	1	0.4	150	120
36	BON ROLLING	SNL	1	0.3	200	160
37	BON MACHING +BON LENGHT MARK	H	2	0.4	150	240
38	BK BON CREASING	IRN	2	0.4	150	240
39	BK BON JOIN	DNL	2	0.6	100	160
40	BON CUT + TURN OVER	H	2	0.5	120	192
41	BON TOP STC DOWN SIDE	SNL	3	0.9	67	160
42	BON TOP STC UPPER SIDE	SNL	2	0.6	100	160
43	BK BON PKT INSIDE TACK	SNL	2	0.45	133	213
44	BK BON PKT BAG SERGING	3 OL	1	0.3	200	160
45	BK BON PKT BAG 1/4 STC	SNL	1	0.3	200	160
46	BK RISE JOIN	5 OL	1	0.25	240	192
47	BK RISE TOP STC	FOA	1	0.3	200	160
48	FNT PART MARK	H/P	1	0.2	300	240
49	**BK PART CHEACK**	QC				
50	**ASSEMBLY**					
51	FNT+ Bk PART MATCHING	H	1	0.3	200	160
52	SIDESEAM JOIN	5 OL	2	0.5	120	192
53	CARE LBL MAKE +JOIN	SNL	1	0.4	150	120
54	SIDE SEAM SAFETY STC	SNL	2	0.5	120	192
55	INSEAM JOIN	5 OL	2	0.45	133	213
56	W/BELT FUSING	IRN	1	0.2	300	240
57	W/BELT PIPING ATT	SNL	1	0.3	200	160
58	W/BELT HOLE	HOLE	1	0.3	200	160
59	W/BELT BTN ATTACH	BUTTON	1	0.3	200	160
60	LOOP MAKE +ASSEMBLY	FL	1	0.3	200	160
61	LOOP CUT+ATTACH MARK	H	1	0.3	200	160
62	LOOP JOIN	SNL	2	0.5	120	192
63	W/BELT ATTACH MARK	H	2	0.3	200	320
64	W/BELT MATCHING	H	1	0.2	300	240
65	SIDE SEAM OPENING MARK	H	1	0.2	300	240
66	W/BELT JOIN	K-S	2	0.5	120	192
67	W/BELT MOUTH CUT+TREAD REMOVE	H	1	0.4	150	120
68	W/BELT MOUTH MARK	H	1	0.25	240	192
69	W/BELT MOUTH CLOSE	SNL	3	0.8	75	180
70	LOOP DEEP TACK	SNL	2	0.45	133	213
71	BTM HEM ROLLING	SNL	2	0.6	100	160
72	THREAD CUT	H	2	0.3	200	320
73	**FINAL TABLE**	QC				
	TOTAL		**85**	**24.15**		

Main Steps:

1. **Fabric Cutting**:
    - Cut trouser components (front legs, back legs, waistband, pockets) from fabric.
2. **Pocket Attachment**:
    - Attach and sew the front and back pockets.
    - Stitch the pocket lining to secure pockets in place.
3. **Fly and Zipper Construction**:
    - Construct the fly front opening.
    - Insert and attach the zipper in the fly area.
4. **Side Seam and Inseam**:
    - Sew the side seams of the trousers, joining the front and back legs.
    - Stitch the inseam, running from the crotch to the hem of the pants.
5. **Crotch and Seat Seams**:
    - Sew the crotch and seat seams, ensuring proper alignment of the front and back panels.
6. **Waistband Attachment**:
    - Attach the waistband to the top of the trousers.
    - Insert belt loops, if applicable.
7. **Buttonholes and Fastening**:
    - Create buttonholes on the waistband and attach buttons or hooks for fastening.
8. **Hemming and Pressing**:
    - Fold and hem the bottom of the trouser legs.
    - Press the trousers to ensure a clean and professional finish.

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4. General Problems Faced in Garment Operations on the Shop Floor:

1. **Machine Downtime**:
    - Sewing machines often break down or require maintenance, which disrupts the workflow and reduces productivity.
2. **Fabric Defects**:

- Poor-quality fabric or materials with defects (stains, uneven dyeing, shrinkage) can cause delays and lead to wastage.

3. **Poor Line Balancing**:
    - Inefficient distribution of work among sewing operators leads to bottlenecks in the production line, slowing down output.
4. **High Rejection Rates**:
    - Quality control issues resulting in high rejection rates, either due to stitching defects, measurement errors, or poor finishing.
5. **Material Shortages**:
    - Lack of trims, threads, or fabric delays production, especially when there's no buffer stock.
6. **Labor Shortage or Absenteeism**:
    - Inconsistent attendance or lack of skilled workers can create gaps in the production line and lower productivity.
7. **Worker Fatigue**:
    - Repetitive work, long hours, and improper working conditions often lead to worker fatigue, reducing efficiency and increasing errors.
8. **Communication Gaps**:
    - Miscommunication between management and shop floor workers can lead to misunderstandings, delays, or incorrect execution of orders.

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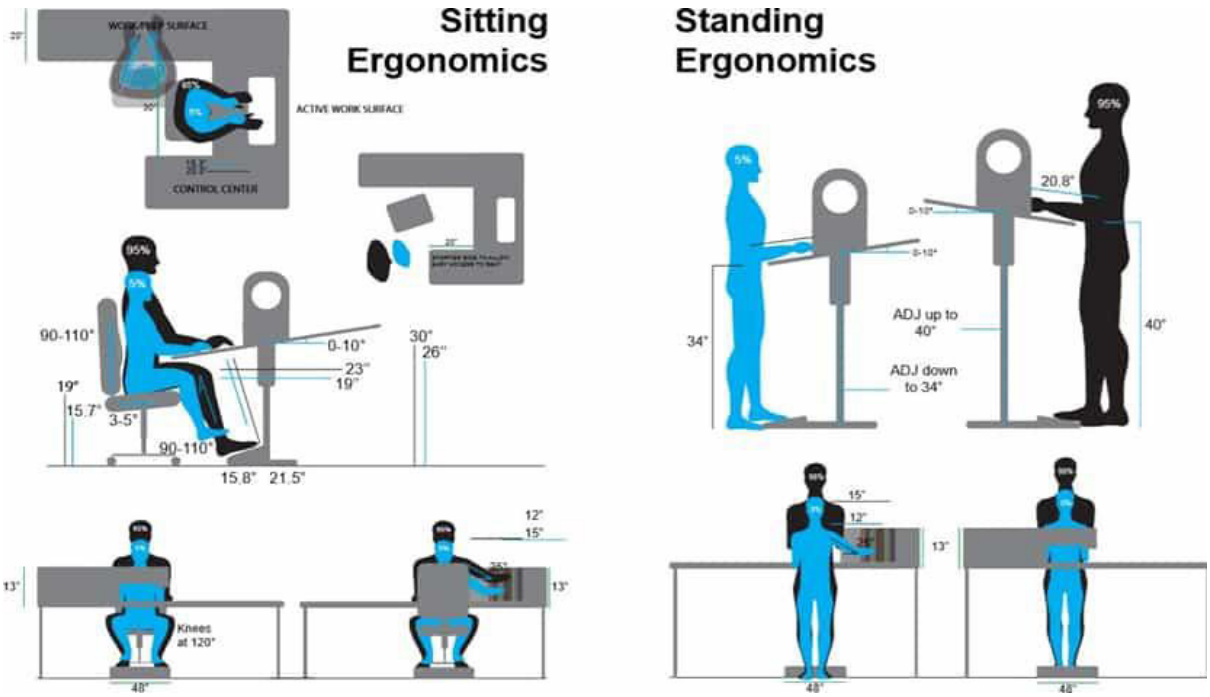
5. **Ergonomics and Its Application in the Garment Industry:**



Ergonomics Defined:

- **Ergonomics** refers to designing workspaces, tools, and workflows to fit the workers' physical abilities, minimizing strain and maximizing productivity. In the garment industry, applying ergonomic principles ensures that workers can perform tasks efficiently, safely, and comfortably.

Ergonomics in Garment Production:

1. **Workstation Design**:
    - Ensure that sewing machines and cutting tables are at the right height to reduce bending and straining.
    - Provide adjustable chairs with back support to prevent fatigue and back pain.
2. **Tool Design**:
    - Use ergonomically designed scissors, needles, and other hand tools to reduce hand fatigue and prevent injuries such as carpal tunnel syndrome.
3. **Posture Improvement**:
    - Educate workers on the importance of proper posture to prevent long-term musculoskeletal issues.
    - Encourage regular breaks to avoid static posture over long hours.
4. **Material Handling**:
    - Implement proper lifting techniques and mechanical aids (trolleys, conveyor belts) for moving heavy fabric rolls, reducing the risk of injuries.
5. **Lighting and Ventilation**:

- Provide adequate lighting to reduce eye strain and improve precision in tasks like cutting and stitching.
- Ensure proper ventilation to maintain air quality and a comfortable working environment.

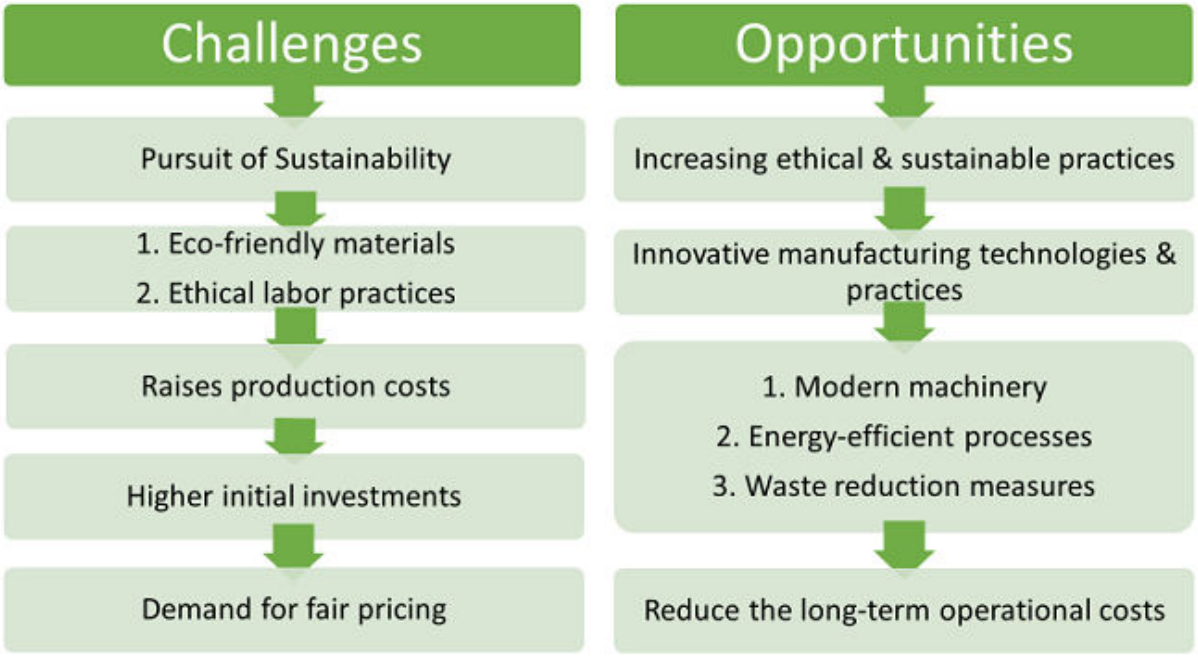
6. **Fatigue Management**:
    - Reduce worker fatigue by rotating tasks to avoid repetitive strain injuries.
    - Allow for scheduled breaks and promote hydration and nutrition to maintain energy levels.
7. **Training and Awareness**:
    - Regularly train workers on the importance of ergonomics and provide guidance on how to maintain proper posture, use tools correctly, and reduce strain during tasks.

Conclusion: Applying ergonomic principles in the garment industry not only improves worker well-being but also enhances productivity and reduces operational errors. By optimizing assembly operations and addressing common problems, garment manufacturers can improve efficiency and product quality

UNIT V

Garment Industry Challenges

Challenges in the Garment Industry



The garment industry faces several operational and strategic challenges that impact productivity, quality, and profitability. Below are key challenges that need to be addressed for successful garment production:

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1. Low Efficiency:

- **Problem**: Low efficiency in production lines leads to longer lead times and reduced output. This inefficiency often stems from poor line balancing, outdated processes, and bottlenecks in the workflow.
- **Impact**: Increased labor costs, delayed delivery, and missed deadlines.
- **Solution**:
    - Implement Lean Manufacturing techniques to streamline processes.
    - Focus on effective line balancing and standardizing production workflows.
    - Invest in proper training for operators to improve their productivity.

2. High Defect Rate:

- **Problem**: A high defect rate in production can severely affect garment quality. Defects like misaligned seams, incorrect stitching, or improper sizing result from poor quality control, operator errors, or faulty machines.
- **Impact**: Increased waste, product rework, high rejection rates, and dissatisfied customers.

- **Solution**:
    - Strengthen Quality Control (QC) mechanisms, including in-line and end-of-line inspections.
    - Implement defect tracking and analysis systems to identify recurring issues.
    - Provide training to operators on critical quality standards and offer performance incentives.

3. Operator Skills:

- **Problem**: A lack of skilled operators can lead to inefficient operations, poor-quality output, and delays in production. Many workers lack proper training in operating modern machines or adapting to new techniques.
- **Impact**: Slow production rates, inconsistent product quality, and high error rates.
- **Solution**:
    - Provide comprehensive skill development programs for sewing operators.
    - Regularly upskill the workforce through workshops and training sessions focused on new machinery, techniques, and technologies.
    - Develop a mentorship program where experienced workers train newer hires.

4. High Attrition Rate:

- **Problem**: High employee turnover is common in the garment industry due to factors like low wages, strenuous working conditions, and lack of career progression opportunities.
- **Impact**: Loss of experienced workers, disruption in production schedules, and additional hiring and training costs.
- **Solution**:
    - Improve working conditions, offer competitive wages, and provide clear career growth paths.
    - Introduce employee benefits like healthcare, skill development programs, and incentives for high performance.
    - Foster a positive work environment to boost morale and reduce turnover.

5. Cost Effectiveness:

- **Problem**: Maintaining cost-effectiveness is challenging due to increasing raw material prices, labor costs, and operational expenses, all while meeting tight budget constraints and offering competitive pricing.
- **Impact**: Reduced profit margins, pressure to compromise on quality, and difficulty staying competitive.
- **Solution**:
    - Focus on cost-saving strategies such as waste reduction, process optimization, and adopting energy-efficient practices.

    - Implement lean production methods to minimize material wastage and optimize resource use.
    - Outsource non-core activities where possible to reduce fixed costs.

6. Machinery Upgradation:

- **Problem**: Outdated machinery leads to slower production speeds, higher defect rates, and increased maintenance costs. Many manufacturers struggle to keep up with advancements in technology due to high capital costs.
- **Impact**: Reduced production capacity, higher operational costs, and inability to meet fast fashion demands.
- **Solution**:
    - Gradually invest in upgrading key machinery and integrating automation technologies.
    - Look for financing or leasing options for expensive machinery to reduce upfront costs.
    - Train operators on how to use new machinery efficiently to maximize productivity.

7. Fast Fashion Cycle:

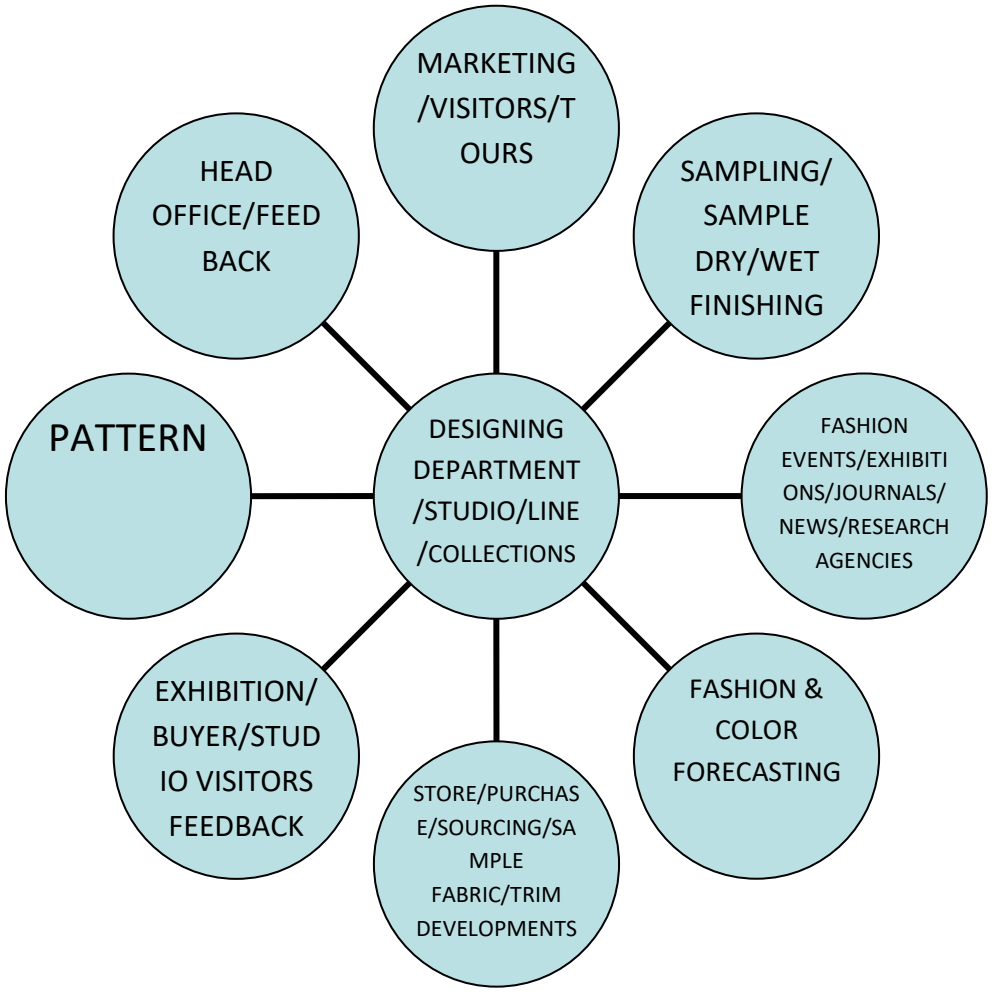
- **Problem**: The fast fashion cycle requires manufacturers to produce clothing quickly and at lower costs, often putting pressure on quality, lead times, and sustainability. The demand for frequent new designs complicates planning and increases the risk of overproduction or underproduction.
- **Impact**: Shorter product life cycles, increased pressure on supply chains, environmental concerns due to overproduction, and unpredictable demand.
- **Solution**:
    - Adopt agile production methods that allow for quick changes in style and quantity without sacrificing quality.
    - Use data-driven demand forecasting to optimize production volumes and avoid overproduction.
    - Embrace sustainable practices such as waste reduction, recycling, and ethical sourcing to address the growing demand for eco-conscious fashion.

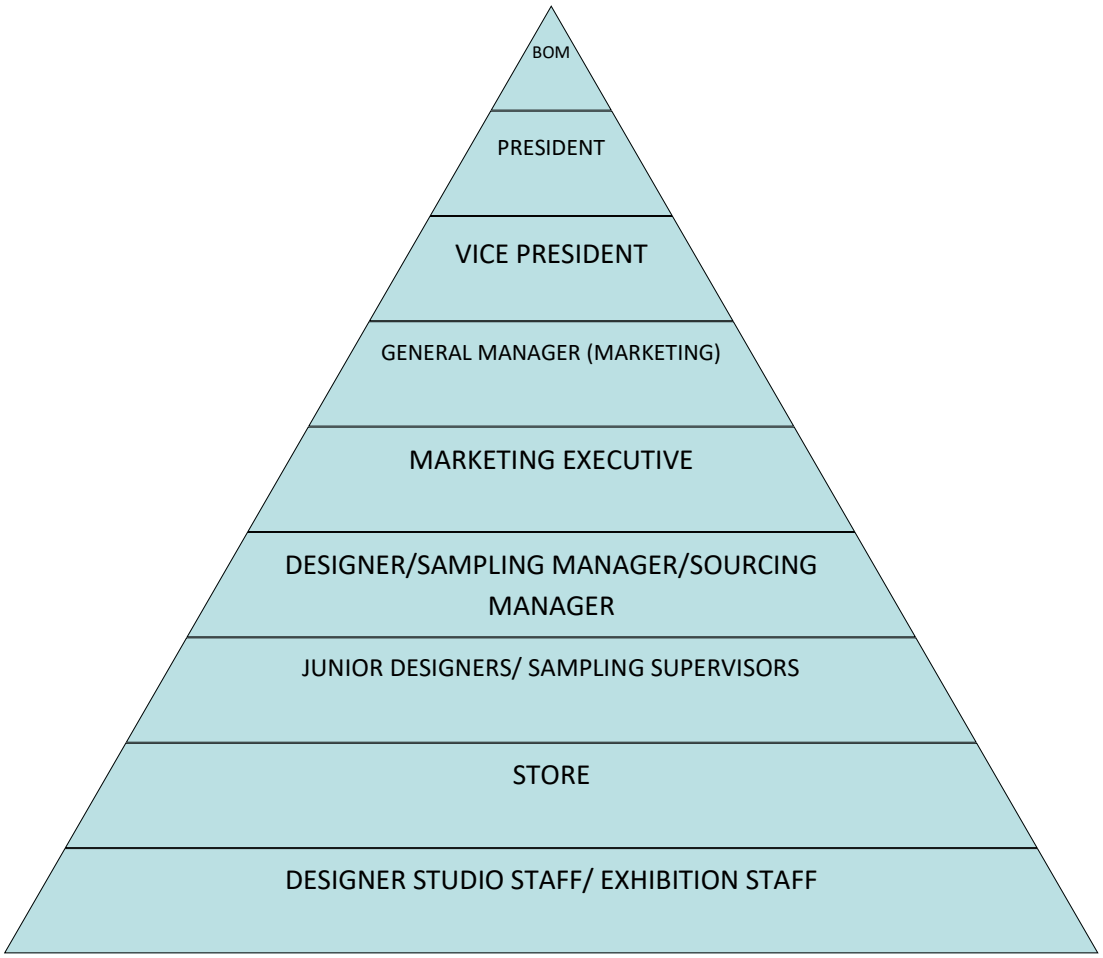
Conclusion:

The garment industry faces numerous challenges, including operational inefficiencies, workforce management issues, and external pressures from fast fashion. To overcome these challenges, manufacturers must invest in training, adopt modern technologies, optimize processes, and improve working conditions. Continuous innovation and strategic planning will help businesses maintain cost-effectiveness, quality, and competitiveness.

UNIT 1: TOPIC – DESIGN DEPARTMENT

DESIGN DEPARTMENT – This department is responsible to plan the merchandise production and delivery to buyer as per buyer's requirement and in promised time. This department acts as an intermediate for communication between a buyer and a production unit as it is not possible for buyer to communicate different departments on its own. So, this department facilitates the communication between a buyer and a manufacturer unit. This department is solely responsible for the timely delivery of merchandise to buyer as per its specifications.





FUNCTIONS OF DESIGNING DEPARTMENT –

1. The designing department refers various sources like journals, magazines, news, etc and design new developments.

2. These new developments are presented in different exhibitions, fairs, and fashion events by designers to invite buyers to business.

3. The designer prepares a product line and collection that is presented in its studio to different buyers, visitors and future buyers.

4. The design collection is also distributed among marketing executives who travels tour to different countries to bring business for company.

5. The designer also use fashion forecasting, color forecasting and market research agencies to update themselves with forthcoming trends to design a competitive collection.

6. The designers in coordination with purchase/sourcing/ stores arrange material for design collections.

7. The designer in coordination with sampling department and sampling facilities develops new designs to be presented at studio and different events.

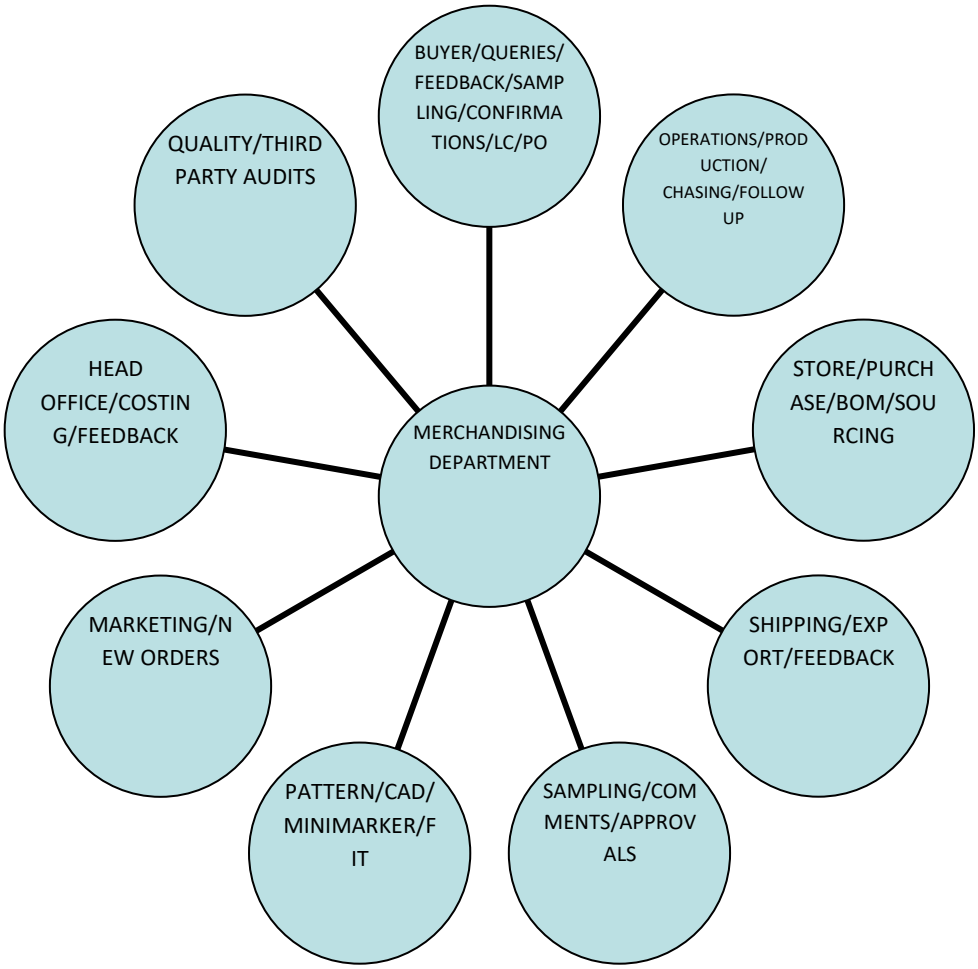
8. Designer continuously receives feedback from marketing team, buyers, head offices, visitors, exhibitors, etc and improves its collection in a meaningful way to keep pace with current trend, demand and challenges.

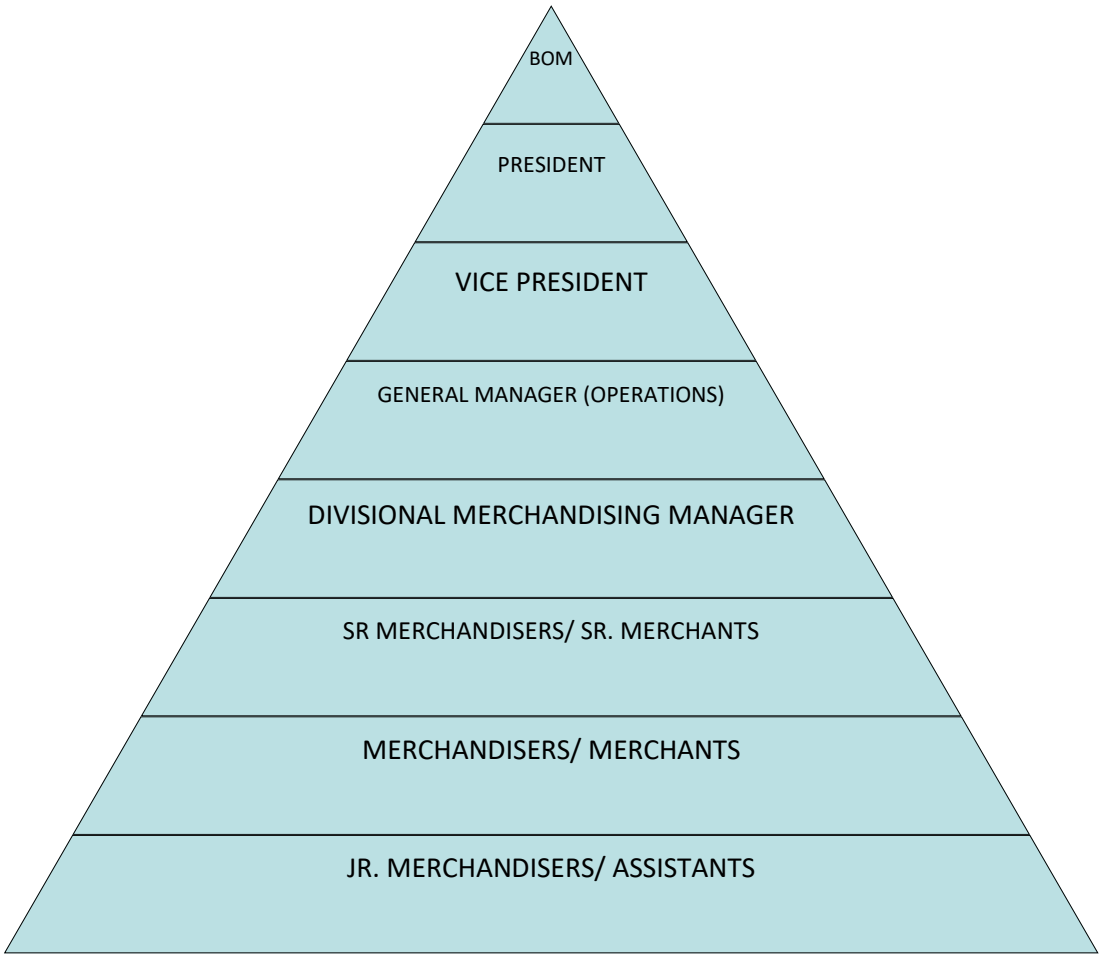
9. The designer with its collection builds image of company among buyers and prospective buyers.

10. The designer with its trend boards, mood boards, etc assists buyers to take decision in line development for coming seasons.

UNIT 1: TOPIC – MERCHANDISING DEPARTMENT

MERCHANDISING DEPARTMENT – This department is responsible to plan the merchandise production and delivery to buyer as per buyer's requirement and in promised time. This department acts as an intermediate for communication between a buyer and a production unit as it is not possible for buyer to communicate different departments on its own. So, this department facilitates the communication between a buyer and a manufacturer unit. This department is solely responsible for the timely delivery of merchandise to buyer as per its specifications.





FUNCTIONS OF MERCHANISING DEPARTMENT –

1. Making production Time and action calendar - based on the process flow of order merchants prepare time and action calendar and indicates who is responsible for the task. This helps merchant to execute an order whether it is on time or behind schedule. Merchants chase department who are running late.

2. Preparing Bill of material and handover it to sourcing department - Based on tech pack (technical sheet), merchant prepares material requirement sheet. In some cases, merchants develop and purchase few trim by themselves.

3. Execution of sourcing trims / accessories - merchants do follow up with supplier for the raw material.

4. Preparing production file - Prepares production file with details documents, approvals, samples and swatches and comments on sample from buyer.

5. Conduct PP meeting with quality team and production team - merchants conduct pre-production (PP) meeting with production team and quality team. In this meeting merchants discuss style construction details, production plan, PCD and handover production file to the production team. One copy of production file is also made for quality team.

6. Giving approval of printing, embroidery production and other subcontracting work.

7. Execution of orders whether it is running on time.

8. Coordination with buyer or buying house if any clarification is required during production.

9. Giving clarification to production and quality team if required related to style workmanship/trims etc.

10. Coordinating with buying house QA or 3rd Party QA for initial/mid and final inspection of shipment.

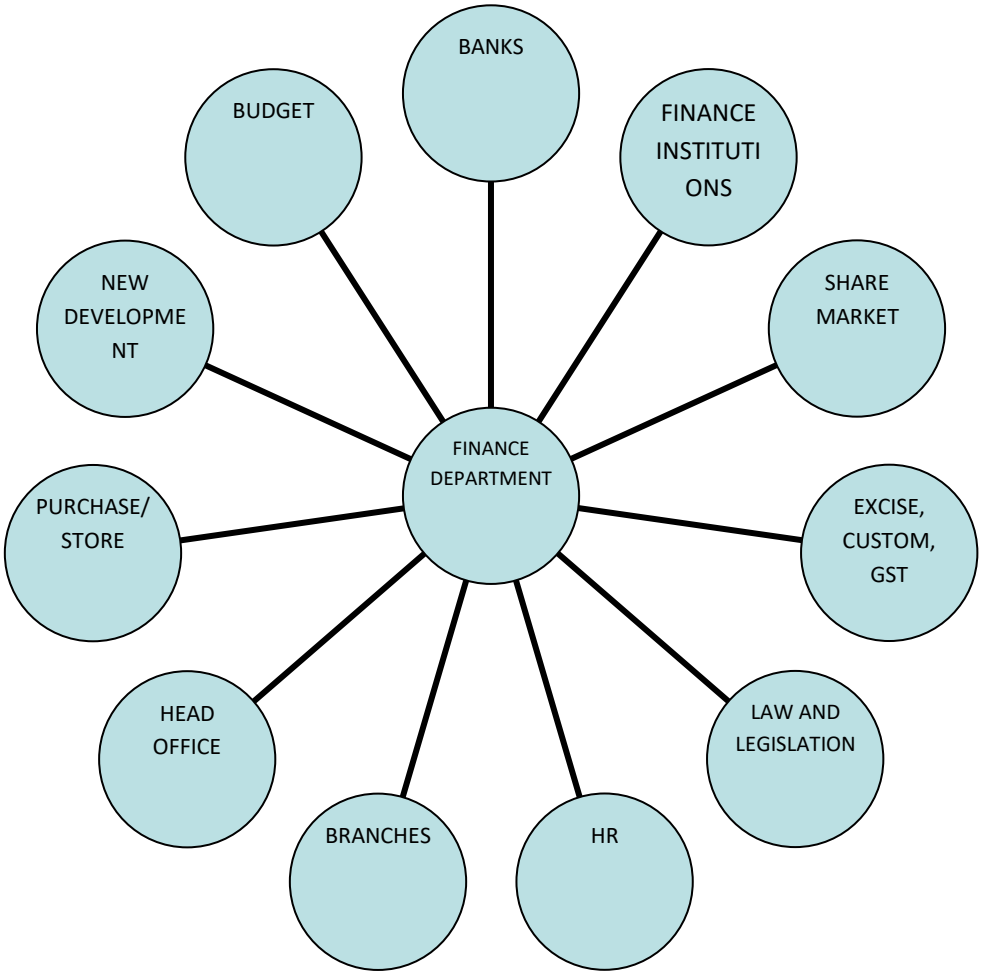
11. Coordination with shipping and documentation department for forwarding the approved shipment.

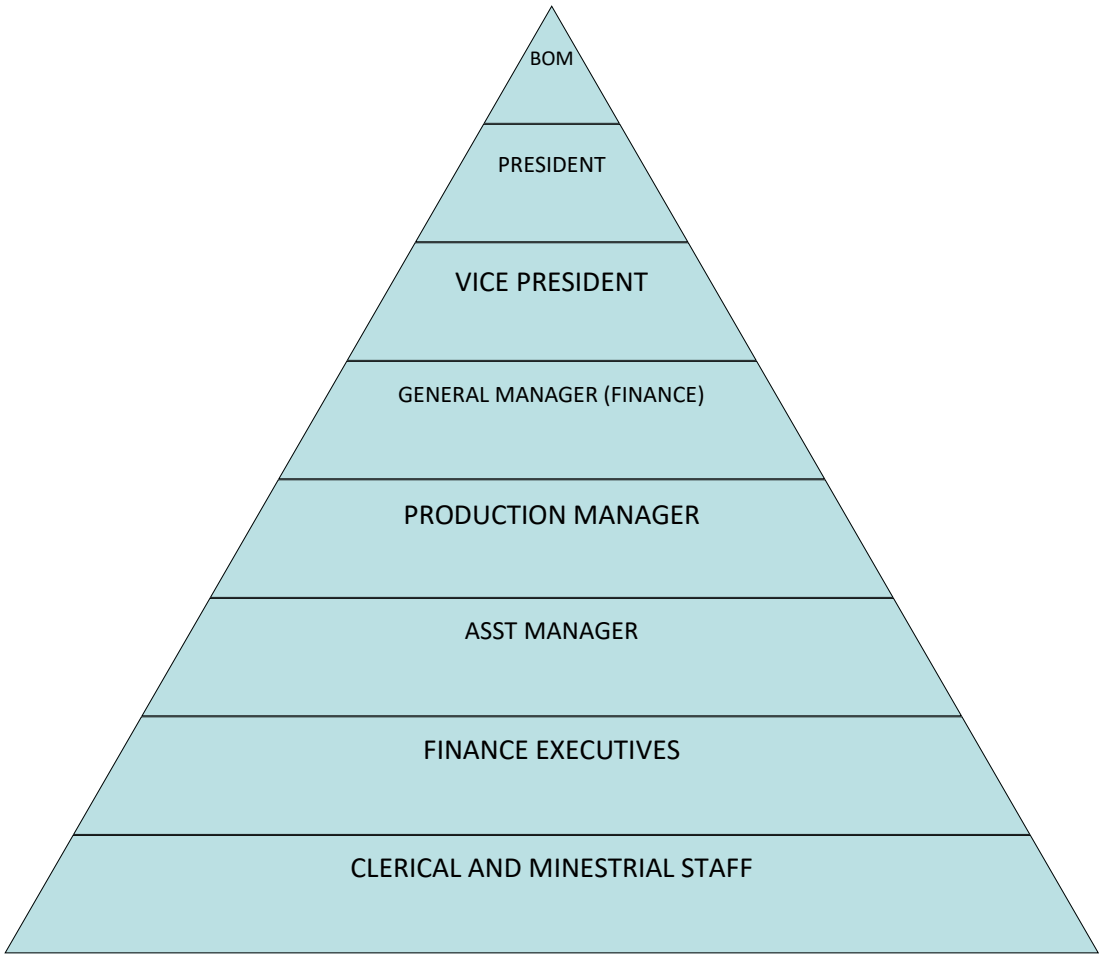
12. Keeping track of style status and updating the same to top management and buyer representatives.

UNIT 1: TOPIC – FINANCE DEPARTMENT

FINANCE DEPARTMENT – This department plays an important role in sourcing the funds to run the industry. This department manages flow of funds inside and outside of the company. This department plans the allocation of funds as per the needs and requirement of different departments. Thus, this department is run by professionals who have expertise in the field of finance / management.

The professional should have knowledge about country's law and legislation related to company law, trade, export, banking, etc.





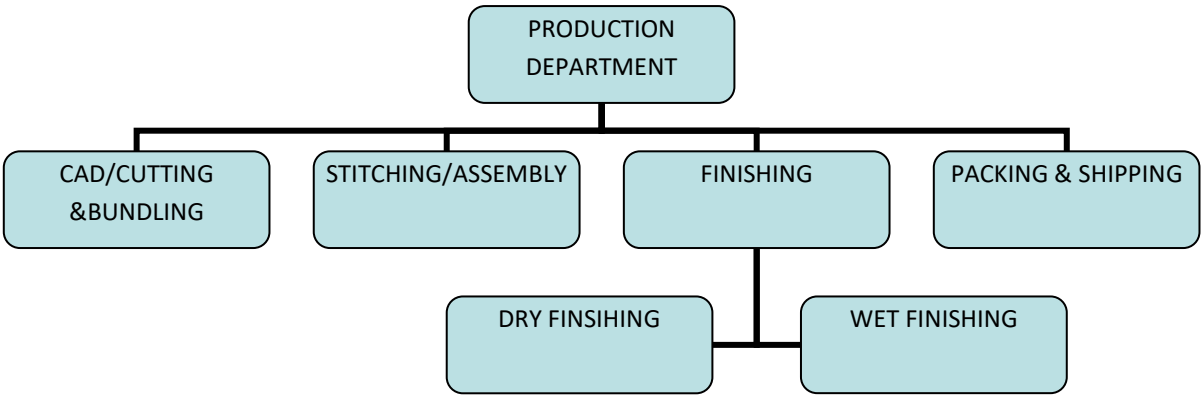
FUNCTIONS OF FINANCE DEPARTMENT –

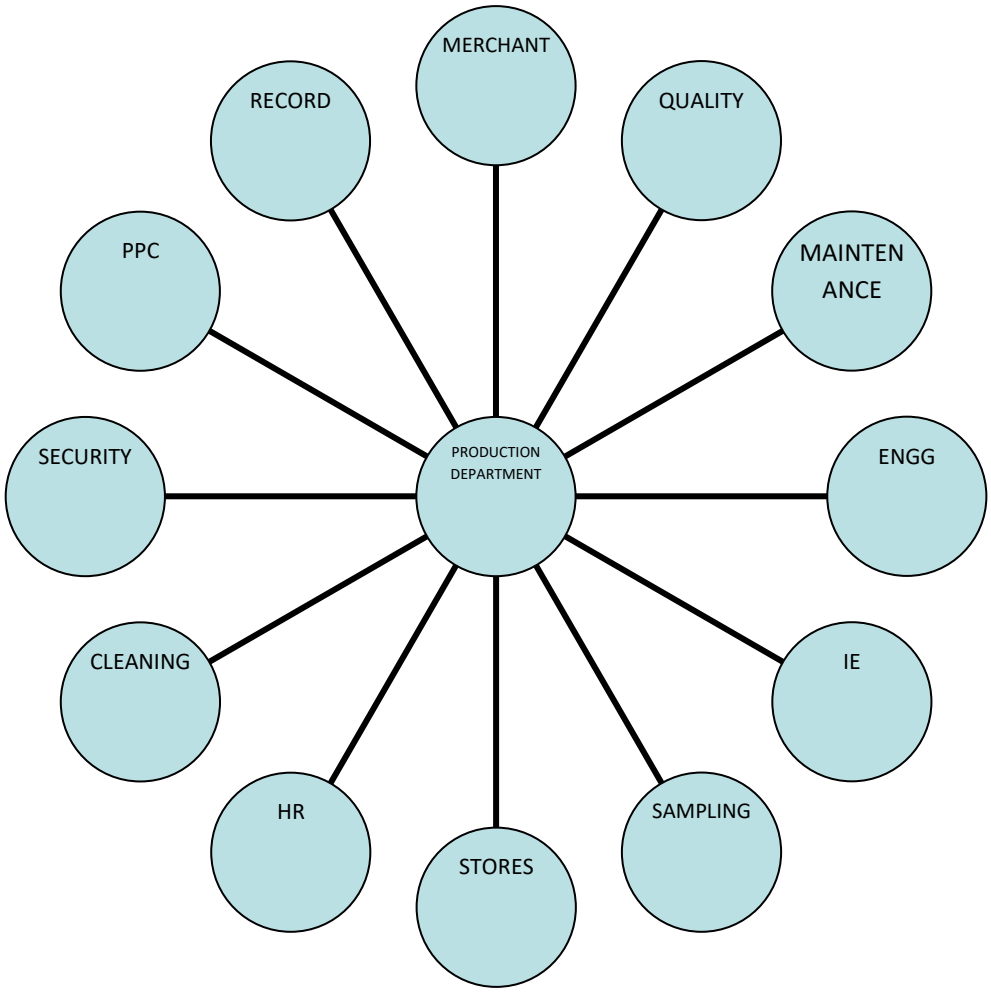
1. Finance department identifies and calculate the need of finance according to various departments in an industry. Generally it is done on annual basis.
2. The finance department arranges the funds from different sources. E.g. banks, companies, Govt, open market, public, etc.
3. The finance department channelize the arranged funds to the concerned department through budget allocation.
4. Finance department after allocating the funds take care that funds should be spend by concerned department as per the plan.
5. Finance department takes feedback from different department and improve its plan.
6. In case of any financial crisis finance department arranges emergency fund to keep the industry running.

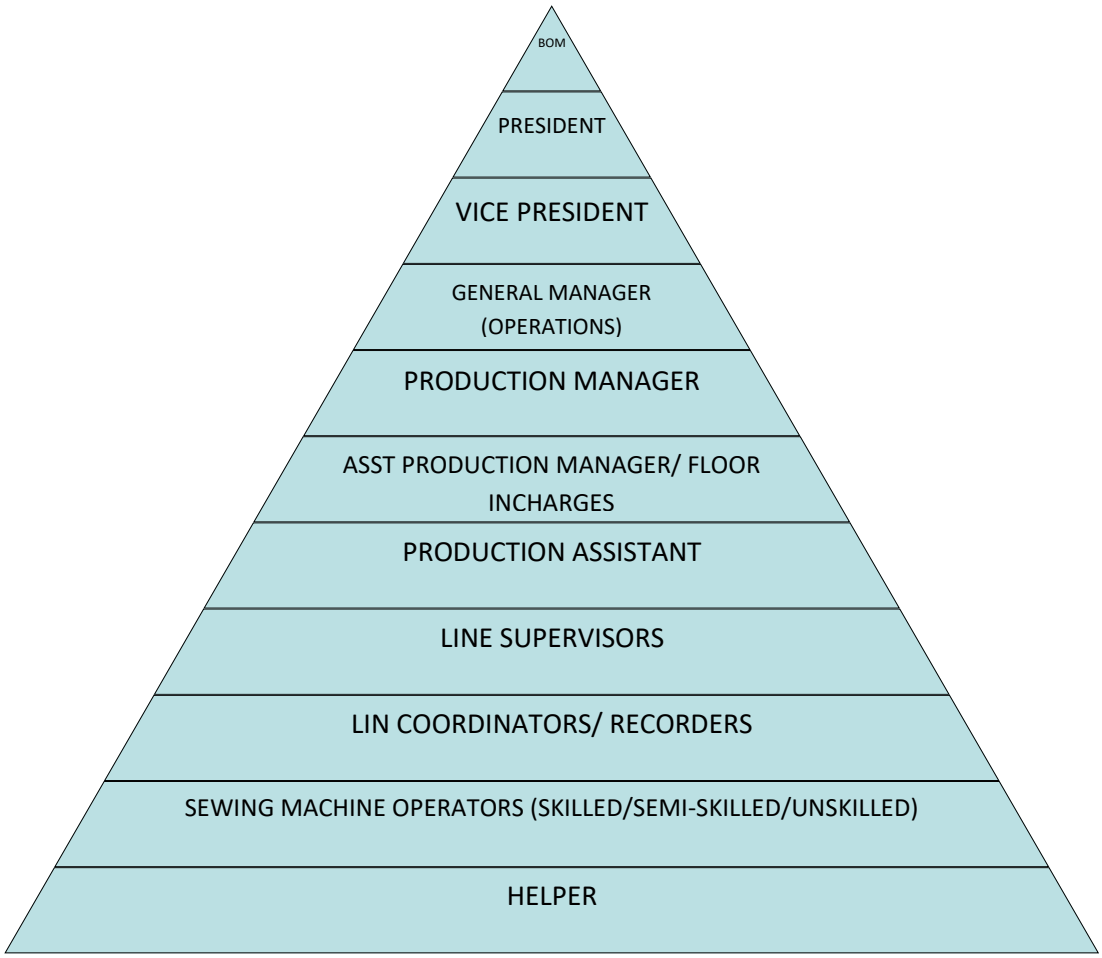
7. Finance department record and analyse all fund transfers to avoid any leakages.
8. Finance department also arranges audits to check any wrong transaction
9. Finance department keep update themselves about new financial schemes, programs, models, etc in order to maintain industry.
10. Finance department also take care of all liabilities as per schedule.

UNIT 1: TOPIC – PRODUCTION DEPARTMENT

PRODUCTION DEPARTMENT – Production department is the actual department that works to prepare the product as per the order. It is also called as operations department. It comprises of those entire department that directly works on product. Thus this department has main responsibility to complete the order in time with quality. That is why in this department we need to understand various sub-departments that are related with production. E.g. CAD, cutting and bundling, stitching, dry-finishing, wet-finishing, finishing, measurement, packing, etc and to support these department work in coordination with production department merchandising department, quality department, maintenance department, engineering department, HR, sampling department, stores, cleaning department, security department, record department, industrial engineering department, PPC, etc.


PRODUCTION DEPARTMENT
CAD/CUTTING &BUNDLING
STITCHING/ASSEMBLY
FINISHING
PACKING & SHIPPING
DRY FINSIHING
WET FINISHING


MERCHANT
RECORD
QUALITY
PPC
MAINTEN ANCE
SECURITY
PRODUCTION DEPARTMENT
ENGG
CLEANING
IE
HR
SAMPLING
STORES



FUNCTIONS OF PRODUCTION DEPARTMENT – The production department functions as following –

1. It prepare production plan as per the planning given by PPC department.
2. The very first step is to prepare cut plan as per the schedule and size of the garment mix and the plan is given to cutting department.
3. The cutting department receive fabric from store department after quality checking, shade sorting and shrinkage calculation.
4. After receiving cut plan fabric is spread on cut table as per marker length and number of plies are kept as per size, quantity ratio and technical feasibility.
5. After spreading the marker is placed on the top layer and cutting is done precisely but before cutting the complete layer is checked by a quality expert. Then the cut patterns are ticketed, bundled in a sequence to make them ready for stitching.

6. These bundles are once again checked by quality team and then supplied to stitching department.

7. Then sewing department arranges sewing line as per the operation break down or assembly line diagram sheet provided by industrial engineering department, thereafter stitching starts.

8. Sewing department in consultation with industrial engineering department balances the line and work to achieve the target.

9. The supervisor also works in coordination with quality department to produce quality garments.

10. After stitching the garments are sending to dry finishing and wet finishing department as per the requirements of the buyer. The quality team closely check the parameter of dry and wet finishes to meet buyer specifications within tolerance.

11. Then garment is send to finishing, measuring and packing department. Where the workers give the garment clean look, put all the trims and accessories, measure all the specifications and prepare final package as demanded by the buyer.

12. The packed shipment is then audited by third party send by buyer for quality inspection as per the contract AQL to pass or fail the shipment. E.g. SGS, Inertek, Bureau Veritas, Asia Inspections, etc.

13. If shipment passes then it is loaded into container and export-import department take care of further procedure.

14. The merchandising department also plays crucial role to resolve day to day queries of either buyer or production team from start to end.

UNIT 2: TOPIC – FABRIC ORDERING AND RECEIVING

FABRIC ORDERING – The process of raising fabric demand to a supplier or vendor of fabric (Greige or processed or finished) after getting necessary approvals from buyer in required quantity and as per the schedule given by concerned merchandiser is called as fabric ordering. The task is carried out by sourcing department within the cost limit set with buyer.

STEPS OF FABRIC ORDERING –

1. When the product is in development stage the merchandiser coordinates with sourcing and sampling department.

2. When the buyer clears all the developments the merchandiser finalises the product and lock the specifications with the buyer.

3. After receiving pre approval from merchandiser the sourcing department investigates the market and procure different fabric options alongwith their cost and specification details.

4. The merchandiser then sends these options to buyer to look and finalising one or two options so that fabric ordering can be started.

5. The buyer reply with final option or options and gives go ahead to start fabric production. Then sourcing department put the order to concerned supplier with all the necessary terms and conditions for the delivery.

6. Then the sourcing department in coordination with supplier, merchandiser and buyer follows the fabric on regular basis to meet the lead time, quality and to take step by step approvals like greige fabric approval, lab dip approval, print approval, color approval, finished sample approval.

FABRIC RECEIVING – The process of receiving the fabric in-house as delivered by the supplier or vendor and inspecting or testing the lot thoroughly with respect to buyer's specification, storing the lot in a proper manner, documenting the detail and initiate the payment or penalty process as required is called as fabric receiving. The order can be supplied in a single lot or multiple lots or batches.

STEPS OF FABRIC RECEIVING –

1. The vendor or supplier delivers fabric either in a single lot or in multiple lots as per the need of the hour.
2. The fabric when reaches the factory, it is thoroughly inspected for both quality and quantity as per the order before receiving.
3. Then the fabric rolls are arranged in store in an ergonomically manner.
4. Now the lot is subjected to sampling to carry out necessary testing for fabric specification, shrinkage and color shade by technical quality team. (GSM, PPI, EPI, width, shade, shrinkage, defects, etc)
5. Then the rolls are sorted on the basis of shade and shrinkage.
6. The rolls which do not fall under the prescribed specification and tolerance are rejected and send back to the vendor or supplier for correction or replacement.
7. Then the report of receiving is send along with quality test to the merchandiser which in turn approves it and send to the purchase department. Then the purchase department passes the bill and the bill department transfers the money to the vendor as per the contract terms and conditions and actual status of fabric quality report.

UNIT 2: TOPIC – PATTERN MAKING WORK

The process of preparing patterns for a given style in consultation with buyer through merchant till the satisfaction of buyer by pattern master or CAD technician is called as pattern making work. The pattern making work involves decision making for three important aspect of garment making i.e. fabric consumption, fit and look and quality. Thus pattern making work is one of the crucial works in a garment industry.

STEPS IN PATTERN MAKING WORK –

1. The pattern making work start from new product development.
2. The buyer interacts with concerned merchandiser and gives details of new development alongwith spec sheet, sample, swatches, comments, etc.
3. The merchandiser consults the new development with sampling department, general manager, sourcing, pattern master, CAD and operations team to start sample development.
4. The merchandiser after discussing and taking feedback from all the participants clarifies the issues with buyer. Then after receiving the comments from buyer the pattern master starts making FIRST PATTERN
5. Then the pattern is send to buyer for approval alongwith min-marker and fabric consumption.
6. The buyer negotiates with merchant on fabric consumption and gives final approval.
7. Once the first pattern gets approve then pattern master works on FIT PATTERN. This fit pattern is discussed with buyer till it gets approved.

8. Now pattern master develops complete SIZE SET and discusses with buyer in coordination of merchant. This task is carried out till the final approval of size set.

9. At last final pattern is developed by pattern master with all the final comments and specification and it is modified until it is sealed with the buyer.

10. Then the sealed pattern is handed over to CAD department for preparing all sizes and markers. While preparing markers the shrinkage is added in the pattern which is given by cutting department.

11. Then the markers are prepared and plotted as per the cut plan and handed over to cutting department.

12. Some patterns are also plotted and given to production and quality department for making templates to be used in production or quality inspection.

UNIT 2: TOPIC – CUTTING AND BUNDLING OF FABRIC

Cutting and bundling of fabric is the main work of cutting department. It is managed by cutting supervisor. Cutting supervisor follows the cut plan provided by PPC department in consultation with production manager and merchandiser. Then cutting supervisor follow this plan and supply cut pattern bundles to sewing department.

The detail process of cutting and bundling of fabric is as follows:

1. The cutting supervisor receives printout of marker from CAD department as per the shrinkage of rolls and cutting plan.
2. The cutting assistant gets issued required fabric rolls from the store and takes it to spreading table.
3. The spreading team marks the length of layer on the table in presence of supervisor.
4. Then spreading staff spreads fabric layer by layer as desired by cutting plan. It can be done manually, semi-automatically and automatically.
5. The supervisor alongwith quality controller checks the layer thoroughly. After inspecting the layer they put the marker on the top and fix it. Now, the spread is ready to cut.
6. After these cutters cut the layer using cutting tools like straight knife, round knife, band knife etc with safety and quality. They remove the waste parts from the pattern simultaneously.
7. Now quality checkers check every pattern thoroughly and give it to bundling staff. The bundling staff put bundle number on each pattern alongwith other information like cut number, style number, pattern count etc.

8. If quality checker found any defect in cut pattern it is replaced immediately in coordination with supervisor before sending it to bundling.

9. The bundling staff after numbering ties the bundles and arrange them on a trolley so that the cut patterns can be delivered to sewing department as per the schedule.

UNIT 2: TOPIC – TRIMS AND NOTION DISTRIBUTION

Trims and notion are required and important for garment manufacturing like fabric. It includes other components like sewing thread, buttons, zipper, braids, lace, elastic, label, patch, fasteners, embroidery threads, and sequins, draw string, etc.

The merchandiser prepares the list of these materials alongwith a specimen for each style. This document is known as bill of materials and the specimen card is known as trim card. The merchandiser then gives the BOM to purchase department. The purchase department in coordination with sourcing department procures all the trim and notions as per required quality, cost and in desired quantity. The purchase department before finalising the order arrange sample of each material and get it approved form buyer in coordination with merchandiser. The purchase department order in bulk all the trims and notions only after final approval given by the buyer. Then the supplier or vendor delivers the material in time. When the material is received in the production unit the quality team thoroughly inspect all the trims and notions and verify its quality as per buyer's specification and comments. When quality team passes the material then the trim and notion are arranged in the store as per the style. These trims and notions if found of poor quality are then returned or replaced with vendor. Then purchase department after getting report from quality and merchandiser passed the bill of vendor. Then the trims and notions are issued to concern in line supervisor in production department as per stitching plan or packing plan. This is known as trim and notions distribution. The poor management of trims and notions can cause wastage of material and lead to shortage and delay of shipment. Thus, merchandiser should closely monitor the trim and notion distribution on a routine basis alongwith store in charge. Moreover the production team should be well aware of each every trim and notion to be used for a particular style to avoid any mismatch and wastage of labour.

UNIT 2: TOPIC – CONSTRUCTION OPERATIONS IN ASSEMBLY LINE

ASSEMBLY – The process of joining patterns of a garment with the help of stitches and seams in a step by step manner is called as assembling of garment. Generally different portions are prepared like in case of a shirt front portion, back portion, collar portion and sleeve portion. Finally these portions are assembled to get a final shirt. Thus, in assembling a garment there are different section in an assembly line e.g. front section, back section, sleeve section and assembly section in this case.

The various operations that are carried out to assemble a garment are known as construction operation in assembly line. These operations are named by task they complete. E.g. hemming of pocket, attaching yoke to back, sew placket to sleeve, etc are different construction operations in assembly of a shirt.

CONSTRUCTION OPERATIONS OF A SHIRT AS EXAMPLE –

COLLAR SECTION –

- Mark lining
- Collar run stitch
- Collar turn and iron
- Collar top stitch
- Collar band hem
- Collar attached to band
- Collar trimming, marking and notching
- Collar band centre stitch

CUFF SECTION

- Cuff hem
- Run stitch cuff
- Turn cuff
- Iron cuff
- Top stitch cuff

POCKET SECTION

- Mark pocket
- Pocket mouth iron

- Hem pocket
- Crease pocket
- Trim Pocket

FRONT SECTION

- Mark front for pocket position
- Front button hole placket
- Attach placket for single fold crease
- Top stitch placket
- Mark button on placket
- Attach pocket
- Sew label of placket

BACK SECTION

- Join yoke with back
- Top stitch at yoke

SLEEVE SECTION

- Cut sleeve according placket measurement
- Notch sleeves
- Iron upper and lower sleeve placket
- Attach placket
- Close lower placket
- Close upper placket
- Mark for button and button hole
- Top stitch

ASSEMBLY SECTION

- Set front and back and mark neck for collar and shoulder attach
- Shoulder attach

- Shoulder top stitch
- Sleeve attach
- Top stitch armhole
- Side seam
- Collar attach
- Collar close and insert label
- Cuff attach and close
- Bottom hemming
- Button hole cuff, front placket and collar
- Sew button at cuff, front placket and collar
- Finishing/Trimming/Ironing/Folding

In assembly line the various construction operations are carried out by operators and helpers. These operators and helpers can be classified into different categories on the basis of their skill level and experience. These categories are high skilled, skilled, semi-skilled and unskilled. On the basis of their skill they are given wages. The construction in assembly line can be carried out by using different production methods. These methods are selected as per the need of quality or quantity.

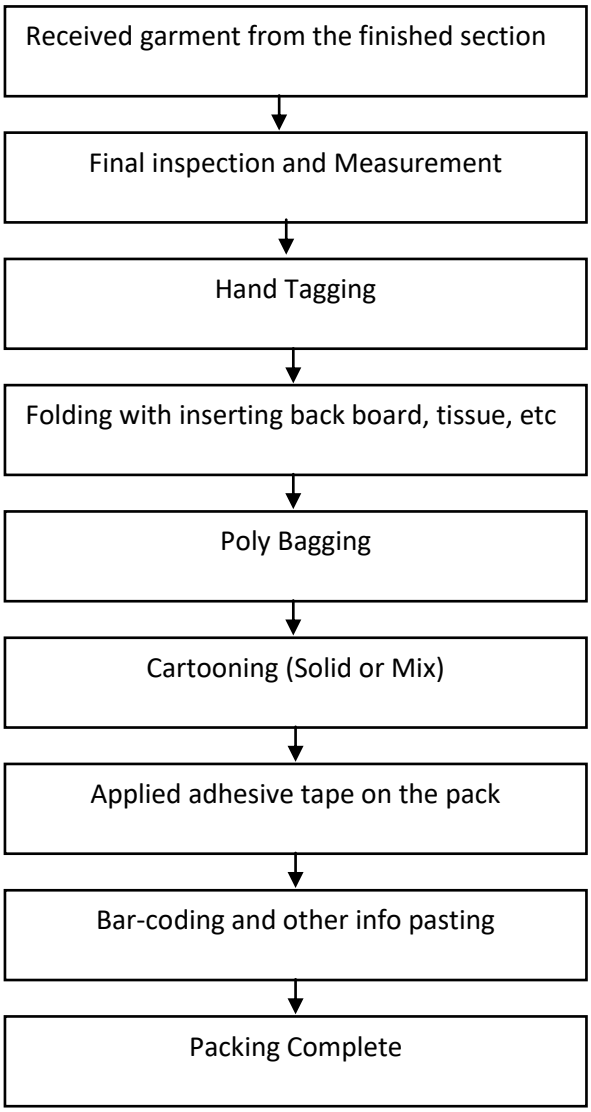
E.g. PBS (Progressive Bundle System) is used for high production. UPS (Unit Production System) is used for high quality production. MPS (Modular Production System is used for adequate quality and quantity.

UNIT 2: TOPIC – PACKAGING AND SHIPPING

PACKING

PACKING – Packing is the process of preparing, pressing, folding, attaching accessories like belt, hanger, scarf etc and wrapping the product into poly bag or some other material in same size or mix size in same color or mix color as desired by the buyer and putting these packets into cartons along with all the necessary stickers and information is called as packing.

Packing also includes complete checking of garment, measuring it and putting all the stickers, blisters, tags, etc as per the requirement of the buyer.



TYPES OF PACKAGE – The basic types of packages used in apparel and allied products are:

- Bags
- Boxes

- Cartons
- Cases
- Crates
- Twins
- Wrappers

TYPES OF PACKING MATERIAL – The simple packaging materials are used in garment and related items are paper, plastic, film, wood, staples, cards, gum tape and metal bands. Wood cases and crates are generally used for bulk exports or rugged shipments where handling is higher. Paper and plastic film packaging materials are used in the garment and related industries. The paper types such as Kraft, crepe, tissue, foil, board and coated are typically used as packing materials. Plastic films have a major advantage over paper because of clarity in range.

LECTURES 31 AND 32 (UNIT 2: TOPIC – PACKAGING AND SHIPPING)

SHIPPING

The process of exporting readymade garments to the destination country (buyer) by an export house (garment factory) by following due export procedure and export documentation as per the agreement between buyers – export house is called as shipping. Shipping can be done by sea, road or air as per the buyer's directions and need of the hour.

Shipping work starts when packaging and third party auditing gets complete. Shipping involves export document preparation, moving of container (shipment) to the customs, receiving custom clearance by showing export documentation, loading of container to ship (generally by sea), informing the buyer, getting acknowledgment from buyer or receipt of shipment by buyer either at port or destination or as mentioned in the agreement. The step by step process of shipping is as follows:

1. Based on the Performa invoice, buyer will send an export order or purchase order confirming the order.

2. According to the terms of payment (advance payment, documents against acceptance, documents against payments, letter of credit) mentioned in the order, the buyer and merchandiser's export department (If the company size is small, then there will be no export department available and all the work will be done by the merchandiser.) will work for arranging payment.

3. If the merchandiser's company wants to cover the credit risks, they can approach export credit guarantee corporation to get insurance.

4. If the term of payment is anything other than advance payment mode, then the merchandiser can talk to his export department to arrange for finance against the export order. The banks may provide export finance (pre- or post-shipment finance) against export orders obtained.

5. Once the required funds are obtained, order execution is carried out. If the finished goods required quality checks by agencies like Intertek, SGS, BVQI, etc., as designated by the buyer and is put in terms and conditions, then such inspection is arranged.

6. After inspection, goods are arranged for proper packing. Palletisation or crating is arranged for the material safety.

7. The merchandiser or the export department will decide on the mode of transportation as per the terms and conditions of the order and if it is sea, then they will decide the container (LCL – Less container load or FCL – Full container load) based on the type of goods and book the carrier. They may use clearing and forwarding agents to arrange for transport. If it is air transport, then the concerned air carrier will be contacted to transport the goods.

8. Once the shipment is ready for export, the export team has a major role to play. They have to create many documents for exporting the goods. It starts with creation of export invoice, export packing list, etc. and they also apply for getting certificate of origin. Necessary documents required for export customs clearance are prepared and sent to the customs department.

9. Once required approval is obtained from customs, the material is transported to the port. The port authorities will provide bill of lading in case of sea shipment and air way bill number (AWB) in the case of air shipment.

10. Based on the terms of delivery, the responsibility of the seller and buyer for the exporting goods is fulfilled by both of them and accordingly the material is shipped.

11. Once export is done, the necessary documents for payment as required by the bank and overseas buyer will be prepared if the payment term is other than "advance payment" mode. The export bill may be discounted or arranged for collection of payment based if on credit basis or negotiated if shipment is based on letter of credit (L/C). For knowing more about mechanism of LC you can follow below image.

12. If the merchandiser's company had received pre-shipment finance, then the discounted / negotiated export bill amount will be adjusted once the bank receives the export proceeds thereby completing the exporting procedure by successfully exporting goods and realising payment.

To do effective exporting, a merchandiser should be aware of the process mentioned above. He / she should know the terms of payment, credit risk insurance facilities, delivery terms (INCO terms), export finance, pre-shipment inspection, details of inspecting agencies, shipment modes, procedure for obtaining customs clearance for shipping and understand the overall export documents that need to be prepared for export.

EXPORT DOCUMENTS

Commercial documents - These are the documents that are used in export as required by the customs of trade for enabling physical transfer of goods, passing the title from the seller (exporter) to the buyer (importer) and for realising the export proceeds. There are 16 commercial documents in which eight are classified as primary and eight documents are classified as auxiliary.

Principal documents - The various principal documents used in export are as follows:

1. Commercial invoice

The commercial invoice is the demand note for payment that is issued by the exporter to the importer for the products shipped as per the sales contract. It details all the particulars related to the product, terms of payment, trade terms and cost. It is used for customs clearance, preparing other shipping documents, accounting purposes, negotiation of documents for collection of payment and to claim incentives. It helps the customs department to ascertain the true value of goods for levy of duties and taxes. It is the bill given by the exporter

evidencing the sale of products.

The contents in a commercial invoice include the exporter name and address, invoice number, letter of credit (LC) number, date of shipment, bill of lading or airway bill number, country of origin, currency, conditions of sale, consignee details, importer details if buyer is not the consignee, transportation mode, total number of packages, product details, quantity, weight, unit price, total value of each product and the grand total or the invoice value along with the name and signature of the authorised personnel of the exporter and the date of signing.

2. Packing list

It is the list with detailed packing information of the goods shipped. It consists of the buyer details, shipping quantity, carton quantity, net weight, gross weight, and description of the item shipped, size wise and colour wise particulars of the items shipped along with total pieces.

The packing list is used by the shipper or forwarding agent to determine the total shipment weight, volume and item wise list of the materials shipped to ascertain that the right cargo is being shipped. It provides the fullest details of the goods including packing information.

3. Bill of lading / Airway bill

a) Bill of lading (B/L)

Bill of lading is the document issued by a carrier for goods sent by sea and it acts as an evidence of contract between the shipper of the goods and the carrier. The original bill of lading should be produced by the buyer as proof of ownership for claiming the goods once it reaches his / her country. It is used for negotiation. The bill of lading is sent to the buyer through the bank for claiming the possession of goods after importing.

The bill of lading consists of exporter, importer, cargo details, port of receipt, loading, discharge and destination, container number, marks, description of goods, weight, number of containers, freight details and charges collected for shipping.

b) Airway bill

Airway bill is issued when goods are shipped by air. It serves as a receipt of goods for delivery by the air carrier and states the condition of carriage but it is not a title document. If goods are shipped by air, airway bill is given and if it is shipped by sea, then bill of lading is given.

However the difference between the two documents is that bill of lading can be used for negotiating the payments with the buyer after delivery of goods and person possessing the original bill of lading becomes the owner of the goods (buyer – if he / she is mentioned as consignee in the B/L) but a person holding airway bill do not hold the title for the goods and it cannot be used as a negotiating document for payment (Consignee not endorsed in AWB).

4. Certificate of inspection / quality control
It is a report issued by the inspection agency designated by the buyer to inspect the shipment on the basis of quality, quantity, packing, etc., as mentioned in the contract and approve the shipment on behalf of the buyer.

5. Certificate of origin
It is the certificate stating the origin of the merchandise. It helps the importer to get the quick delivery of goods from custom authorities and also to claim special concession based on the country from where the material is imported from. It gives adequate proof to the importer about the origin of goods. It is important when countries have preferential rate tariffs.

It consists of the exporter details, producer details, buyer details, description of goods, producer, net cost, preference criterion, country of origin and authorised signature. The certificate of origin is of two types – Preferential and Non-preferential.

6. Bill of exchange
Bill of exchange is a negotiable document prepared by the seller addressed to the buyer. It is an instrument in writing containing an unconditional order signed by the drawer directing a certain person to pay a certain sum of money only to or to the order of a person or the bearer of the instrument. It is also known as “draft”. It is drawn on the issuing bank mostly.

The bill of exchange consists of name and signature of the drawer (seller), name of the drawee (buyer), payee (buyer or a third party), specified sum and date of payment with authorised signature of the drawer.

7. Combined transport document and shipment advice

a) Combined transport document
When goods are transported using more than one mode of transport, the issuer of the collection takes responsibility for the whole of the journey by issuing a combined transport document.

b) Shipment advice
It is the letter or form sent by the exporter to a foreign buyer informing that the ordered goods are shipped and it is on its way to reach the buyer. A copy of bill of lading, invoice and packing slip are attached with the shipment advice.

8) Insurance certificate
An insurance policy is an insurance document evidencing insurance has been taken out on the goods shipped, and it gives full details of the insurance coverage. An insurance certificate certifies that the shipment has been insured under a given open policy and is to cover loss of or damage to the cargo while in transit. The different types of insurance and policies available are marine insurance, specific voyage policy, time policy, floating policy, open policy, open

cover policy.

The above discussed documents are all commercial documents which are used in export. The mandatory documents for exporting are bill of lading / airway bill, commercial invoice, packing list and shipping bill or bill of export. There are also some auxiliary documents which are used in exporting garments. They are given below.

Auxiliary Documents:
The various auxiliary documents used in export are as follows:

1. Performa invoice
2. Intimation for inspection
3. Shipping instructions
4. Insurance declaration
5. Shipping order
6. Application for certificate of origin
7. Mate's receipt
8. Letter to bank for collection/negotiation of documents.

INCO TERMS

A registered trademark of the International Chamber of Commerce, the first INCOTERMS were issued in 1923 and since then they have been updated regularly with the latest set of terms published in 2010. Incoterms are used in contracts in a 3-letter format followed by the place specified in the contract such as the port or where goods are to be picked up.

EXW – Ex Works – The seller delivers when it places the goods at the disposal of the buyer at the seller's location or at another specified place. The seller does not need to load the goods on any collecting vehicle, nor does it need to clear the goods for export.

FCA – Free Carrier – The seller delivers the goods to the carrier or another person nominated by the buyer at the seller's location or another named place.

FAS – Free Alongside Ship – The seller delivers when the goods are placed alongside the vessel nominated by the buyer at the named port of shipment. The risk of loss of or damage to the goods passes when the goods are alongside the ship, and the buyer bears all costs from that moment onwards.

FOB – Free On Board – The seller delivers the goods on board the vessel nominated by the buyer at the named port of shipment. The risk of loss of or damage to the goods passes when the goods are on board the vessel, and the buyer bears all costs from that moment onwards.

CPT – Carriage Paid To – The seller delivers the goods to the carrier or another person nominated by the seller at an agreed place. The seller must pay the costs of carriage necessary to bring the goods to the destination.

CFR – Cost and Freight – The seller delivers the goods on board the vessel. The risk of loss of or damage to the goods passes when the goods are on board the vessel. The seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination.

CIF – Cost, Insurance and Freight – The seller delivers the goods on board the vessel. The risk of loss of or damage to the goods passes when the goods are on board the vessel. The seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination. The seller also contracts for insurance cover against the buyer's risk of loss of or damage to the goods during the carriage. The seller is only required to obtain minimum insurance coverage. However, should the buyer wish to have more insurance protection, it will need either to agree with the seller or to make its own extra insurance arrangements.

CIP – Carriage and Insurance Paid To – The seller delivers the goods to the carrier or another person nominated by the seller at an agreed place. The seller must pay the costs of carriage to bring the goods to the destination. In addition, the seller is required to obtain minimum insurance coverage. Should the buyer wish to have more insurance protection, it will need either to agree with the seller or to make its own extra insurance arrangements.

DAT – Delivered At Terminal – The seller delivers when the goods are unloaded and are placed at the disposal of the buyer at a named terminal at the named port or place of destination. The seller bears all risks involved in bringing the goods to and unloading them at the terminal at the named port or place of destination.

DAP – Delivered At Place – The seller delivers when the goods are placed at the disposal of the buyer on the arriving means of transport ready for unloading at the destination. The seller bears all risks involved in bringing the goods to the named place.

DDP – Delivered Duty Paid – The seller delivers the goods when the goods are placed at the disposal of the buyer, cleared for import on arrival and ready for unloading at destination. The seller bears all costs and risks involved in bringing the goods to destination and is obligated to clear the goods not only for export but also for import, to pay any duty for both export and import and to carry out all customs formalities.

UNIT 3: TOPIC – DESIGNING A SUCCESSFUL GARMENT LINE

LECTURE 33 & 34

A garment line includes collection of garments focussed for a buying season of market for target customers by a buyer with the help of designer, manufacturer and suppliers.

Garment line can be of three types:

1. **Print-On-Demand Garment Line** - The first and easiest option for starting a garment line involves printing your designs or logo on standard blank apparel. This is an attractive option for people with a low budget and to set up a nearly fully-automated business. The biggest drawback to this type of business model is the lower profit margins and the lack of ability to differentiate your product on things like material, stitching and fit since you're using standard wholesale clothing.
    a. The print-on-demand or direct-to-garment printing process uses a special digital ink-jet printer to print ink directly onto clothing and apparel. These digital printers are able to produce full color images with extreme accuracy.
    b. Print-on-demand printing produces high quality printed apparel quickly and efficiently. Because of this, there are no setup costs, unlike screen printing. This means that it's easy and cost effective to print small orders (including just 1 unit).
    c. Advantages
        i. No set-up costs
        ii. High quality prints
        iii. Unlimited color options
        iv. Perfect for low order quantities or one-offs
        v. Many clothing options (shirts, leggings, socks, dresses etc.)
    d. Disadvantages
        i. Not cost effective for large production runs
        ii. Generally no volume discounts
        iii. Limited print product selection
        iv. Limited finishing options (tags, labels, etc)
    e. Completion Time – In days
    f. Cost – Cheaper
2. **Wholesale or Private Label Garment Line** - This option is similar to the option above, but a little more involved, giving you more options for personalization and higher margins, while costing more and taking slightly longer to get started.

a. This method involves you sourcing clothing products that you would then need to customize by adding print, tags, labels, etc. Since you're purchasing bulk inventory upfront, you'll also need to figure out warehousing and shipping for your products.
b. By sourcing in bulk, you get better pricing which allows for greater margins. As an additional benefit, by purchasing inventory upfront and not printing/shipping directly from the printer, you have greater control over the final product allowing you to add additional details like tags and custom labels. This allows you to further increase your brand's perceived value to achieve greater margins.
c. Advantages
    i. Cost effective in large batches
    ii. Volume discounts
    iii. Potential for increased perceived value from customers
    iv. Potential for increased margins
d. Disadvantages
    i. Not cost effective for large inventories of designs, colors and sizes
    ii. Can only print simple images and designs (not photographs)
    iii. Usually minimum order starts at 10 units per color/size
    iv. You'll have to manage inventory and shipping yourself
e. Completion Time – In weeks.
f. Cost - Expensive

3. **Custom Cut and Sew Garment Line** - Custom cut & sew clothing means you're doing everything. We're talking about designing sketches, turning them into patterns, sourcing fabrics and manufacturers and paying for a full production run (which could be thousands of units).
    a. This can be an intensive process that can take months at minimum to get up and running. You'll need to find a manufacturer that is willing to do smaller runs, you'll need to work with a pattern maker, and you'll have to source and test fabric, and create many samples before you even come close to a finished product. Depending on the exact clothing items you're looking to produce, just to get a few samples as finished products can cost thousands.

b. Once you have a finished product, you'll need to produce a full run with your manufacturer, you'll need to stock your inventory and develop a shipping strategy to get your clothes to your customers.
c. Pros
    i. 100% custom product
    ii. Potential for increased perceived value from customers
    iii. Potential for increased margins
d. Cons
    i. Very high start-up costs
    ii. Complex process involving several moving parts
    iii. Can take months or more to launch
e. Completion Time – In months to years
f. Cost – Very expensive

UNIT 3

LECTURE 35

MEANING OF CUSTOMER SEGMENT

1. Introduction -

   In any business the buyer must know its customers for a successful selling of products. To know and understand the customers the buyers differentiate customers on different basis like demography, geography, behaviour, life cycle, etc before placing their product in the market, this is called as segmentation and the particular segment is called as customer segment. The main purpose of customer segment is to know the target customers out of the available customers for which the product has been actually designed. Thus, customer segment is very important for a product to run successfully in a market.

2. Definition -

   Customer segmentation involves grouping customers into specific marketing groups, perhaps narrowing them down by gender, interests, buying habits or demographic.

   Or

   Customer segmentation is the practice of dividing a customer base into groups of individuals that are similar in specific ways relevant to marketing, such as age, gender, interests and spending habits.

3. Examples -

   a) Demographic Segment (age, generation, gender, education, occupation, income, marital status, or ethnicity)

   b) Geographic Segment (country, state, region, climate, or market size)

   c) Behavioral Segment

1. Occasion: Segmentation based on purchases for a specific occasion such as weddings, Christmas, or Halloween.
2. Usage: Segmentation based on the frequency of their purchases.
3. Thought Process: Segmentation based on the driving force behind their purchase decisions.

d) Customer Journey Segment (In which stage of the buying process they are in. This type of customer segmentation is called lifecycle or customer journey-based segmentation)

e) Other examples – Psychographic Segment, Firmographic Segment, Smart Customer Segment,

4. Objective -

   By differentiating their customer base, buyers can better target individuals and maximise sales, link-sell appropriately and provide more tailored shopping experiences.

5. Importance -

   a) Better matching of customer needs

   b) Enhanced profits for business

   c) Better opportunities for growth

   d) Retain more customers

   e) Target marketing communications

   f) Gain share of the market segment

   g) Precisely reach a consumer with specific needs and wants

   h) Make better strategic marketing decisions

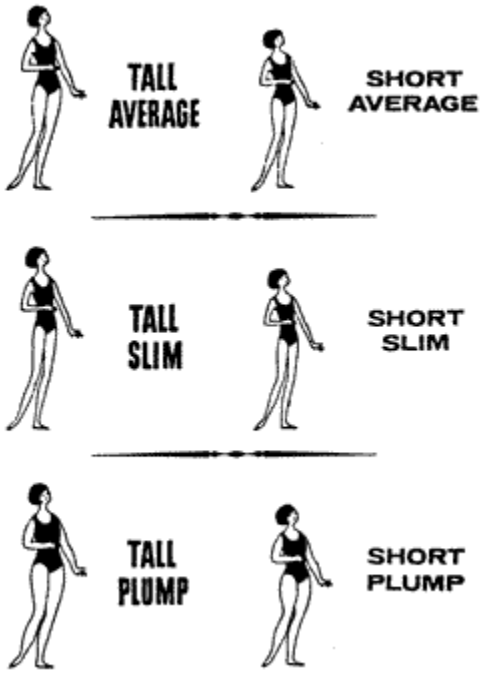
UNIT 3

LECTURE 36 TO 39

METHODS OF MODIFYING BODY PROPORTIONS WITH ELEMENTS AND PRINCIPLES OF DESIGN

1. Introduction -

Few people are as perfect as to general figure, shape of the face, coloring, etc., that they are able to wear almost any type of dress and look well. Many of us have certain special features such as narrow shoulders, flat chest or round shoulders, a large bust, or our face may be very square, so that we must use care in the design and selection of our dress. Examples of different body proportions are as follows:



These body proportions can be modified by carefully using different elements and principles of design. The careful selection of elements and principles give visual illusion in such a way that

the unusual body looks balanced and good. These methods can be studied one by one by taking different examples as following:

A) Thin Figure -

i. Lustrous materials, unless the person is too angular

ii. Materials that stand out somewhat from the figure

iii. The silhouette of the dress shown broken, rather than long beginning line

iv. Horizontal movement in the line of the dress

v. Wear loose clothing

vi. Broken lines and curved lines

vii. The sleeves gathered in to tight

viii. Use patch pocket, short collars

ix. Wear cap, hats of average size

i. Light furs, if becoming to the complexion

B) Stout Figure -

i. One material or color, used throughout the costume rather than breaking it up into separate parts.

ii. Soft yet not clinging fabrics with dull surfaces. Dull colors in large areas.

iii. Black, or very dark colors if the silhouette is good. if the outline of the figure is poor, use fairly dark colors to reduce size, but not so dark that they will call attention to the silhouette.

iv. An unbroken silhouette, if the figure is normal. Semi fitted, rather than tight effects in the dress as a whole but molded to the hips with some fullness below.

v. Transitional lines in the dress rather than extreme curves or angles, Vertical movement in the lines of the dress.

vi. A long diagonal line in the waist is excellent for a stout figure, provided the diagonal is not directed too far out toward the hips. Carried too far it will broaden the waist and hips.

vii. Panels of moderate width, Pleats, panels, etc., that starts above or below a point where the figure is large.

viii. Comparatively long skirts. Skirts that flare a little in center front with a straight silhouette.

ix. A normal waist line or slightly above or below it. No belt or narrow belt. Slim, long set-in sleeves. Normal armhole, or trifle higher if the shoulders are broad.

x. Simple neck lines, preferably long lines and long collars. Short jackets the same color as the skirt. Long coats and jackets. Hats of moderate size.

C) Long Waist and Slender Figure -

i. The effect of a slight blouse at the underarm seam.

ii. Long lines in the skirt.

D) Narrow Shoulders -

i. Padded or broadened shoulders.

ii. Broad lines in yokes, collars, and lapels.

iii. Armhole seams placed slightly out (or lower than normal)

E) Broad Shoulders -

i. Lengthwise pleats, folds, or tucks extending from the shoulders to the waist, placed somewhat toward the center line in order to narrow rather than broaden the figure.

ii. Hat with a relatively high crown and a fairly wide brim

F) Round Shoulders -

i. Set-in sleeves.

ii. The shoulder seam placed about one- half inch back of the normal shoulder line.

iii. Collars that will appear to straighten the curve of the back. Either have the collar long enough to hang loose from the neck to below the highest point of the curve, or have it short enough to fill in the space between the neck and the beginning of the curve.

G) Large Busts -

i. Panels or vests

ii. Silhouette built out at waist and hips if not already large.

iii. A yoke line, jewelry, or some other conspicuous line that stops above or below the bust line.

iv. Long flat collars

H) Flat Chest -

i. Full, soft collars.

ii. Fullness over the chest by means of tucking or shirring the material into the shoulder seam.

I) Large Hips -

i. Emphasis up and down the center front of the dress.

ii. Oblique lines from hem to waist that end slightly at one side of the center front.

iii. Narrow belt placed slightly below natural waist line.

iv. Average amount of fullness in the skirt.

v. The skirt flared slightly from the hips.

vi. The skirt blouse at the waist line.

J) Large Abdomen -

i. Waist slightly loosed

ii. Long, simple jabot of moderate fullness of reveres that end slightly below the waist line.

Coats that build out the sides of the figure.

K) Small Faces -

i. Hat that are rather small

ii. Trimmings that is rather fine in texture and in scale.

iii. A relatively small hair dress.

L) Large Faces -

i. Hats sufficiently large to from an adequate frame for the face.

ii. A hair dress of moderate size.

M) Square Face or Broad Faces -

i. Hat with an irregular line.

ii. Hair dressed rather high and with a soft, irregular line.

N) Round Face -

i. Collar or scarf worn close to the neck in back and with a long line in front.

ii. Necklines that give an oval effect.

iii. Hats with slightly irregular effects.

iv. Hats with lines that carry the eye upward.

v. Rouge placed rather high toward the nose and blended down.

vi. Hair worn in an irregular line.

vii. Ears covered unless neck is short.

viii. In that case leave the lower part of the ear exposed.

ix. Hair parted toward the side and arranged in an irregular line.

x. Hair dressed high.

O) Narrow Pointer Face -

i. Short necklaces.

ii. Hat with medium- sized brim.

iii. Hat with slightly drooping brim.

iv. Hair worn low on the forehead and in soft irregular lines.

v. Moderate size in hair dress.

vi. Hair worn back from the cheeks.

vii. Rough placed high out on the cheek bone and blended toward the nose and quit close to the hair.

P) Large Waist and Hips -

i. Built-out shoulders.

ii. The center of interest kept at the face and away from the waist and hips.

iii. Long skirts, in order to add height.

iv. Hats of average size or slightly larger.

Q) Short Waists -

i. Waist line dropped below the normal line, especially for people whose hips are low.

R) Long Necks -

i. Collars with high or medium roll.

ii. Round neck lines, especially those which fit closely to the base of the neck.

iii. Fluffy collars or fichus or furs.

iv. High close collars.

v. Scarfs.

vi. Short necklaces, especially bulky ones.

vii. Hair worn low at the neck.

viii. Hair worn over the ears.

In this way the different body proportions can be modified carefully selecting elements and principles of designing.

UNIT 3

LECTURE 40 TO 41

ELEMENTS AND PRINCIPLES OF DESIGN

1. Introduction - In creating a design one of the components which interact is the Art Elements. The elements and principles of design are flexible and should be interpreted within the context of current fashion. A design can be defined as an arrangement of lines, shape, colors and texture that create a visual image. The principles of design are the rates that govern how elements are combined. The elements are therefore the raw materials that must be combined successfully.
2. Elements of Design:

   A) Line - It provides the visual dimensions of length and width. When lines combine, space is enclosed and forms and shapes are defined. Lines offered a path of vision for the eyes when is wearing an object/outfit. E.g. Horizontal line, Vertical line, Oblique line, Diagonal line, Curved line etc.

Vertical lines produce an illusion of added height to the outfit design by adding and contrasting colored vertical bank in the center or a center panel added with vertical line gives an added height to the outfit. These lines end to make a short person look tall.

Horizontal line adds width to the garment and decrease the apparent height, for example a wide contrasting colored belt shortens the height of the figure by cutting the garment into two segments, however the belt has the effect of slimming the waist line, the colored will not shorten the height of the outfit as well as the wearer.

Diagonal lines can add or decrease the height of the wearer depending on their slope. Long uninterrupted diagonals tilting almost vertically are the most lengthening and most dramatic of all lines. Diagonal lines should be combined with vertical or horizontal lines. If they are used alone for the entire dress the effect will be disturbing.

Curve lines are more romantic and pensive by nature. Curved lines can be a full circle or may even appear almost straight. Curved lines are considered graceful and feminine; those in a diagonal direction are the most graceful and can be seen in the soft folds of material in a draped dress or a ruffled collar.

B) Form - It is an object having three dimensions like length, width and depth. The human body is a form and by viewing it analytically, its various perspectives are revealed. The human form changes visually with clothing, especially as fashion changes.

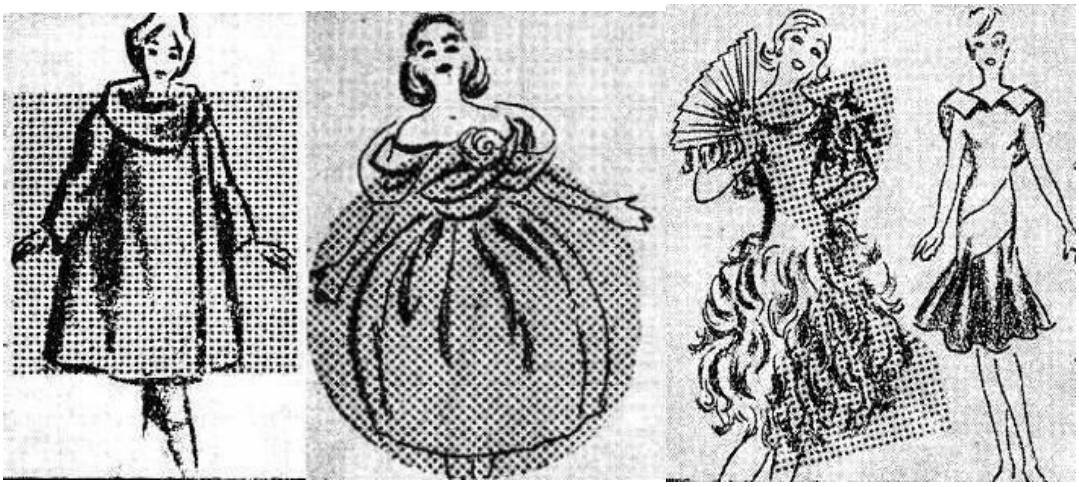
C) Shape - It describes the outer dimensions or contour of an object. Shape also encloses space and imparts a certain character to the object viewed. Through clothing design, the shape of the human body is often revealed in a natural way, but sometimes even distorted. The shape of clothing in a human body, communicates silently, the messages about the wearer. In dress designing there are seven basic shapes — each season adaptations of one or more of these predominates the fashion picture. They are as follows:


Rectangle


Triangle


Inverted Triangle


Oval



Square Round Hour Glass Combination

D) Space - It is generally considered to be the area seen between the shapes. Busy space in clothing becomes distractive and fatiguing to view where an interesting space may go unnoticed or appear monotonous.

E) Color and Texture - When we talk of principles of designing, or when we start off with a given design theme the first thing to occur to our minds is the co lour and texture of the fabric. while choosing a co lour one must be utmost careful as co lour creates the first impression and hence can glorify or destroy ones appearance. Even simple silhouette may be enhanced by using effective co lour schemes. As texture is the feel, drape and degree of stiffens and softness of the fabric, it also creates a visual effect upon the wearer, given a small swatch of fabric, the designer can visualize the texture and the fall of fabric which helps him to design further.

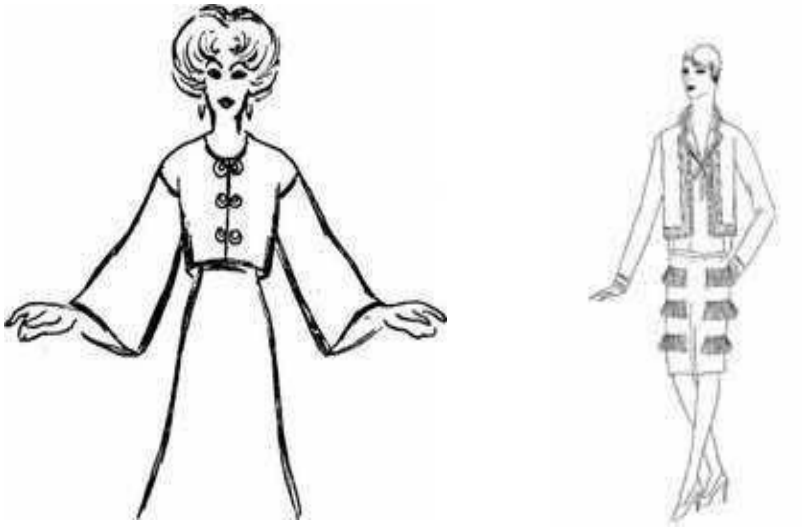
UNIT 3

LECTURE 40 TO 41

ELEMENTS AND PRINCIPLES OF DESIGN

1. Principles of Design - The principles of design are useful in creating different forms of expression in an artistic manner, which are pleasing and attractive to the eye. Following are the principles of designing:

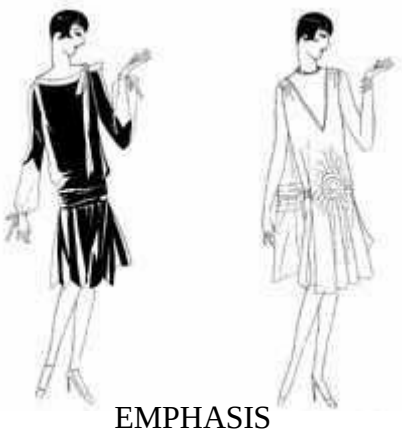
   A) Balance - In clothing balance refers to a visual attribution of weight, from a central area. Balance implies a sense of equilibrium. Pleasing balance brings about a satisfying relationship among all design parts to produce visual harmony. In clothing designs, three kinds of balance are observed.



FORMAL BALANCE

INFORMAL BALANCE

B) Emphasis - Emphasis involves the concentration of interest in the selected area of design with other center of interest subordinated. Emphasis as such, should not be placed at an area that one wishes to minimize attention drawn on. Designers often create emphasis partially though the careful arrangement of line, texture and colors. It could also be called as focal point. Each design needs some note of interest that catches the eye or attracts the attention on a specific area of the garment. Contrasting color for example could be used to emphasize an area. A black dress with white collar and cuffs will direct the eye to the face and hands. Some other examples are Grouping of design units, Using contrast of hues, by leading lines, A combination of any of the above, Repeating details such as tucks, gathers, button etc, Unusual shapes and textures, Applied design on a contrast background, etc.



EMPHASIS

C) Harmony - Harmony otherwise called unity. If the principle of proportion, balance, rhythm and emphasis are applied creatively, the resultant design is said to have the harmony. Unity means that all elements of the design work together to produce a successful visual effects. t is a result or an achievement which every designer should keep in mind while designing or drawing or arranging various elements or design for achieving/creating particular purpose of design.

D) Proportion - Relationship in size between a part and the whole is defined to as proposition. For way design, an artist or a designer should aim for a sense of order of unity or oneness among the principles of design. Proportion includes planning of the basic shape within a design. It may involve the scale of the forms within the design like diversion of space to create attractive space relationship where the variety of shapes, sizes and the general idea of unity of principles of designs are to be expressed.

E) Rhythm - Directs the movements of the eyes as one uses the details of a design. Therefore a rhythmic pattern needs to be established to give a costume unity. It is the repeated use of lines or shapes to create pattern. Uniform rhythm is the repetition of the same space and is known as the order lines of rhythm. In progressive or graduated rhythm the size of the unit increases or decreases as it is repeated. Unequal rhythm is an unequal use of space and this rhythm is an unequal use of space and this is called as un-orderliness of rhythm. In this type of rhythm the proportion are unbalanced; creating a larger space for enhancing the design and this finally calls in for expertise. This type of rhythm gives though provoking designs.

RHYTHM

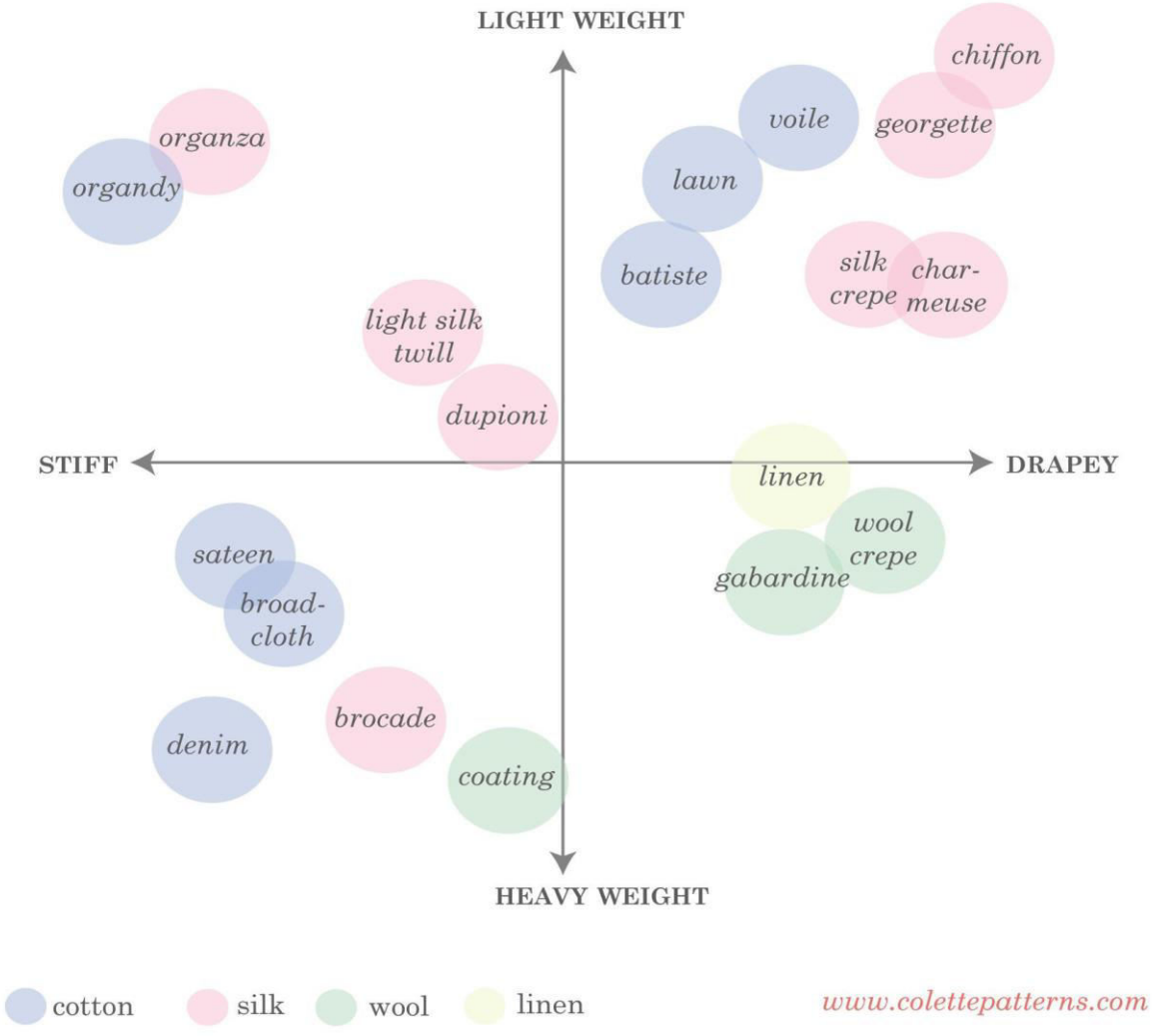
In this unit we clearly understood about principle of design. It covers the balancing of silhouettes. Here we saw three different types of balancing with figure for your clear understand. Through emphasis, how the designer uses the line, texture and color based on the season and interest. The unity (harmony) gives the idea to use of proportion, balance, rhythm and emphasis in creative applications. Even though we may have a good creative idea, we must know the scale and proportion of a figure and it was explained in this lesson through the topic of scale by planning, basic shape size and the method of division of spaces.

UNIT 3

LECTURE 43 TO 45

SELECTING FABRIC ON THE BASIS OF ITS DRAPE

1. Introduction - Fabric drape is one of the most important factors to consider when constructing a garment. Drape refers to how the fabric hangs or falls on the body. You can decide whether you want a dress to hug the body or hang away from the body. Drapability is term which indicates “how's fabric follow the body contour, when it comes in contact/ rest on body. High drapability of fabric provides better fit and body movement while lower drapability of fabric gives creases and unwanted fold.



The above chart gives a brief idea of relation of fabric weight and drape. Thus while selecting fabric care should be taken of drape of the fabric. The drape of a fabric is the way it flows over things. Stiff fabrics have less drape, and fluid fabrics have more. For selection of fabric it is important to decide on an appropriate amount of drape by deciding following points:

1. How much flow of fabric is required in the design – fluid, moderate or none?

   There are three main kinds of fabric drape:

   A) Fluid – chiffon, silk, viscose, crepe

   B) Medium Drape – most denim, many woven cottons

   C) Stiff – taffeta, coated denim, bengaline, organza

2. How much stiffness of fabric is required in the design – low, moderate or high?

3. What kind of aesthetic or look is required in the design – smooth, structural or body fit?

4. What kind of body type the wearer has – ectomorph, mesomorph or endomorph?

A) Ectomorph (skeletal)

B) Mesomorph (more muscular)

C) Endomorph (cushioned)

5. What is the end use of the garment – look, comfort, modification?
6. What age group does the garment belong – kids, adults or elders? As each age group has different needs.
7. What is the occasion to wear the garment – casual, formal or special occasion?
8. What feel and texture is required from the garment – rough, smooth, shiny?
9. Whether the garment is functional or aesthetic?
10. What GSM is required for the garment – low, medium or high?

UNIT 3: TOPIC – FASHION BUYER'S ROLE IN LINE DEVELOPMENT

1. INTRODUCTION - A line is a collection of new designs that buyer wants to sell in a coming season. This line is planned, designed, executed and distributed into the market under buyer's guidance. Thus, fashion buyer has an important role in line development. The buyer understands the market and invests its money in developing new product lines for coming seasons and hence its role is very crucial.
2. FASHION BUYER'S ROLE IN LINE DEVELOPMENT – To understand buyer's role in the step by step process of line development is required which is as follows:
    a. The whole process starts with buyer's BUYING PLAN. A buying plan is the guiding document in which buyer decides in advance that how many seasons will it sell products in to the market in a year. It also includes the detail of money that it will invest for development of line and other works for a year.
    b. Then for each season buyer develops a line and collection of fashion products. For this it will interact with different designers, travel to different fashion events, study forecasts, read fashion journals, news, interacts with market researchers to understand current and future trends.
    c. The buyer also interacts with different trims and accessories suppliers, manufacturers and closely follows current trends to understand future demands.
    d. The buyer closely researches on colors and design in current demand and also for coming seasons.
    e. The buyer then plans season wise prospective markets, customers and investment required.
    f. The buyer then starts executing on the above plan and finalises prospective designs season wise and then interacts with different manufacturers for sample development and tentative costing.
    g. The buyer also researches in advance the future demands and chances of product success and makes necessary changes in the line as per the feedback received from fashion pipeline or supply chain and old customers.
    h. The buyer also plans the mood and visual setting of stores in advance to set the tone among customers for coming seasons for the successful selling The buyer also finalises its budget..
    i. Then the buyer's merchants work on the plan and get the line ready with manufacturers and move products in to the stores as per the plan and schedule.

In this way line and collection are developed and introduced into the market. Thus we learn that buyer plays very important role in line development from start to end.

UNIT 4: TOPIC – DEFINITION AND UNDERSTANDING OF TREND BOARD

1. DEFINITION - Trend boards are visual presentation by designers for buyers of fashion industry in paper form or digital form created as a result of a research of the fashion market, fashion trends, and fashion forecasting. Fashion forecasting and fashion design studios offer trend board services. It sometimes also called as concept or presentation board.
2. UNDERSTANDING TREND BOARDS – To understand trend boards it is important to learn its applications as following:
    a. To present ideas include trend direction such as silhouettes, color direction, print design and pattern inspirations.
    b. To compare competitors brand silhouettes, print and patterns, embroideries, trimming techniques etc with new idea for new design development.
    c. To present as broad illustrations to understand current trend direction.
    d. To show the exact items that buyer plans to promote for the coming season as a *concept board.*
    e. To simply display concepts for color currently in trend.
    f. Creative artists use it to visually illustrate the style they wish to pursue as per the latest trend.
    g. To give different options to buyer for developing products for coming season.
    h. To impress buyers by the visual presentation to earn its confidence in design development with their company.
    i. To show the creativity of designers with respect to future course of line and collection development.
    j. To express various trends that can become successful in coming season.

UNIT 4: TOPIC – DEFINITION AND UNDERSTANDING OF MOOD BOARD

1. DEFINITION – Mood boards are collages made by designer by creatively arranging images, materials, texts and other design elements either on paper or digitally to express an overall style and its mood or theme. It is also called as theme board or story board.
2. UNDERSTANDING MOOD BOARDS – To understand mood boards it is important to learn its applications as following:
    a. To express the ideas regarding applications of products or designs in real world through visual presentation.
    b. To create a story regarding a product or design to present it to interested buyers to achieve new projects.
    c. It is an efficient tool to express visual ideas of designer effectively to others.
    d. A mood board acts as a starting point to start a project on new design development.
    e. A mood board help designer to create unique styles on particular themes as demanded by buyer or new project.
    f. It uses colors, images and textures to efficiently create story or image for a product's brand for target customers.

g. A mood board presents fashion styles in a manner that viewer can understand the possible timing and best possible locations for that design.
h. A mood board helps buyers to take decision regarding new design after viewing the theme and story related to designs through these boards.
i. A mood board is also a tool for designer to show multiple stories using different elements for similar styles.
j. A mood board also acts as a tool to show designers creativity and set the theme or story or mood in the eyes of viewer.

UNIT 4: TOPIC – DESIGN SPECIFICATION SHEET

1. DEFINITION – A design specification sheet commonly referred to as "Spec Sheet," is a technical document that consists of important details about a particular design or garment so that it can be manufactured correctly as per the specifications desired by buyer.
2. SPEC SHEET - The specification sheet consists following details related to a design:
    a. SKETCH - Front and backline drawing with the measurement details for the garment. Drawn by hand or computer.
    b. FABRIC DETAILS - Swatches, Product code, Fibre content and supplier details.
    c. MEASUREMENTS - The various size measurements of the required item. The important quality points that will be used to check that the measurements are correct on the finished garment.
    d. PRINT INSTRUCTIONS- Information regarding the type of print on the garment and its placement.
    e. EMBROIDERY INSTRUCTIONS - Information regarding the type of embroidery, its size and placement.
    f. STITCH INSTRUCTIONS - Details of stitch type, thread to be used, and stitch length.
    g. GARMENT WASHING INSTRUCTIONS - Details of wash finishes for items such as denim garments.
    h. ACCESSORIES INSTRUCTIONS - Trim details, fastenings required with product codes, fibre content and supplier details.
    i. LABEL INSTRUCTIONS - Placement details for brand logo labels and care labels.
    j. COMMENTS SECTION - Used by the factory to make a note of anything related to the construction of the garment.
3. USES – It has following important uses:
    a. It is used in sample development.

b. It is used in actual production of garments.
c. It is an important tool for quality department as it acts as reference.
d. It acts as a base for costing of garment.
e. It acts as a guide or blueprint during production process.
f. It is finalised by buyer in coordination with design development team before giving it to sampling or production department.
g. It is used by industrial engineering department to plan all the technical aspects of production.
h. It is used by PPC (Production, Planning and Control Department) for planning all the manufacturing steps.
i. It is also used by purchase and sourcing department to find necessary guidelines before sourcing all the trims and accessories for the design.
j. It is always updated with all the necessary comments and instructions so that the garments can be manufactured without any mistakes.

UNIT 4: TOPIC – QUALITY CONTROL TICKETS

1. DEFINITION – A quality control ticket is check document that ensures production of garments under required specifications and with in the control limit of tolerances. This ticket is marked by quality control department staff during inspection of garments at different stages of production. Thus, it is an important tool of quality control.
2. QC TICKET – The quality control ticket gives following information:
    a. It shows the status of quality of the part or products i.e. pass, fail or require alteration.
    b. It shows the type and detail of quality defect if found during inspection.
    c. It shows the cut number, style number, line number and part details in order to trace the production path.
    d. It shows inspection station and quality checker details.
3. USES – The quality control ticket is very useful document or tool in quality control system due to following uses –
    a. The record of quality control tickets gives a detail analysis of types of defects and its frequency in production so that improvements can be done.
    b. The quality control tickets help to identify those workstations where defects are occurring to control and improve the quality.

c. The quality control tickets help to find out any carelessness if done at quality checking level also.
d. The quality control ticket also gives idea of those lines where quality production is going on smoothly as well as those also where quality work is poor. It helps production team to take corrective action.
e. The quality control tickets ensure the effective implementation of quality control system.
f. On the basis of quality control tickets daily reports related to quality department are also generated for close monitoring of quality department performance.
g. Quality control ticket helps to earn buyer's trust of quality production.
h. Quality control ticket avoids packing of any faulty garments by mistake.
i. Quality control ticket helps to segregate faulty, altered and pass pieces easily.
j. Quality control ticket helps to identify skilled operators who do quality work from those unskilled operators who do not follow quality instructions.

UNIT 4: TOPIC – CUTTING TICKET

1. DEFINITION – Cutting ticket is an important document of cutting department in production. It gives all the necessary information about cut patterns so that it can be planned, managed and transported to stitching section without any mistake for further production. Cutting ticket controls the planning, management and coordination in cutting department.
2. CUTTING TICKET – The cutting ticket gives following information:
    a. Cut number/ layer number
    b. Style number
    c. Lot number
    d. Size detail
    e. Fit detail
    f. Shrinkage detail/ Fabric lot detail
    g. Size set detail
    h. Plies detail
3. USES – The cutting ticket is very useful document or tool in cutting department due to following uses –
    a. It helps to trace any lot of cutting of any style in factory.
    b. It helps to trace the fabric roll detail for any cut or lot.
    c. It helps to trace the total number of patterns or bundles of a cut.

d. It helps to plan and manage cutting and smooth supply to stitching department.
e. It helps to plan and manage size wise cutting for completing orders in each size as desired by buyer.
f. It helps to plan and manage style wise cutting and ensures smooth supply of cut patterns in each style as per the production plan.
g. It gives idea of production in cutting department and to manage it as per the need according to the plan.
h. It helps to trace the shrinkage and fabric consumption for different styles in a factory.
i. It helps in coordination with CAD department to plan marker planning, plotting and issuing on a routine basis.
j. It helps in inter department movement, storing and planning of cut patterns for efficient working of cutting department.

UNIT 4: TOPIC – LABOUR WORKSHEET

1. DEFINITION – Labour worksheet is a document that reflects the bio data, skills, performance and other relevant record of labour in an industry unit. It acts as a basis of labour categorisation into highly skilled, skilled, semi-skilled, unskilled or helper as per the skills shown by him/her over a period of time.
2. LABOUR WORKSHEET – The labour worksheet gives following information:
    a. Bio data reflecting name, age, gender, etc.
    b. Skills possessed by labour relevant to the industry like stitching, helping, recording, cutting, finishing, etc.
    c. Machines that the labour can handle or function smoothly.
    d. Operations detail performed by the labour like attaching yoke, pocket setting, collar turning, label sorting, pressing, etc.
    e. Targets set by the department to the labour and the actual output achieved by the labour.
    f. Labour's attitude towards quality. Defects record of the labour.
    g. Difficulty level of work carried out by the labour i.e. hard, moderate or easy.
    h. Labour's attitude towards precaution and safety measures i.e. cautious, careful or negligent.
    i. Labour's attitude towards others.

3. USES – The labour worksheet is very useful document or tool in production department due to following uses –
    a. It helps to categorise labour on different skill levels.
    b. It helps to set the wages of labour as per their performance.
    c. It helps supervisors to set new line of production and setting workstations as per the labour's skill and output.
    d. It helps to select, promote and motivate labour having positive attitude for quality, production and work.
    e. It helps to take decisions regarding labour utilisation as per their performance and output.
    f. It helps to develop skill pool in an industry unit.
    g. It helps to sort out labour grievances that may arise from time to time.
    h. It helps to plan in advance for new styles as per available skill and performance data.
    i. It helps to find out direct labour costs of industrial unit as per the current performance and skill data.
    j. It helps to improve production efficiency of industrial unit by working on skill, performance and behaviour improvement of labour.

UNIT 4: TOPIC – MEASUREMENT SHEET

1. DEFINITION – Measurement sheet is an important document for pattern making, CAD, production as well as quality department as it acts as basis of pattern making, marker making, grading, production screening and quality control.

   It includes all the relevant information related to all kind of measurement related to a garment style. It is provided by buyer to production unit alongwith spec sheet.

   It is a detailed, differentiated and step by step representation of measurements required at different levels of production of garment alongwith the allowed limits of deviations or tolerances.

2. MEASUREMENT SHEET – The measurement sheet gives following information:

   a. Measurement of cut patterns size wise as well as fit wise with tolerances
   b. Measurement of stitched or sewed parts size wise as well as fit wise during sewing with tolerances
   c. Measurement of ready pattern size wise as well as fit wise during assembling with tolerances
   d. Measurement of placing, positioning different trims like labels, pockets, buttons, etc
   e. Measurement of size, placement for prints

f. Measurement of size, placement for embroideries
g. Measurements of finished garment (after washing) size wise as well as fit wise with tolerances
h. Style number
i. Buyer details
j. Any special comments or requirements from measurement.
k. Crucial measurement points like crotch, waist highlighted or bolded

3. USES – The measurement sheet is very useful document or tool in production department due to following uses –
   a. It helps in pattern making during earlier sampling.
   b. It helps in pattern making, grading and marker planning in CAD.
   c. It helps in checking cut patterns.
   d. It helps in checking stitched and sewn patterns in stitching.
   e. It helps in checking assembled garments in stitching.
   f. It helps in checking correct placement of trims and accessories.
   g. It helps in checking correct placement and size of prints.
   h. It helps in checking correct placement and size of embroideries.
   i. It helps in finally inspecting finished garment as per the specifications desired by buyer before packing.
   j. It helps to meet buyer's specification throughout the production process to produce quality garments.

k. It helps to keep all the measurements within the tolerance limits of buyer.

l. It helps to achieve best quality by focussing on crucial measurement points more sincerely.

UNIT 4: TOPIC – ASSEMBLY DIAGRAM SHEET

1. DEFINITION – Assembly diagram sheet is a supportive document for line supervisor prepared by industrial engineering department showing step by step flow of operations required to sew a style of garment alongwith all the technical information like type of machine, number of machines, target, skill level required, work aid required, etc for a successful line setting.
2. ASSEMBLY DIAGRAM SHEET – The assembly diagram sheet gives following information:
    a. Total number of workstations required
    b. Type of sewing machine required
    c. Type of helping operation required
    d. Target of each workstation
    e. Work-aid or attachment required at each workstation
    f. Flow of work i.e. step by step operations
    g. Skill level required at each workstation
    h. Summary of machines required
    i. Summary of man power required (skill wise)
    j. Placement of inspection points or QC points
    k. Movement of work
    l. Critical operations marking
    m. Style number and description

n. Buyer's Detail

3. USES – The assembly diagram sheet is very useful document or tool in production department due to following uses –

    a. It helps line supervisor to set line for new style
    b. It helps to distribute manpower as per skill require for each workstation
    c. It helps maintenance in charge to plan sewing machines as per the summary of machine provided alongwith work-aids and attachments.
    d. It helps floor in charge to plan manpower as per the skill set required in the assembly line diagram.
    e. It helps line supervisor to identify and take extra care of critical operations for smooth production.
    f. It helps line supervisor to check each and every workstation's performance as per the target given to achieve desired efficiency.
    g. It helps quality department to establish and function quality check points during production.
    h. It gives a basis to check, improve and achieve desired efficiency of production by close coordination between operators, line supervisor, and industrial engineering department.
    i. It gives quality output by close coordination among line supervisor; line QC, floor in charge and production manager.

j. It acts as a basis to plan, manage and improve production process and avoid bottlenecks by following engineered flow of production which is improved time to time by industrial engineering department.