KUMARAGURU
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B.TECH DEGREE EXAMINATIONS: APRIL/MAY 2024

(Regulation 2018)

Sixth Semester

FASHION TECHNOLOGY

U18FTT6001: Apparel Production Planning and Control

COURSE OUTCOMES

CO1: Explain the basic techniques of production planning & control in garment industry.

CO2: Choose production system for apparel industry based on style and quantity of merchandise.

CO3: Prepare and analyze the flow process grids, control forms and scheduling charts for production control in apparel industry.

CO4: Decide the suitable cut production analysis for various garment quantities.

CO5: Determine the capacity planning and line balancing techniques to achieve balanced production.

CO6: Update modern tools and methods of production planning and control.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

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1. Infer the types of material details present in Bill of material (BOM).	CO1	[K2]
2. Brief about the activities carried out in pre -production planning.	CO1	[K2]
3. Outline the characteristic features of make through production system.	CO2	[K2]
4. Predict the use of production grid for scheduling activities.	CO3	[K3]
5. Identify the difference between planning and scheduling.	CO3	[K2]
6. The marker length is 240cm, the fabric spread length is 245cm. The number of fabric plies / spread for the lay is 20. The fabric width is 120cm. And the selvedge allowance is 4.0cm for both edges of single ply. Calculate the fabric edge loss for 20 fabric plies.	CO4	[K4]
7. Conclude the right spreading technique with direction of spread for the fabric shown in figure 1.	CO4	[K3]
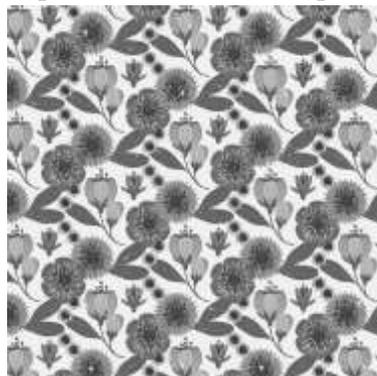
Figure 1

8. Calculate the capacity of the line per day, which has an output rate of 0.5 garment per minute, 480 minutes per day at 80% efficiency and operator absenteeism of 10%. CO5 [K4]

9. Infer the pre-requisite check points followed before loading a style in a sewing line. CO5 [K2]

10. Write a short note on the use of barcodes for cut part bundles in a production system. CO6 [K2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11. a) Explain product life cycle with neat illustration for fashion products and FAD products. Discuss the four stages of Product life cycle management. 8 CO1 [K2]

    b) Discuss the relevance of proto sample, Pre-production sample and size set sample. 8 CO1 [K2]

12. a) Choose the right folder, seam class and stitch type for the following seam cross sections shown in the table below. 8 CO2 [KL]
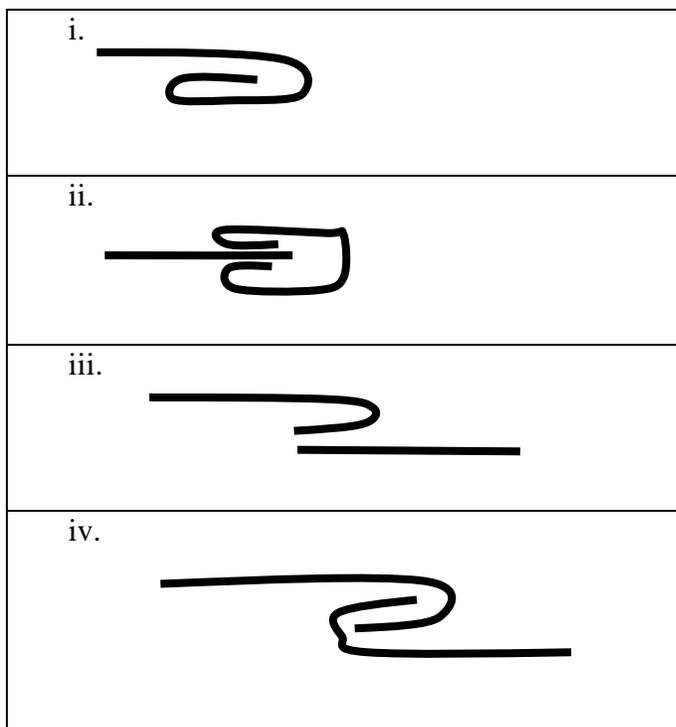
    b) Compare the features of progressive bundle production system, module production system and unit production system with reference to movement time between operations, storage time and order quantity size. 8 CO2 [KL]

13. a) Calculate the activity time using PERT for the following project activities. Arrange the six activities in sequential order starting from the first activity of batch setting to the last activity of batch setting. 8 CO3 [K4]

Activity	Optimistic time, min	Pessimistic time. Min	Most likely time. min
Machine arrangement	6	12	9
Study operator skill	9	15	12
Set the folders	6	18	9
Load cut parts in the Line	18	36	30
Assign operators	9	15	12
Study operator Availability	36	42	36

b) Day 1 to day 1.5 – fabric issued to cutting, Day 1.5 to day 5 – fabric spreading & cutting, Day 3 to Day 6 – cut parts bundling, Day 6 to 6.5 – bundled cut parts loaded to sewing, Day 7 to day 8 – first day sewing batch setting. Day 8 to day 12 – Total number of 2000 garments completed. Assume 400 pieces are produced between day 8 and day 9. And the remaining 1600 pieces are produced between day 9 and day 12.
Calculate the lead time for completing the sewing of 1000 pieces. Prepare a Gantt chart for the activities mentioned above.   8   CO3   [K4]

14. a) Prepare the cut order planning for the given order quantity and suggest the total number of lays to be cut from cost saving perspective.
Maximum no of garments marked per lay – 4, Maximum No of plies per lay – 70, lay length – 4m.
Order quantity – 350 pieces in S size, 700 pieces in M size, 1400 pieces in L size 700 pieces in XL size and 210 pieces in XXL size.   8   CO4   [K4]

b) Resolve the different types of fabric packages and suggest the right spreading modes for each package type.   8   CO4   [K4]

15.	a)	Operators	Overlock machines	Chain stitch machine	Lock stitch machine	8	CO5	[K4]
		Ramabhadra	100	100				
		Susan		90	100			
		Julie	80		100			
		Jahana		80	100			
		Kajol	100		125			
		Jaswinder Singh	120					

There are around 5 operations in a garment.
Garment output at Operation 1 (overlock edges) -2.0 garment/min,
Garment output at Operation 2 (overlock stitch) – 2.5 garment/min,
Garment output at Operation 3 (lock stitch)– 1.8 garment/min,
Garment output at Operation 4 (feed of arm chain stitch)– 1.5 garment/min and
Garment output at Operation 5 (Lock stitch) – 2min. Calculate the target output per minute (pitch time) for line balancing and Assign the operators to achieve the target output.

b) Calculate the capacity of 3 lines from the following parameters and Pitch time – 1.5 garment per min, No of working days = 26 in a month, Working minutes per day = 400min, Zero absenteeism percentage. Line 1 efficiency = 60%, line 2 efficiency = 70%, line 3 efficiency = 80%.
Suggest how many lines and which lines are needed for completing an order quantity of 21,000 pieces in a month in 24 days.   8   CO5   [K3]

16. a) Choose a suitable tracking system for unit production system and explain its system architecture for data flow management.   8   CO6   [K2]

b) Classify the three types of bundling followed in garment industry and justify whether it is possible to implement barcode tracking in item bundling.   8   CO6   [K2]

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