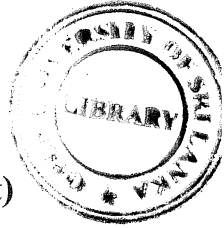




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The Open University of Sri Lanka

Department of Textile and Apparel Technology

Diploma in Industrial Studies (Apparel Production and Management)

Final Examination-2007/2008

TTI3241-Production Planning and Organisation

Duration- 3 Hours

Date:25th April 2008

Time:0930-1230hrs

Total number of questions:08

Answer **question 1**, which is **compulsory**, and additional **five (05)** questions.

Question 1 carries twenty five (25) marks and question 02 to 08 carry fifteen (15) marks each.

- Q1.** (a) Name four (04) major processes of the process of developing a product and give the components for each of these major processes. (6 marks)
- (b) Differentiate the two terms “cut to order” and “cut to stock” related to garment manufacturing. (4 marks)
- (c) What do you mean by “cut order planning” and name four (04) different variables affected on this process. (4 marks)
- (d) Name four (04) classes of “spread on open” method used in laying fabrics indicating the spreading direction for each class. (3 marks)
- (e) Give two (02) main purposes of carrying out a work study in a garment factory. (2 marks)
- (f) Give four personal factors affecting on the productivity of a garment factory. (2 marks)
- (g) What do you mean by the terms “work in progress” and “through put time” of a garment factory? (4 marks)
- Q2.** (a) Describe the nature of a fashion cycle with elaborating the art of changing the popularity, price and profit of a product. (9 marks)
- (b) What do you understand by following types of samples and explain the objectives and purposes of using them in garment manufacturing.
- (i) Fit approval sample
- (ii) Reference sample
- (iii) Offer sample (6 marks)

Q3. (a) Explain the influences of following constraints on marker planning by giving two (02) examples for each.

- (i) Nature of the fabric and desired characteristics of finished product
- (ii) Requirements of quality in cutting (6 marks)

(b) How do you use following factors to improve the marker efficiency?

- (i) Number of sizes in a marker
- (ii) Pattern engineering process
- (iii) Width of the fabrics (9 marks)

Q4. A time study gives following information.

Operation	Observed rating	Observed time (min)
1. Open the bundle	90	0.25
2. Sort out parts	90	0.17
3. Sew center back seam	100	1.25
4. Sew 1 st underarm seam	100	0.65
5. Sew 2 nd underarm seam	95	0.7
6. Sew 1 st side seam	100	0.63
7. Sew 2 nd side seam	85	0.65
8. Close the bundle and complete the ticket	90	0.50

Bundle size =6

Relation allowance =12% and

Machine attention allowance =5%

(a) Calculate the standard minute value (SMV) per garment by considering the frequencies of doing each operation. (12 marks)

(b) Estimate the production of the line (working with 85% efficiency) for a 6 hours shift. (3 marks)

Q5. (a) Assume that you are a sewing room in charge of a garment factory. Briefly explain four (04) steps that you suggest to improve the productivity of the sewing room. (6 marks)

(b) After productivity growth of the garment factory, what benefits can be gained by following parties?

- (i) Customer
- (ii) Employee
- (iii) Company (9marks)

Q6. ABC garment factory has received following orders.

Contract	Number of garments	SMV per garment	Weeks Due
A	10,000	15	3
B	15,000	20	2
C	4,000	15	2
D	8,000	20	5
E	8,000	25	6

The factory has a weekly capacity of 100,000 standard minutes. There are 50 operators organized as two (02) lines. Factory works for 5 days per week.

- (i) Calculate the load of each contract. (5 marks)
 (ii) Draw up a Gantt chart for the activities of both lines, commencing from week 1. (10 marks)

Q7. Following order has been received to a cutting room for lay planning.

Colour \ Size	12	14	16	18
Red	200	320	440	240
Blue	200	320	440	240

Total number of garments required: 2400

The constraints on lay dimensions are:

Maximum cutting height=200 plies

Maximum ply length=3 garments marked

Single garment marker lengths are as follows

Size 12=1.61m; Size 14=1.72m; Size 16=1.91m; Size 18=2.02m

Multi-size marker saving:

for two sizes=2% and for three sizes=3%

End allowance = 4cm per ply

- (a) Give your cut order plan for the minimum number of lays. (10 marks)
 (b) Calculate the fabric length requirement from each colour. (5 marks)



Q8. A production line includes following operations and standard minute values (SMV) are given below.

Operation	Machine required	SMV
1. Make sleeves	Lock stitch machine	2.33
2. Close darts & sleeves	Lock stitch machine	4.50
3. Under-press	Iron	2.20
4. Sew on Collar	Lock stitch machine	2.25
5. Sew in sleeves	Lock stitch machine	1.55
6. Hem	Lock stitch machine	1.75
7. Press off	Iron	3.25

- (i) How many work places would be required at each operation to make 180 garments a day? Assume standard performance and a working day of 450 minutes.
- (ii) How many operators would be staffed the line?
- (iii) Which operations would you amalgamate to achieve an acceptable balance?
- (iv) Calculate the balancing loss and determine the balancing states of the line.
- (v) If the group produced 165 garments in a day, what would be the performance of the line?

(15 marks)