



THE OPEN UNIVERSITY OF SRILANKA
DEPARTMENT OF TEXTILE AND APPAREL TECHNOLOGY
BACHELOR OF TECHNOLOGY HONOURS IN ENGINEERING/
BACHELOR OF INDUSTRIAL STUDIES HONOURS
FINAL EXAMINATION – 2015 / 2016
TTI3241-PRODUCTION PLANNING AND ORGANISATION
DURATION- 03 HOURS

Date: 15th November 2016

Time: 1330 – 1630hours

Total number of questions: 08.

Answer **06 questions including question 01**, which is **compulsory**.

Question 1 carries twenty five (25) marks and question 02 to 08 carry fifteen (15) marks each. In all the calculations roundup to **two (02) decimals**.

Compulsory Question

- (Q1) (a) Draw and briefly explain the fashion cycle and mark important phases. (04 marks)
(b) Briefly explain the process of “Origin of styles” included in the product development process. (03 marks)
(c) Briefly explain the purposes of preparing cut order plan. (03 marks)
(d) Briefly explain the importance of producing Approval sample garments. (03 marks)
(e) State four (04) advantages of computerized marker making process. (02 marks)
(f) List down the six (06) basic steps of performing a method study. (03 marks)
(g) Draw and name four (04) classes of spread on open method. (04 marks)
(h) List out six (06) requirements of fabric spreading. (03 marks)

Select any (05) questions from Q2 to Q8

- (Q2) With giving suitable examples explain the three (03) main constraints possible to face by a marker planner. When answering you may consider major factors under each constraint. (15 marks)
- (Q3) (a) State two (02) main purposes of carrying out work-study in a workplace. (04 marks)
(b) Explain the need of work-study in a workplace giving suitable examples. (05 marks)
(c) Explain the objectives of method study giving suitable examples. (06 marks)

- (Q4) ABC garment factory carryout a time study for a particular line and found following information show in table given below.

S.No.	Element	Observed Rating	Observed Time, min	Frequency
1.	Obtain and sort bundle	100	0.18	1/10
2.	Position breast pocket	85	0.15	1
3.	Sew to attach pocket	110	1.12	1
4.	Cut threads and reposition	95	0.10	1
5.	Pick up and position pocket	90	0.20	1
6.	Sew to attach flap	105	0.95	1
7.	Cut threads and aside garment	90	0.08	1
8.	Close bundle and write ticket	90	0.22	1/10

(BSI 100 rating used)

10% machine attention allowance is applied for machine elements and 12% relaxation allowance is applied for basic time added machine attention allowance.

- (a) Calculate the standard minute value for one garment. (13 marks)
- (b) If the average line efficiency is 95%, how many garments would be expected to complete in this line within an 8 hours working shift? (02 marks)
- (Q5) (a) Explain how productivity improvements benefit customer, employee and the employer? (06 marks)
- (b) Giving suitable examples explain how personal factors affect productivity? (09 marks)

- (Q6) A garment factory has received a contract orders to be completed within given due weeks as given in table given below.

Factory has three (3) production lines in similar capacity.

Factory works for 5 days per week.

Total weekly capacity of these 3 lines is 300,000 SMV.

Factory top management has instructed to reduce style changeover time per line, so that each contract must be completed within the same line.

Contract	Order Quantity (garments)	SMV (production) per garment	Week due
A	20000	18	4
B	48000	10	5
C	24000	5	6
D	8000	15	6
E	20000	19	4
F	22000	10	6
G	15000	8	5

Draw a Gantt chart to complete all the contracts on or before the due week.

(15 marks)

- (Q7) An order has received to a cutting section of a garment factory from four (04) sizes of three (03) colours. The quantities to be cut and the single garment marker lengths are given in the table given below.

Colour	No. of garments to be cut in different sizes			
	Size 12	Size 14	Size 16	Size 18
White	250	200	100	50
Red	200	250	50	100
Blue	150	150	50	50
Single garment marker length (m)	2.1	2.3	2.5	2.8

The constraints on lay dimensions are:

Maximum cutting height	= 200 plies
Maximum ply length	= 4 garments marked
End allowance per ply	= 5cm
Fabric saving for multi size marker	= 2%
Cost of fabric per meter White colour fabric	= Rs.350/=
Cost of fabric per meter Red colour fabric	= Rs.360/=

Cost of fabric per meter Blue colour fabric = Rs.355/=

- (a) Prepare an economic cut order plan with minimum number of lays and markers. (09 marks)
- (b) Calculate the material requirement of each colour. (04 marks)
- (c) Calculate the total cost of material required to complete the order. (02 marks)

(Q8) A garment factory scheduled to produce 1500 garments per 8 hours shift in a production line. A breakdown of operations is given in the table below. Assume the efficiency of the production line is 100%.

Operation no.	Operations	Machine	SMV per garment
1	Mark neck ,trim & run stitch	SNLS	0.91
2	Join shoulder	SNLS	0.58
3	Insert neck trim	SNLS	0.88
4	Serge margin	4TOL	0.24
5	Top stitch on neck trim	3TFL	0.40
6	Bind shoulder to shoulder	DNCS	0.82
7	Attach sleeves	4TOL	1.02
8	Sew side seams with labels	4TOL	1.25
9	Sew sleeve hem	DNCS	0.94
10	Sew bottom hem	DNCS	0.46

- (a) Determine the number of workplaces and number of operators that would be required to balance the line. (12 marks)
- (b) Calculate the balancing loss and comment whether it is well balanced or not. (03 marks)