

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology



Study Programme	: Bachelor of Science Honours in Engineering/Bachelor of Industrial Studies Honours
Name of the Examination	: Final Examination
Course Code and Title	: TAX4438- Production Planning and Organization
Academic Year	: 2024/25
Date	: 7 th February 2026
Time	: 1330-1630h
Duration	: 3 hours

General instructions

1. Read all instructions carefully before answering the questions.
 2. This question paper consists of **Eight (8)** questions in **Four (4)** pages.
 3. Write down your Index Number in all the pages of the answer script.
 4. Answer the question one (Q1), which is compulsory and five (05) more questions from Q2 to Q8. Question one (Q1) carries twenty-five (25) marks and Question two (Q2) to eight (Q8) carry fifteen (15) marks each.
 5. Answer to each question should commence from a new page. If a question has many parts, all the parts should be answered in the chronological order under the same question.
 6. Write down the answered question numbers in the space given in the answer book.
 7. Answers should be in clear handwriting.
 8. Do not use red colour pens to write the answers.
 9. This is a Closed Book Test (CBT).
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Compulsory Question

- (1) (a) Mention two (02) disadvantages of direct buying. (02 Marks)
- (b) State key difference between shipment samples and other types of garment samples. (01 Mark)
- (c) Name the three (03) types of multi-size markers used in garment production. (03 Marks)

- (d) What do you understand by "Kaizen system"? (03 Marks)
- (e) What is the purpose of maintaining correct ply tension during spreading? (02 Marks)
- (f) Name three (03) types of fabric lays during spreading. (03 Marks)
- (g) What is the purpose of doing work study in a garment factory. (01 Marks)
- (h) Apart from the basic time, mention three (03) allowances that are considered for operators when calculating SMV. (03 Marks)
- (i) What is PMTS? Write two (02) advantages of using PMTS. (03 Marks)
- (j) Mention four (04) methods to that can be used to reduce balancing Loss in production line. (04 Marks)

Answer any five (05) questions from the following seven (07) questions

- (2) (a) Explain the process "Attaining commercial products" in garment product development. (05 Marks)
- (b) Briefly explain five (05) factors which commonly affect the marker efficiency. (10 Marks)
- (3) (a) Explain the components that a style must satisfy to become a fashion. (03 Marks)
- (b) List down any six (06) advantages of computer-assisted marker making in garment production over manual marker making. (06 Marks)
- (c) Explain how the nature of fabric and desired garment appearance influence marker planning. (06 Marks)

- (4) A time study gives the following information in relation to a production line.

No	Operation	Observed Rating	Observed Time(min)	Occurrence
1	Open and sort the bundle	90	0.30	1/10
2	Attach sleeves	85	0.25	1/1
3	Close side seam	92	0.22	1/1
4	Bottom hem stitching	85	0.35	1/1
5	Thread trimming	90	0.12	1/1
6	Close bundle and complete ticket	90	0.10	1/10

- (a) If the bundle size is 10 and has a machine attention allowance of 10% and relaxation allowance of 8%, calculate the standard minute value (SMV) for a garment. Standard Rating is 100. (12 Marks)
- (b) If a garment production line operates for a 9-hour shift and the output is 450 garments. Calculate the efficiency of the production line. (03 Marks)
- (5) (a) What is meant by "Motion Study" and how does it help to improve productivity in a production line? (04 Marks)
- (b) Who is called a "Standard operator" in work study? (03 Marks)
- (c) Briefly explain how proper operational breakdown improves productivity in the sewing room. (08 Marks)
- (6) ABC factory works 5 days per week and has weekly capacity of 60,000 standard minutes. There are 30 operators organized in three (03) lines. Factory has received following orders.

Contract	No of garments	SMV per garment	Week due
A	3000	20	4
B	2000	10	1
C	4000	10	4
D	3600	20	4
E	3600	10	2

- (a) Calculate the load for each contract. (05 Marks)
- (b) Prepare the Gantt chart for the calculated workload. (10 Marks)

- (7) An order has been received to the cutting department of a garment factory with below given details.

Colour/size	12	14	16	18
Red	150	150	50	50
Yellow	100	300	100	100
Green	250	50	50	250
Single garment marker length (in meters)	1.8	2	2.2	2.4

Maximum number of plies per spread = 100

Maximum lay length = 4 garments

End allowance = 3 cm per ply

Cost of fabric = 100 rupees per meter

Cloth saving on a multi size marker = 5%

- (a) Using above data, prepare the most economical cut order plan for the order. (11 Marks)
- (b) Calculate the total cost of material required for above order. (04 Marks)
- (8) A garment production line has to perform the following operations and their standard minute values are given below.

Operation no.	Operations	Machine	SMV per garment
1	Make sleeve	SNLS	1.7
2	Join shoulder	4TOL	1.4
3	Sew neck trim	SNLS	3.2
4	Under press	Iron	1.2
5	Top stitch neck trim	3TOL	1.3
6	Sew side seam	SNOL	7
7	Attach the label	4TOL	4.1
8	Press off	Iron	4.2

- (a) Calculate the number of workplaces required for each operation. Assume that the daily target of the production line is 150 garments. The length of working day is 480 minutes. (12 Marks)
- (c) Calculate the balancing loss and give comments on your answer. (03 Marks)

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