THE OPEN UNIVERSITY OF SRI LANKA

DIPLOMA IN INDUSTRIAL STUDIES

FINAL EXAMINATION – 2006/2007

TTI3241 – PRODUCTION PLANNING AND ORGANISATION

058

DURATION - THREE HOURS

DATE: 05th April 2007 TIME: 0930 – 1230 Hours

Answer Question 01, which is compulsory and additional five (05) questions. Question 1 carries twenty-five marks and Questions 2 to 9 carry fifteen (15) marks each.

Question 01

(a) What are the five stages of fashion life cycle? **(03 marks)**

(b) List five types of sample garments with reference to the garment industry. **(03 marks)**

(c) What are the pre-production operations involved in cut order planning? **(02 marks)**

(d) In order to obtain a good lay there are certain requirements of spreading. List five of them. **(02 marks)**

(e) Explain the following terms with reference to laying.
Lay length , Usable width and **Cutting loss** **(03 marks)**

(f) State five variables which affect the cut order planning. **(03 marks)**

(g) List down the six basic steps in the procedure of the Method Study. **(02 marks)**

(h) For calculating Basic Time in work study, we use the following equation.

$$Basic\ Time = \frac{a \times b}{c}$$

What do a,b and c represent? **(02 marks)**

(i) State the meaning of the following terms.
Seiri, Seiton , Seiso **(03 marks)**

(j) State two advantages of Standard Data. **(02 marks)**

Question 02

(a) Define the term "Marker". **(03marks)**

(b) What are the strategies that you can use to increase the marker efficiency? **(06marks)**

(c) What advantages can be gained by using computerised marker making system over a manual method? **(06marks)**

Question 03

(a) "In the industrial situation the purpose of Work Study is to provide management with information to make decisions".
Explain at least five purposes or decisions gained by Work Study. **(05marks)**

(b) A Time Study gives the following information: (BSI Standard = 100)

S.No.	Element	Observed Rating	Observed Time, min
1	Pick up and sort bundle	0.10	90
2	Position zip	0.15	70
3	Sew first side of zip	0.47	80
4	Reposition	0.07	100
5	Sew second side of zip	0.52	80
6	Dispose of garment	0.06	90
7	Dispose of bundle, take ticket	0.15	100

7.5% Allowance on machine elements for machine delay.
10% Relaxation allowances on all elements.
Average bundle size is 6.
Calculate the Standard Time value for one garment, based on this data.
How many garments are expected to produce by this operator in one hour.
Explain any assumptions. **(10marks)**

Question 4

(a) Define the term "Activity Sampling" **(07marks)**

(b) Explain the advantages and disadvantages of activity sampling. **(08marks)**

Question 5

(a) What is productivity? How does productivity growth benefits the company, employee and the customer? **(10marks)**

(b) Give any five suggestions to improve the productivity of a sewing room. **(05marks)**

Question 6

(a) Define the two terms "Work in Progress" and "Through Put Time".

(06marks)

(b) A Taylor operates a small apparel contract sewing business that employs 10 operators who work seven hours a day. The plant has a 90% efficiency level. A customer brought in an order for 6,000 units of style A that needs to be finished in a 10 days. The plant has a committed capacity of 300 hours for the 10 day period. Style A has a production time of 5 SMVs.

(i) What is the potential capacity of the plant for the ten working days?
(ii) What is the required capacity for the order?
(iii) What is the available capacity in the specified time frame?

(09marks)

Question 7

Draw up a Gantt Chart for planning of following work load in a garment factory.

Contract	Number of garments	SMV per garment	Week due
A	5000	10	5
B	5000	20	5
C	4000	15	5
D	10,000	10	9
E	12,000	5	8
F	3000	10	9
G	2000	10	5

The factory has a weekly capacity of 50,000 SMV. There are 60 operators, organised as two lines and the factory works 5 days per week.

(15marks)

Question 8

ABC garment factory has received following order for planning. The sizes are small(S), Medium(M), Large(L) and Extra large (XL). Three colours are to be cut namely yellow, white and red. The quantities are to be cut shown in the table.

Size/Colour	S	M	L	XL
Yellow	200	400	400	200
White	100	100	200	200
Red	100	300	300	200

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 S = 1.52 m , Size M = 1.62 m
Size L = 1.72 m, Size XL = 2.02m

Multi size marker saving : For two sizes 2 %
For three sizes 3 %
End allowance = 4cm per ply

(i) Give a cut order plan for the minimum number of lays. **(08marks)**
(ii) Calculate the fabric length requirement from each colour. **(07marks)**

Question 9

A group of workers make skirts containing the following operations:

Operation	Standard Minute Value	Operation	Standard Minute Value
Sew 4 darts	2.00	Sew side seams	1.00
Insert zip	2.40	Overlock side seams	1.00
Overlock hem	0.80	Stitch & turnout	1.20
Overlock waistband	0.60	Attach waistband	2.40
Blindstitch hem	1.10	Top press	2.00
Underpress darts, side- seams & waisband	2.00	Button & buttonhole	2.50

Operators are attached to the group as follows:

Operator	Average Performance
2 Trainees	80
2 semi skilled	100
2 fully skilled	120
1 under presser	80
1 top presser	80

(i) What is the output obtainable by the group in 480 minutes? **(05marks)**

(ii) Explain how you will allocate the operators to the work in order to obtain the best balance. **(10marks)**