Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(APM)/SEM-6/APM-601/2010

2010

PRODUCT ENGINEERING & PLANT LAYOUT

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Objective Type Questions)

1. Answer the following questions : 10 × 1 = 10

A) Choose the correct alternatives for the following :

i) 'SAM' stands for

a) Standard Allowed Minute

b) Standard Ability Measure

c) Statistically Accepted Method

d) Single Access Method.

ii) Sorting and bundling process takes place

a) after marker planning and before cutting

b) after cutting and before sewing

c) after spreading and before cutting

d) none of these.

iii) Productivity calculation is mainly based upon

a) volume of output against the profit

b) running RPM of the main motor

c) average speed of the machine and worker's efficiency

d) volume of output against the volume of infrastructure at a given time period.

iv) "PERT" stands for

a) Project Execution and Report Technique

b) Programme Evaluation and Report Technique

c) Planning Evaluation and Review Technique

d) none of these.

v) What are the 'Inputs' for the productivity measurement system ?

a) Garment analysis sheet, line planning, worker allocation

b) Weekly productivity report

c) Management review meeting and MIS

d) All of these.

vi) An element is a/an

a) distinct part of a specific job

b) input required to start a job

c) % of completion of a specific job

d) none of these.

B) State whether the following statements are True or False :

vii) Supervisor's and manager's training in sewing deparment may give some productivity improvement in apparel manufacturing industry.

a) True

b) False.

viii) Training of operator/checker in cutting and quality control dept. brings some productivity improvement in the apparel manufacturing industry.

a) True

b) False.

C) Choose the correct alternatives for the following :

ix) CMT stands for

a) Costing and Manufacturing Technique

b) Computerised Manufacturing Technique

c) Cut, Make and Trim

d) Cost of Materials and Tools.

x) GMROI stands for

a) General Method for Review and Observation in the Industry

b) Garment Manufacturer's Review and Observation for Improvement

c) General Merits of Review and Observations in Industry

d) Gross Margin Return on Inventory.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Define 'Productivity' and explain the different methods of productivity calculation for garment manufacture.

3. Explain the principles of apparel costing including all types of cost involved.

4. Define any *two* of the following :

a) Work measurement

b) Time study

c) Work study

d) Maximum allowable idle time

e) Standard time

f) Snap study.

5. What do you mean by Production planning and control ? Mention its objectives and functions for a garment manufacturing industry.

6. What are the principles of plant layout ? Discuss about the Govt. regulations for plant layout and industry and industry's own requirement for maximizing production at optimum cost.

7. Following data are collected from an apparel factory :

Total number of sewing machines	=	48
Total number of operators	=	48 per shift
Total number of helpers	=	8 per shift
Total number of supervisors	=	2 per shift
Total number of checkers	=	4 per shift
Duration of work shift	=	450 minutes
SAM of 1 pc of garment	=	17 minutes (sewing)
Average output per shift	=	900 pcs of garment

Calculate the following :

i) Efficiency of operators

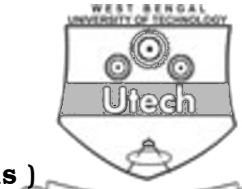
ii) Total labour productivity (sewing)

iii) Machine productivity (sewing)

Assume your own data, if necessary. 1 + 2 + 2

OR

On what factors does the pricing of an apparel depend ?



GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. Explain about the different methods of productivity improvement in apparel industry.

9. An export order for men's formal wear is confirmed on 3rd April, 2010 for M/s Delta Export. The time estimated for different sub-processes are as given below :

Activity	***Estimated time of completion (in days)***
Fabric sourcing	5
Fabric inspection	7
Cutting	10
Sewing	17
Finishing	10
Final checking	8
Packing	5

   i) Construct a suitable production planning analysis in WBS for the above case.

   ii) Construct a suitable production planning through Gantt chart to complete the given order within 30 days from the date of order confirmation.

10. Describe a method of work study and time study in the sewing department, with the help of a sample study sheet.

11. Write about principles, advantages and limitations of CPM and PERT chart with simple illustrations. How is a project evaluated and reviewed for checking its progress ?

12. Discuss about the solutions for commonly occurred production problems in spreading, cutting, marking, ticketing and pressing operation.

13. Discuss the flow-chart processes of pattern making, spreading, marking, cutting and sewing and finishing for a regular garment production unit, showing work and sub-work component at each section / phase for manufacture of any particular garment.

14.

Activity	*Must precede*	*Optimistic time for completion (a) in days*	*Pessimistic time for completion (b) in days*	*Most likely time for completion (m) in days*
A	None	2	4	3
B	A	3	5	4
C	B	3	5	4
D	C	1	3	2
E	C	1	3	2
F	C	3	6	5
G	E + F	3	5	4
H	G	2	4	3
I	H	4	6	5
J	G + H	1	3	2
K	J	1	3	2
L	J	1	3	2
M	L	5	7	6
N	L + M	4	6	5

i) Construct a suitable PERT chart for the above case.

ii) Construct a suitable CPM chart for the above case.

iii) Identify the critical path and calculate the expected time required to complete the entire project.