

**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)**

Term-End Examination 01045

June, 2012

BME-013 : PRODUCTION MANAGEMENT

Time : 3 hours

Maximum Marks : 70

Note : *Attempt any seven questions. All questions carry equal marks. Use of calculator is permitted.*

1. (a) Explain the factors affecting the location of warehouse. **5+5**
- (b) A manufacturing firm has three proposals for a product. Either it can be purchased from an outside vendor at Rs.4.00 per unit or it can be manufactured in - plant. There are two alternatives for in - plant manufacturing. Either, a fully automatic unit is procured, involving fixed cost of Rs. 30,000 and variable cost of Rs. 2.75 per unit. Alternatively, a semi - automatic unit would cost Rs. 20,000 as fixed cost and Rs. 3.00 per unit as variable cost. Draw a break - even chart for these alternatives. Suggest range of production-volume suited for these alternatives.

2. (a) Compare and contrast 'Push' type of production system with 'Pull' type of production system and justify which one is better. 5+5
- (b) An activity has a select time of 4.00 minutes per cycle and a calculated normal time of 4.64 minutes per cycle. Allowance is 10 percent.
- (i) What was the performance rating factor of the worker studied ?
- (ii) What is the standard time of the activity ?
3. (a) What is materials management ? How does materials management in a manufacturing operation differ from that in a non - manufacturing operation ? 5+5
- (b) Assume that your stock of sales merchandise is maintained based on the forecast demand. If the distributor's sales personnel call on the first day of each month, compute your forecast sales by each of the three methods here.

	Actual
June	140
July	180
August	170

- (i) Using a simple three - month moving average, what is the forecast for September ?
- (ii) Using a weighted moving average, what is the forecast for September with weights of 0.20, 0.30 and 0.50 for June, July, and August respectively ?

4. (a) "You don't inspect quality into a product, 5+5
you have to build it in". Discuss the
implications of this statement.
- (b) A steel company faced the following
demand for its products during past few
months. Presently, the company is using
last years corresponding monthly sales as
this year forecast.

Month	Forecasted Demand (in metric tons)	Actual Demand (in metric ton)
July	21100	20000
August	23600	22000
September	22400	21000
October	27500	26500

Calculate MAD, Biss and tracking signal and interpret them.

5. (a) Explain briefly the major difference between 5+5
aggregate planning in manufacturing and
aggregate planning in services.
- (b) Should a firm always attempt to "meet
demand" ? Why or why not ? Give an
example of a situation where a pure
planning strategy may be uneconomical
from a practical stand point.

6. (a) What factors will you consider for locating any of the following : 5+5
- (i) a thermal power plant
 - (ii) a call centre
 - (iii) a placement agency
 - (iv) a milk processing plant
- (b) Processing times (including setup times) and due dates for six jobs waiting to be processed at a work centre are given in the following table. Determine the sequence of jobs, the average flow time, average job lateness, and average number of jobs at the work centre for each of these rules :

- (i) SPT, and (ii) EDD

Job	Processing Time (Days)	Due Date (Days)
A	2	7
B	8	16
C	4	4
D	10	17
E	5	15
F	12	18

7. (a) Explain what you understand by the term "Total Quality Management", paying particular attention to the following terms ; quality, supplier - customer interfaces, and process. 5+5

- (b) A group of six jobs are to be processed through a two - step operation. The first operation involves cleaning and the second involves painting. Determine a sequence that will minimize the total completion time for the group of jobs. Processing times are as follows :

Processing Time (Hours)		
Job	work centre - 1	work centre - 2
A	5	5
B	4	3
C	8	9
D	2	7
E	6	8
F	12	15

8. (a) Define productivity. List some factors that can effect productivity and some ways in which productivity can be improved. **5+5**
- (b) A toy manufacturer uses approximately 32,000 silicon chips annually. The chips are used at a steady rate during the 240 days a year that the plant operates. Annual holding cost is Rs. 0.60 per chip, and ordering cost is Rs. 24/- . Determine :
- (i) The optimal order size
 - (ii) The number of work days in an order cycle.

9. (a) What are the important elements of JIT 5+5
manufacturing ? How does JIT system
eliminate waste, enforce continuous
improvement ? What are the benefits of JIT
manufacturing ?
- (b) What do you understand by ERP ? What
are the factors involved in ERP
implementation ? Explain it's main functions.
10. Write short notes on *any five* of the following :
- (a) Lean manufacturing 5x2=10
- (b) Preventive Maintenance
- (c) Chronic loss
- (d) Bill of Materials
- (e) Computer Aided process Planning
- (f) ABC analysis
- (g) ISO 9000
- (h) The kanban system
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