

**B.Tech. MECHANICAL ENGINEERING  
(COMPUTER INTEGRATED  
MANUFACTURING)**

**00683** Term-End Examination

**June, 2018**

**BME-013 : PRODUCTION MANAGEMENT**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Attempt any **five** questions. Use of scientific calculator is allowed.*

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1. (a) Explain the principal factors considered by an organization for the choice of plant location. 5
- (b) What is facility layout ? What are its main objectives ? 5
- (c) Explain the facilities available in a warehouse and activities performed in these. 4
2. (a) Explain the basic principles of material handling. 6
- (b) Define fixed, variable and semi-variable costs. 4
- (c) What is project scheduling and project controlling ? 4

3. (a) Define the following ranking rules :  
Minimum Job Slack, Greatest Resource Demand and Greatest Resource Utilization. 4
- (b) A firm performs six activities, the details of which are shown in the table below. Find the critical path and critical path time. 10

Activity	Predecessor Activity	Time Estimates (Weeks)		
		a	m	B
A	–	10	15	20
B	A	3	4	5
C	B	6	9	14
D	–	3	3	4
E	C	2	3	4
F	E, F	2	3	8

4. (a) Define the following : 6
- (i) Mean squared error
- (ii) Mean absolute deviation
- (b) A company observed that the sale of a particular product is related to the number of salesmen employed by it. The data collected is shown in the table : 8

No. of Salesmen	75	40	20	25	30	60	50	70
No. of Products Sold	30	18	8	15	18	34	28	25

- (i) Derive a regression forecasting equation.
- (ii) Estimate the sale when the number of salesmen is 45.
- (iii) Calculate the standard deviation of regression and correlation coefficient.

5. (a) Briefly explain the main objectives of MRP and show how it can reduce the inventory investment.

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(b) In a firm, for the first week of a particular month, the forecast was 200 units while the actual demand turned out to be 180 units. The firm uses simple exponential smoothing with  $\alpha = 0.2$ , to forecast the demand.

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(i) Forecast the demand for the second week of the month.

(ii) If the actual demand for the second week was 210 units, forecast the demand for the third week. Forecast the demand for the subsequent three weeks if the actual demand for the subsequent weeks was 208, 180, 185 and 215 units.

6. (a) Explain the following terms :

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(i) Batch Size

(ii) Safety Stock

(b) The total requirements for material from an MRP schedule are given in the table below :

Week	1	2	3	4	5	6	7	8
Total Requirements	300	500	800	400	250	300	250	900

The annual demand for this item is estimated to be 40,000 units over a 40 weeks per year schedule. The changeover cost, to begin a production lot is ₹ 400. It costs ₹ 0.80 per unit when one unit of this product is carried in inventory from one week to another and the same cost is to be taken for carrying the product from the ending inventory to the beginning inventory in the next week. Determine which of these lot sizing methods results in the least carrying and changeover (or order) costs for the eight weeks schedule :

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- (i) Lot for Lot
- (ii) Economic Order Quantity
- (iii) Period Order Quantity

7. (a) What are the main outputs of MRP ?  
Explain in brief. 6
- (b) List the main features of ERP. 4
- (c) Explain the method of selecting an ERP package. 4