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**B.E/B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2012  
MANUFACTURING ENGINEERING**

**SIXTH SEMESTER**

**MF9351 COMPUTER INTEGRATED PRODUCTION MANAGEMENT SYSTEM  
(REGULATIONS 2008)**

Time : 3 hrs

Max. Marks : 100

Answer ALL Questions

**PART - A (10 x 2 = 20 Marks)**

- How is the continuous flow system different from the intermittent flow system?
- What are all the factors affecting forecasting?
- Given below is a series of weekly demand data that the Beta company collected on one of its products and forecast for the corresponding weeks, made by a forecast method which the company is testing. Compute mean absolute deviation for the six week data.

Week	1	2	3	4	5	6
Demand	142	181	144	174	192	176
Forecast	155	157	159	161	163	165

- What is meant by Bill of Materials?
- What are the basic inputs for MRP?
- What is a Gantt Chart? What is its use in scheduling?
- How is MRP II different from MRP?
- The product line manufacturing electric motors have seven stations. The individual capacity of the critical station is limited to 1000 units per week. If, the actual output of the product line is 800 units per week, find i) system capacity and ii) rated capacity.
- List various pure strategies and mixed strategies in Aggregate Production Planning.
- What is meant by forward and backward planning in CAPP?

**PART - B (5 x 16 = 80 Marks)**

11. (i) What is meant by seasonality index? Why is it required to smooth the seasonality index for forecasting demand? (6)

- (ii) The sales of a particular company for 13 years of operation is furnished below :

Year	1	2	3	4	5	6	7	8	9	10	11	12	13
Sales	96	116	119	127	146	145	153	158	160	165	177	190	205

Fit a simple regression for the above data and Forecast the sales for the 14<sup>th</sup> year of operation. (10)

- 12 a) (i) Briefly describe the various functions of production planning and control. (8)
- (ii) Explain the various modern production management tools? (8)

OR

b) (i) A firm uses exponential smoothing with a very high value of  $\alpha$ . What does this indicate with respect to the emphasis it places on past data? (5)

(ii) How are MAD, bias and MAPE useful in evaluating the efficiency of forecasting? (5)

(ii) Riverview Hospital has used a 9 month moving average forecasting method to predict drug and surgical dressing inventory requirements. The actual demand for one item is shown in the accompanying table. Using the previous moving average data, convert to an exponential smoothing forecast for month 33. (6)

Month	24	25	26	27	28	29	30	31	32
Demand	78	65	90	71	80	101	84	60	73

- 13 a) (i) Distinguish between Aggregate Production Planning and Master Production Scheduling. (4)

(ii) The forecast for a group of items manufactured in firm is shown below:

Quarter	1	2	3	4	5	6	7	8
Demand	370	320	570	670	550	370	350	480

The firm estimates that it costs Rs. 200 per unit to increase the production rate, Rs. 250 per unit to decrease the production rate, Rs. 75 per unit per quarter to carry the items on inventory and Rs. 125 per unit if subcontracted. Compute the cost incurred if the following pure strategies are followed. (i) Varying the workforce size, (ii) Changing the inventory levels and (iii) subcontracting. (12)

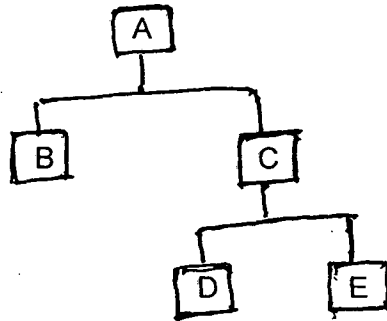
OR

(b) Consider the manufacture of a toy. The master production schedule to manufacture the toy is given in the following table:

Master Production Schedule

Week	1	2	3	4	5	6	7	8
Demand	200	--	100	175	300	200	--	250

The bill of material structure is given in the following figure:



The details of BOM along with EOQ and stock on hand for the final product and subassemblies are shown in the following table:

Part Requirement	Order Quantity	No. of units	Lead Time (week)	Stock on Hand
A	350	1	2	200
B	450	1	1	400
C	400	1	1	375
D	375	1	1	250
E	400	1	2	425

Complete the material requirements plan for the main products A as well as for the subassemblies B, C, D and E.