M.E. DEGREE EXAMINATIONS: APRIL/MAY 2010

Second Semester

INDUSTRIAL ENGINEERING

IEE506: Operations Management

Time: Three Hours   **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 2 = 20 Marks)

1. List out the different types of production system with examples.

2. Define Production Management.

3. Why do you need forecasting in Operations Management?

4. What do you mean by Delphi technique?

5. List down the various strategies in Aggregate planning?

6. Distinguish between MRP-I and MRP-II.

7. Name the priorities in sequencing rules.

8. Write down the advantages of Assembly Line Balancing.

9. What are all the elements of JIT?

10. What is meant by the term Equipment Effectiveness used in TPM?

PART B (5 x 16 = 80 Marks)

11. (a) (i) Explain the historical evolution of Operations Management.   (10)

   (ii) Explain the framework of Operations Management.   (6)

(OR)

   (b) "Operation is a value addition process". Comment on the above statement with substantiating examples.

12. (a) XYZ Company Ltd, uses simple exponential smoothing with smoothing constant α as 0.2 to forecast the demand. The forecast for the first week of April 2009 was 500 units and the actual demand turns out to be 550 units.

   (i) Estimate the demand for II week of April.   (4)

   (ii) If the actual demand for the II week of April was 560 units,   (12)

   Forecast the demand up to May II week. Assume that the demand for the subsequent weeks as 560, 545, 540, 555, 565, 570 units.

(OR)

(b) The following data gives the sales for the Company for various years. Fit the straight line and forecast the sales for the year 1998 and 1999.

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997
Sales (000)	13	10	10	18	20	22	23	28	33

13. (a) A company produces 16mm TMT steel bars at their works in Kolkata. Aggregate planning measures used by the Company is Tons of steel bars which include making and packaging.

The planning is done for a time horizon of one year and for Four quarters.

Quarter	I	II	III	IV
Demand (Tons)	30	50	45	40

The company has a regular work force which can produce 25 tons of output/quarter. If the workers are allowed to work Overtime with a restriction that the extra time cannot be more than 20% of the regular time in any time. The output rate is 25% higher than regular time production during overtime but at an overtime expense of 40% more than that of regular time production. The company subcontracts manufacturing operations to a SSI unit at a cost of 50% premium to the regular time production cost.

No shortages are allowed and Inventory Carrying Costs are Rs.10, 000/ton per year. The regular time production cost is Rs.20, 000/ton. Design a cost efficient aggregate plan assuming Zero starting inventory, and also compute the total production cost.

(OR)

(b) (i) The following information on Production Inventory System of a manufacturing Company is given below. Determine

    1) Optimal lot size (5)

    2) Manufacturing time and time between setups. (5)

Demand /annum=10,000 units, Unit cost=Rs.30, Setup cost= Rs.500, Production rate=14, 000 units/month, Holding cost=Rs.9/unit/annum, Shortage cost/unit = Rs.20/ unit/annnum

(ii) Write down the functions of Master Production Schedule. (6)

14. (a) Consider the assembly Network given below which shows the precedence relationships in assembling the product. The required production volume in 8 hour shift is 24 completed assemblies. Design an Assembly Line using COMSOAL algorithm.
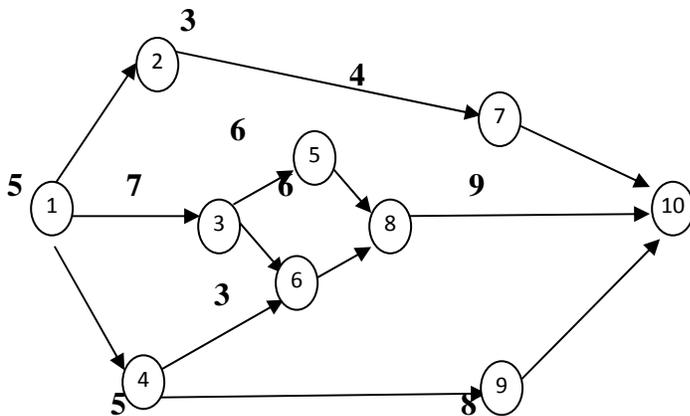
(OR)

(b) Five jobs are to be processed on Two machines M1 and M2 in the order M1----M2. Processing time in hours are given below

Job	Processing time in hours	
	Machine 1	Machine 2
1	5	2
2	1	6
3	9	7
4	3	8
5	10	4

Determine the sequence that minimizes the total elapsed and idle time, If any, associated with Machine.

15. (a) Explain the following concepts.

   (i) Kanban system.   (6)

   (ii) TPM.   (10)

(OR)

(b) Explain the concept of JIT in detail along with its benefits.

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