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10ME81

Eighth Semester B.E. Degree Examination, July/August 2021
Operations Management

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. Enumerate the basic techniques to improve productivity. **(10 Marks)**

b. The input and output data of ABC Company for a particular time period is given below :

Output	= Rs 1,00,00,000	Human input	= Rs 1,00,000
Material input	= Rs 25,00,000	Capital input	= Rs 15,00,000
Energy input	= Rs 50,000	Other expenses input	= 40,000

Determine total factor and total productivity. **(10 Marks)**

2 a. Describe the characteristics of Operations decisions. **(10 Marks)**

b. Annual fixed cost at a small textile shop is Rs 46,000 and variable costs are estimated at 50% of the Rs 40 per unit selling price.

i) Find BEP.

ii) What profit would result from a volume of 3000 units? **(10 Marks)**

3 a. What is Forecasting? Explain the elements of good forecasting. **(10 Marks)**

b. As you can see in the following table, demand for heart transplant surgery at a Hospital has increased steadily in the past few years.

Year	1	2	3	4	5	6
Heart transplants	45	50	52	56	58	?

The director of medical services predicted 6 years ago that demand in year 1 would be 41 surgeries.

i) Use exponential smoothing. First with a smoothing constant of 0.6 and then with one of 0.9 to develop forecast for years 2 through 6. Find MAD.

ii) Use a 3 – year moving average to forecast demand in years 1 through 6. Find MAD. **(10 Marks)**

4 a. Explain the techniques useful for evaluating capacity alternatives. **(10 Marks)**

b. List and explain the factors affecting location decisions. **(10 Marks)**

5 a. Explain the inputs and outputs of Master Scheduling process. **(10 Marks)**

b. Consider a three period modal where regular and overtime productions are used. The production capacities for the three periods are given below :

Production capacities

Period	Production capacity (units)	
	Regular	Overtime
1	15	10
2	15	0
3	20	15

The production cost per unit is Rs 5 for regular production and Rs 10 for overtime production. The holding cost per unit and shortage cost per unit are given by 1 and 2 respectively. The demand units for three periods are 20, 35 and 15 respectively. Determine Optimum production schedule. **(10 Marks)**

6 a. List and explain the major reasons for carrying and controlling inventory in Industries. (10 Marks)

b. Given the data for an item of uniform demand, instantaneous delivery time and back order facility. Annual demand = 800 units ; Cost of an item = Rs 40 ;
Ordering cost = Rs 800/order ; Inventory carrying cost = 40% / unit / year.
Back order cost = Rs 10/unit/year. Find out
i) Economic order quantity.
ii) Maximum number of backorder.
iii) Time between orders.
iv) Total annual cost.
v) Maximum inventory. (10 Marks)

7 a. With the aid of flow chart, explain MRP – II on integrated system for planning and control. (10 Marks)

b. Determine the net requirements for the three items shown in table below :

	Switches	Microprocessors	Keyboards
Gross requirement	110	28	56
On hand inventory	18	2	7
Inventory on order	12	12	10

(10 Marks)

8 a. Explain the step – by – step procurement process followed in Industry. (10 Marks)
b. Explain the types of E – procurement with examples. (10 Marks)

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