

--	--	--	--	--	--	--	--	--	--

Third Semester MBA Degree Examination, June 2012
Operations Management

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Define the term method study and state its objectives. (03 Marks)
 b. State and explain briefly the principles of plant layout. (07 Marks)
 c. An industrial engineer deputed to conduct a time study for a job, has, after observation, divided the job into five elements. He had noted the timings for four cycles of job as below.

Elements	Time in minutes				Performance rating (%)
	Cycle 1	Cycle 2	Cycle 3	Cycle 4	
1	1.246	1.328	1.298	1.306	90
2	0.972	0.895	0.798	0.919	100
3	0.914	1.875	1.964	1.972	100
4	2.121	2.198	2.146	2.421	110
5	1.253	1.175	1.413	2.218	100

Are there any outliers in the data i.e. probable errors in reading or recording data which should not be included in the analysis?

Compute the basic time for the job and the standard time if a relaxation allowance of 12%, a contingency allowance of 3% and an incentive of 20% are applicable for the job. (10 Marks)

- 2 a. Define productivity. List out factors affecting productivity. (04 Marks)
 b. Explain the various techniques of forecasting. (06 Marks)
 c. A company has to select one location out of the five alternative considered for a new plant. The annual operating costs and other intangible factors are given below for these five locations.

Factors	Location				
	A	B	C	D	E
i) Economic factors (in Rs)					
Labour cost	1,20,000	1,10,000	1,60,000	85,000	75,000
Transportation cost	10,000	8,000	7,000	12,000	14,000
Local taxes	17,000	20,000	25,000	19,000	17,000
Cost of power	21,000	29,000	25,000	18,000	23,000
Other costs	16,000	11,000	12,000	16,000	18,000
ii) Intangible factors					
Community attitude	Very good	Fair	Good	Fair	very good
Labour availability	Good	Very good	Fair	Outstanding	Acceptable
Quality of transportation	Fair	Acceptable	Outstanding	Acceptable	Fair
Quality of life	Acceptable	Fair	Good	Very good	Outstanding

- i) On the basis of annual operating factors which site would you choose?
 ii) Devise a method of qualifying the intangible factors and integrate them with the cost data into the overall evaluation. Which is best now? (10 Marks)

- 3 a. What are the limitations of break even analysis? **(03 Marks)**
 b. Explain briefly the seven quality control tools. **(07 Marks)**
 c. A manager has the option of purchasing either one, two or three machines. The data regarding the costs and the range of out put are given below :

No. of machines	Total annual fixed costs	Corresponding range of output
1	Rs. 10,000	0 – 300
2	Rs. 15000	301 – 550
3	Rs. 20,000	551 - 800

Variable cost is Rs. 20 per unit and selling price is Rs. 50 per unit.

- i) Determine the break even point at each range
 ii) If the projected annual demand is between 550 to 600 units how many machines should be purchased? **(10 Marks)**
- 4 a. Define mean absolute percentage error. **(03 Marks)**
 b. Explain briefly the factors for selecting location for i)Cement plant ii)Suger factory. **(07 Marks)**
 c. An auto industry purchases spark plugs at the rate of Rs. 25 per piece. The annual consumption of spark plug is 18,000 nos. If the ordering cost is Rs. 250 per order and carrying cost is 25% p.a., what would be the EOQ? If the supplier of the spark plug offers a discount of 5% for the order quantity of 3,000 nos. per order, do you accept the discount offer? **(10 Marks)**
- 5 a. Define EOQ. What are its limitations? **(03 Marks)**
 b. State and explain Juron’s quality trilogy. **(07 Marks)**
 c. Calculate the vender rating for the following. The item under consideration is the same for all suppliers. Weightage for quality = 70%, price = 20%, delivery =10%. **(10 Marks)**

Suppliers data	A	B	C
Quantity supplied	90	80	75
Quantity accepted	78	80	70
Price of each item	Rs. 4	Rs. 4.2	Rs. 3.9
Delivery promised	6 weeks	6 weeks	6 weeks
Actual delivery made in	8 weeks	6.2 weeks	7 weeks

- 6 a. What is statistical quality control? **(03 Marks)**
 b. State the responsibilities of a good purchase manager. **(07 Marks)**
 c. What is time study? Explain the procedure for method study. **(10 Marks)**
- 7 a. What is quality costing? **(03 Marks)**
 b. Distinguish between process layout and product layout. **(07 Marks)**
 c. Draw \bar{X} -R chart for the following data: . Assume $A_2 = 0.58, D_3 = 0, D_4 = 2.11$. **(10 Marks)**

Sample no.	Measurements in mm				
1	40	40	42	38	42
2	44	40	34	46	44
3	45	42	41	40	43
4	35	46	47	48	45
5	46	40	44	42	40

- 8 a. What are the strategies adopted in aggregate planning? **(03 Marks)**
 b. Define quality circles. What are the major impact of quality circles? **(07 Marks)**
 c. The monthly demand of commodity over 6 month period is given below :

Month	1	2	3	4	5	6
Demand (units)	120	130	110	140	110	130

Determine forecast of demand for the 7th month, using 3 months moving average method

If the weightage given for the demand for 6th 5th and 7th months are 0.5, 0.3 and 0.2 respectively, determine the forecast of demand for 7th month, using weighted average method. **(10 Marks)**