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Third Semester MBA Degree Examination, June/July 2011
Operations Management

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. What are the strategies adopted in aggregate planning? (03 Marks)
- b. List out the benefits and objectives of work study. (07 Marks)
- c. A company uses 1200 units/month of an electronic component each costing Rs.2/unit. Placing each order costs Rs.50/- and the carrying cost is 6% per year of the average inventory.
 - i) Find EOQ
 - ii) If the company gets 5% discount if it places single order, should they accept the discount offer?
 - iii) Find break even discount percentage which matched EOQ ordering. (10 Marks)
- 2 a. Outline the limitations of BEP. (03 Marks)
- b. What are the objectives of facility 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 has noted the timings for four cycles of the job as below :

Time in minutes					
Element	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Performance rating
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

- i) Are there any outliers in the data?
- ii) Compute the basic time for the job and standard time for a relaxation allowance of 12%, a contingency allowance of 3% and the incentive of 20% are applicable for job. (10 Marks)
- 3 a. What is memomotion study? (03 Marks)
- b. Briefly explain Jurvan's quality trilogy. (07 Marks)
- c. Find the next period forecasting by using simple exponential method. Given that initial forecasting is 90 units and $\alpha = 0.3$. (10 Marks)

Month	Jan	Feb	Mar	Apr	May	June
Demand	100	110	115	104	112	117

- 4 a. What is ISO 14001? (03 Marks)
- b. Calculate the standard time per article produced from the following data obtained by a work sampling study.

Total number of observations	= 2500
Number of working observations	= 2100
Number of units produced in 100 hrs. duration	= 6000 number
Proportion of manual labour	= 2/3
Proportion of machine time	= 1/3
Observed rating factor	= 115%
Total allowance	= 12% of normal time

 (07 Marks)
- c. Briefly explain Deming's 14 principles. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 5 a. What is Deming cycle? (03 Marks)
 b. State the factor's influencing make or buy decision. (07 Marks)
 c. List out the factors affecting selection of plant location. Explain briefly. (10 Marks)
- 6 a. Outline the functions of MRP? (03 Marks)
 b. Briefly describe the Malcolm Balridge national quality award for performance excellence. (07 Marks)
 c. Assume a fixed cost of Rs.900, a variable cost = 4.50 and a selling price of Rs.5.50.
 i) What is the break-even point?
 ii) How many units must be sold to make a profit of 5,00,000 Rs.?
 iii) How many units must be sold to average Rs.0.25 profit/unit, Rs.0.50 profit/unit, Rs.1.50 profit/unit? (10 Marks)
- 7 a. Define productivity. (03 Marks)
 b. How can capacity be measured? State the factors affecting determination of the plant capacity. (07 Marks)
 c. A company has to select one location out of five alternatives considered for a new plant. The annual operating costs and other tangible factors are given below for these five locations.

Factors	Location				
	A	B	C	D	E
a) <u>Economic factor</u>					
Labour cost (Rs.)	1,20,000	1,10,000	1,60,000	85,000	75,000
Transportation cost (Rs.)	10,000	8,000	7,000	12,000	14,000
Local taxes (Rs.)	17,000	20,000	25,000	19,000	17,000
Cost of power (Rs.)	21,000	29,000	25,000	18,000	23,000
Other cost (Rs.)	16,000	11,000	12,000	16,000	18,000
b) <u>Intangible factors</u>					
Community attitude	very good	fair	good	fair	very good
Labour availability	good	very good	fair	outstanding	acceptable
Quality of transport	fair	acceptable	outstanding	acceptable	fair
Quality of life	acceptable	fair	good	very good	outstanding

- i) On the basis of annual operating cost, which site would you choose?
 ii) Derive a method of quantifying the intangible costs and integrate them with the cost data into the overall evaluation. Which is best now? (10 Marks)
- 8 a. In a work sampling study, a mechanic was found to idle for 20% of the time. Find out the number of observation needed to confirm to the above figures with a confidence level of 95% and the relative error by $\pm 5\%$. (03 Marks)
 b. Determine safety stock, reserve stock and buffer stock for the data given below :
 Normal usage = 100 per week
 Lead time = 4 to 6 week
 Maximum usage = 150 per week
 Minimum usage = 50 per week
 Re-order quantity = 600 no's
 Also calculate the re-order level, minimum and maximum levels of inventory and also average inventory level. (07 Marks)
 c. State the principles of plant layout. Explain the different types of plant layout, with one example each. (10 Marks)

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