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Third Semester MBA. Degree Examination, December 2011
Operations Management

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1
 - a. What do you mean by the term “break even analysis”? How is it useful to operations management? (03 Marks)
 - b. Differentiate between qualitative and quantitative methods of forecasting. Explain any two methods from each type, briefly. (07 Marks)
 - c. List the elements of TQM. Also discuss the term “cost of quality” with its components with an example. (10 Marks)

- 2
 - a. What is aggregate planning? What are the inputs of it? (03 Marks)
 - b. Briefly explain product and process layout with their advantages and limitations. (07 Marks)
 - c. A garment manufacturing company has got following data :
 - i) Selling price if each unit = Rs 15 ii) Variable cost for making = Rs 10
 - iii) Fixed cost for the period = Rs 250.
 Calculate :
 - i) Break even point in units ii) Sales revenue at the break even point iii) level of sale to break even, if the sales price is dropped to Rs 12/unit, iv) the units the company needs, to make a profit of Rs 500. (10 Marks)

- 3
 - a. What is productivity? What are the different measures of it? (03 Marks)
 - b. Discuss the production system briefly, with the help of a neat sketch. Mention the components of it and functions of them. (07 Marks)
 - c. List Deming’s 14 principles of quality management. (10 Marks)

- 4
 - a. List the objectives of work study. (03 Marks)
 - b. List the limitations of break – even analysis. Also mention the ways to lower the break – even point volume. (07 Marks)
 - c. The ABC company has two alternate locations to start its new plant. The company desires to produce 1000 units in a year. The selling price of the product is Rs 200/units. The cost details of both locations are given in the below table :

Location	Fixed cost (Rs)	Variable cost (Rs)
A	25,000	Rs 10 per unit
B	40,000	Rs 7 per unit

Calculate : the production level at break – even point for location A and location B. Which location is ideal and why? Find the production level at which the company can set – up the unit at either of the locations. Which location is ideal, if the company desires to produce 1000 units? (10 Marks)

- 5
 - a. List the factors that influence plant location. (03 Marks)
 - b. List the objectives of MRP. With a sketch, indicate the input and output of MRP. (07 Marks)

- c. The XYZ company has got the following data, for their demand of product. Using simple exponential forecasting method, compute the next period forecast value. Consider the value of $\alpha = 0.3$. Assume the initial forecasting as 90 units. (10 Marks)

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

- 6 a. What are the dimensions of quality? (03 Marks)
 b. What is meant by the term "Work sampling"? In a work study it is noted that 20% of the machines are idle. Determine the number of observations required for a work sampling study at 95%. Confidence level with a relative error is $\pm 5\%$. (07 Marks)
 c. Calculate the vendor rating and rank it based on the following data. The weightage for quality = 50, Delivery = 25, Price = 15 and response to suggestions = 10 may be adopted for computations. (10 Marks)

Supplier's data	Vendor A	Vendor B	Vendor C
Quantity supplied	108	90	80
Quantity accepted	102	90	75
Price of item (Rs)	1	1.2	1.1
Delivery promised (weeks)	3	4	4
Actual delivery (weeks)	2.7	5	4.4
Response to suggestions	90	85	100

- 7 a. What are the objectives of inventory management? (03 Marks)
 b. What are the criteria considered to award the performance excellence in Malcom Baldrige National Quality Award (MAN QA)? (07 Marks)
 c. The time taken for 4 pieces of a production item is given in below table, with associated element, cycle and rating. The total allowance may be taken as 25%. Calculate the standard time per piece. (10 Marks)

Element	Cycle - 1	Cycle - 2	Cycle - 3	Cycle - 4	Rating on B.S (0-100)
a	1.2	1.3	1.3	1.4	85
b	0.7	0.6	0.65	0.75	120
c	1.4	1.3	1.3	1.2	90
d	0.5	0.5	0.6	0.4	70

- 8 a. Differentiate between attribute and variable control charts. (03 Marks)
 b. The auto industry purchases spark plugs at the rate of Rs 25 per unit. The annual consumption is 18,000 units and ordering cost is Rs 250 per order. The inventory carrying charge is 25% p.a. Calculate the EOQ. Also compute total cost of inventory. (07 Marks)
 c. Plot the control chart for the following production data. Given that $A_2 = 0.58$, $D_3 = 0$ and $D_4 = 2.11$. (10 Marks)

Sample No	Measurement in mm				
	1	2	3	4	5
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
