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**Third Semester MBA Degree Examination, Dec.2015/Jan.2016**  
**Operations Management**

Time: 3 hrs.

Max. Marks: 100

**Note: 1. Answer any THREE full questions from Q.No.1 to Q.No.6.**  
**2. Question No. 7 and 8 are compulsory.**

- 1 a. Define transformation process. (03 Marks)  
 b. A company manufactures a product for which there are two alternative processes available i.e. process A and B. Process A has no fixed costs but a variable cost of ₹30 per unit. Process B has a fixed cost of ₹30,000 per annum and a variable cost of ₹20 per unit.  
 i) How many units should be produced in order to be indifferent to the costs of both processes?  
 ii) If process 'A' needs certain improvements which would incur a fixed cost of ₹12,000 per annum, what is the new break-even quantity between the two processes. (07 Marks)  
 c. Define competitiveness. List and explain the dimensions of competitiveness. (10 Marks)

- 2 a. List any three functions of production or operations manager. (03 Marks)  
 b. Illustrate with a neat sketch how the production or operations strategies be developed. (07 Marks)  
 c. SONU Darshini a multi cuisine restaurant offers the following menu for its customers. The unit selling price, variable production cost and expected sales per day are shown as follows:

Item	Selling price unit (₹)	Variable cost per unit (₹)	Expected daily sales (units)
A	300	120	700
B	80	30	700
C	150	50	500
D	70	40	500
E	30	20	300

The fixed costs are ₹20,000/day. Determine the BEP (₹) (10 Marks)

- 3 a. Who is a qualified worker? (With respect to work measurement) (03 Marks)  
 b. State the reasons for ineffective forecasting. (07 Marks)  
 c. SSI Bakery's quarterly sales (in thousands) as well as forecast demand and error computations for an item are shown below. Compute the tracking signal and determine whether forecasts are performing adequately. (10 Marks)

Quarter	Forecast demand	Actual demand	Error
1	100	90	-10
2	100	95	-5
3	100	115	+15
4	110	100	-10
5	110	125	+15
6	110	140	+30

- 4 a. What are the primary outputs of an MRP system? (03 Marks)  
 b. Give the functions of Inventory. (07 Marks)  
 c. A company uses 1200 units per month of an electronic component each costing ₹2/-. Placing each order costs ₹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. (10 Marks)

- 5 a. Identify any three reasons for making location decisions. (03 Marks)  
 b. List and explain the factors involved in delivering services. (07 Marks)  
 c. From the following data draw an ABC analysis graph after classifying A, B and C class items: (10 Marks)

Item	1	2	3	4	5	6	7	8
Unit Price (₹)	200.00	2.00	5000.00	12.50	9.00	25.00	1000.00	70.00
Annual consumption (units)	3,000	60,000	20	200	350	6000	40	300

- 6 a. Define time dependent capacity? (03 Marks)  
 b. An 8 hours work measurement study in a plant reveals the following: Units produced = 320 nos., Idle time 15%, Performance rating = 120%. Allowances = 12% of normal time. Determine the standard time per unit produced. (07 Marks)  
 c. Explain the following: i) Multi site management.  
 ii) IT based delivery systems design. (10 Marks)
- 7 a. Pilot study showed percentage of occurrence of an activity as 50%. In your case what would be the number of observation of a work sampling study conducted at 95% confidence level with a relative error of  $\pm 2\%$  (Given  $C = 2$  for 95%) (05 Marks)  
 b. Devise a method of quantifying the qualitative factors for the following and determine which location could be the best. (05 Marks)

Factors	Locations		
	A	B	C
Community attitude	Very good	Fair	Good
Labour availability	Good	Very good	Fair
Quality of transportation	Fair	Acceptable	Outstanding
Quality of life	Acceptable	Fair	Good

- c. JLS company is planning to add a new line of toys to its product-mix. This would require leasing new equipment for a monthly payment of ₹6000. Variable costs would be ₹2 per unit and the toy would sell for ₹7 per unit. If the company wishes to sell 2000 units with a profit target of ₹5000. What would be the best price for the toy, if this is the case? (05 Marks)  
 d. PRK FUN novelty company buys 80,000 shipping container per year. Price of each container is ₹0.40. Cost of purchase ₹80 per order, cost of holding one container per year is ₹0.10. Bank rate of interest is 15% if the company had been following a policy of quarterly ordering. What would have been the increase in the variable cost? (05 Marks)

- 8 AIB company uses exponential smoothing to forecast demand for a piece of equipment it manufactures and sells. An increasing trend is observed to be present in the data collected regarding actual demand for the past 10 months. The data is given as follows:

Month	Actual demand (units)	Month	Actual demand (units)
1	12	6	21
2	17	7	31
3	20	8	28
4	19	9	36
5	24	10	?

Assume the initial forecast for the 1<sup>st</sup> month to be 11 and the trend over that period was 2 units. Using the smoothing constants  $\alpha = 0.2$  and  $\beta = 0.4$ . Calculate the adjusted forecast trend or trend-adjusted forecast. (20 Marks)

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