

COMMONWEALTH EXECUTIVE
MBA/MPA PROGRAMME

Term-End Examination

June, 2010

00859

C-4 : OPERATIONS MANAGEMENT

Time : 3 hours

Maximum Marks : 100

(Weightage 70%)

Note : Section-A has five questions of 20 marks each. Attempt any three questions from Section-A. Section-B is compulsory and carries 40 marks.

SECTION - A

1. (a) Discuss the process of launching a new product in the market. Explain with the help of suitable examples. **10+10=20**
- (b) A manufacturing firm has three proposals for a product. Either it can be purchased from an outside vendor at Rs. 4.00 per unit or it can be manufactured in-plant. There are two alternatives for in-plant manufacturing. Either, a fully automatic unit is procured, involving fixed cost of Rs.30,000 and variable cost of Rs. 2.75 per

unit. Alternatively a semi-automatic unit would cost Rs. 20,000 as fixed cost and Rs. 3.00 per unit as variable cost. Draw a break-even chart for these alternatives. Suggest range of production volume suited for these alternatives.

2. (a) What is the major difference between aggregate planning in manufacturing and aggregate planning in services ? $10+10=20$
- (b) Assume that your stock of sales merchandise is maintained based on the forecast demand. If the distributor's sales personnel call on the first day of each month, compute your forecast sales by each of the three methods requested here :

	<u>Actual</u>
June	140
July	180
August	170

- (i) Using a simple three month moving average, what is the forecast for September ?
- (ii) Using a weighted moving average, what is the forecast for September with weights of 0.20, 0.30 and 0.50 for June, July and August respectively.

(iii) Using single exponential smoothing and assuming that the forecast for June had been 130, forecast sales for September with a smoothing constant alpha (α) of 0.30.

3. (a) What factors should be taken into account when taking "make or buy" decision ? Illustrate your answer with examples from both, a manufacturing and service organisation. **10+10=20**
- (b) A time study of a restaurant activity yielded a cycle time of 2.00 minutes and the waitress was rated at PR = 96 percent. The restaurant chain has a 20 percent allowance factor. Find the standard time.
4. (a) What are the reasons for the successful application of robots in manufacturing industries ? **10+10=20**
- (b) The specifications for one characteristic of a part call for its width to be 3.000 ± 0.008 centimeters. The process has been run under controlled conditions so that no assignable cause of variation have been introduced and sample have been taken. The standard deviation of the process was estimated to be 0.003 centimeters. What is C_p for this process ? What does this value say about the process capability ?

5. (a) "You don't inspect quality into a product, you have to build it in" - Discuss the implication of this statement. **10+10=20**
- (b) Processing times (including set-up times) and due dates for five jobs waiting to be processed at a work centre are given in the following table :

Job	Processing time (Days)	Due date (Days From Now)
A	12	15
B	6	24
C	14	20
D	3	8
E	7	6

Determine the sequence of jobs, the average flow time, average Job lateness number of jobs at the work centre for the Earliest Due Date (EDD) rule.

SECTION - B

6. (a) For your own organisation or any organisation with which you are familiar identify categories of stock applying ABC analysis. Explain and evaluate why it is important for the organisation to do this and demonstrate how managing inventories can improve overall performance. **10+10=20**
- (b) A company produces 4800 parts per day and sells them at approximately half of that rate. The set-up cost is Rs. 1000/- and carrying cost is Rs. 5 per unit. The annual demand is 4,80,000 units find :
- (i) Optimal Lot Size
 - (ii) Number of production runs that should be scheduled per year.
 - (iii) Length of each production run.
7. Write short notes on *any four* of the following : **4x5=20**
- (a) Chronic Loss
 - (b) Preventive Maintenance
 - (c) Bath-tub curve
 - (d) Just in Time
 - (e) CAD/CAM
 - (f) Cellular Manufacturing
 - (g) Pareto Diagrams
 - (h) Bill of Materials.
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