COMMONWEALTH EXECUTIVE MBA/MPA PROGRAMME

00797

Term-End Examination

December, 2010

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)   How is the capacity planning problem different for mature products that have relatively stable growth pattern than for products that are new or involve risky situation ?   **10+10=20**

(b)   An activity has a select time of 4.00 minutes per cycle and a calculated normal time of 4.64 minutes per cycle. Allowances are 10 percent.

(i)   What was the performance rating factor of the worker studied.

(ii) What is the standard time of the activity ?

2. (a) You have been selected as a consultant for establishment of a steel plant. Discuss important factors that you would consider for locating a steel plant. Give examples.

(b) The following tabulations are actual sales of units for six months and a starting forecast in January. 10+10=20

	Actual	Forecast
January	100	80
February	94	
March	106	
April	80	
May	68	
June	94	

(i) Calculate forecasts for the remaining five months using simple exponential smoothing with $\alpha = 0.2$.

(ii) Calculate MAD for the forecasts.

3. (a) Do the cause – and – effect diagrams have any advantages over a simple list of possible causes of a problem ? Explain with suitable examples. 10+10=20

(b) A company currently using an inspection process in its material, receiving department is trying to install an overall cost reduction programme. One possible reduction is the elimination of one of the inspection positions. This position tests material that has a defective content on the average of 0.04. By inspecting all items, the inspector is able to remove all defects. The inspector can inspect 50 units per hour. Hourly rate including fringe benefits for this position is Rs. 900. If the inspection position is eliminated, defects will go into product assembly and will have to be replaced later at a cost of Rs. 1000 each when they are detected in final product testing.

(i) Should this inspection position be eliminated ?

(ii) What is the cost to inspect each unit ?

(iii) Is there benefit (or loss) from the current inspection process ? How much ?

4. (a) Differentiate between Wastivity and Productivity. Explain whether reducing wastivity and increasing productivity imply one and the same thing. Justify your answer.   10+10=20

(b) A small firm intends to increase the capacity of a bottleneck operation by adding a new machine. Two alternatives A and B have been identified, and the associated cost and revenues have been estimated. Annual fixed costs would be Rs. 40,000 for A and Rs. 30,000 for B ; variable costs per unit would be Rs. 10 for A and Rs. 12 for B ; and revenue per unit would be Rs. 15 for A and Rs. 16 for B.

(i) Determine the break–even point in units for each alternative.

(ii) At what volume of output would the two alternatives yield the same profit ?

(iii) If expected annual demand is 12,000 units, which alternative would yield a higher profit ?

5. (a) Suppose you were asked to set up a cost-control programme for an established automobile manufacturing firm. Explain, briefly, the steps you would feel were absolutely vital for such a programme.10+10=20

(b) The process times and due dates for five jobs A, B, C, D and E are given in the table below :

Job	Process time (Days)	Due date (Days from Now)
A	9	16
B	7	20
C	5	25
D	11	15
E	6	40

The jobs may be sequenced according to any of the following rules :

(i) Shortest Processing Time (SPT)

(ii) Earliest Due Date (EDD)

For the above set of jobs, compute the following characteristics for sequencing by both the priority rules (sequencing rules)

(i) Total completion time

(ii) Average flow time

(iii) Average number of jobs in the system

(iv) Average job lateness

6. (a) You are a production manager who has just been informed that higher management may approve a just–in–time inventory policy, beginning in two weeks. Describe briefly the strategies to be undertaken for smooth functioning of JIT inventory policy. **10+10=20**

   (b) A local distributor for a national tyre company expects to sell approximately 9600 steel–belted radial tyres of a certain size and tread design next year. Annual carrying costs are Rs. 160 per tyre, and ordering costs are Rs. 750. The distributor operates 288 days a year.

   (i) What is the EOQ ?

   (ii) How many times per year does the store reorder ?

   (iii) What is the length of an order cycle ?

7. Write short notes on *any four* of the following :

   (a) Sporadic Loss   **5x4=20**

   (b) CIM

   (c) Group Technology

(d) FMS

(e) Robotics

(f) ISO 9000

(g) The Kanban system

(h) Delphi Technique

———————