

MANAGEMENT PROGRAMME

Term-End Examination

June, 2012

00353

**MS-53 : PRODUCTION/OPERATIONS
MANAGEMENT**

Time : 3 hours

Maximum Marks : 100

(Weightage 70%)

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

SECTION - A

1. (a) Give an example of a business that would use a push and one that would use a pull operation control system . Explain your choice and briefly describe how the system works. **(10+10)**
- (b) A small firm intends to increase the capacity of a bottleneck operation by adding a new machine. Two alternative A and B have been identified, and the associated costs and revenues have been estimated. Annual fixed cost 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 out put would the two alternatives yield the same profit ?
 - (iii) If expected annual demand is 12,000 units, which alternative would yield a higher profit ?
2. (a) What are the various methods of judgemental forecasting ? Comment on possible errors that are associated with judgemental forecasting. (10+10)
- (b) Processing time (including, setup times) and due dates for five jobs waiting to be processed at a work centre are given in the following table.

Machine		
Job	Processing time (Days)	Due Date (Days)
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 and average number of jobs at the work centre, for each of these rules

- (i) FCFS
- (ii) SPT and
- (iii) EDD.

3. (a) Should a firm always attempt to "meet demand" ? Why or why not ? (10+10)
- Give an example of a solution where a pure planning strategy may be uneconomical from a practical stand point.
- (b) The forecasted and the actual demands for a product during the last six weeks are shown in the following table.

week	Forecast	Actual
1	800	900
2	950	1000
3	950	1050
4	950	900
5	1000	900
6	975	1100

Compute Mean Absolute Deviation and tracking signal. Comment on your results

4. (a) Given the increasing importance of environmental concerns, how would a company incorporate these issues into the make-or-buy process ? Give two examples to illustrate your views. (10+10)
- (b) The specifications for one characteristics of a part call for its width to be 3.000 ± 0.008 centimetres . The process has been run under controlled conditions so that no assignable causes of variation have been introduced and samples have been taken. The standard deviation of the process was estimated to be 0.003 centimetres. What is C_p for this process ? What does this value say about the process capability ?

5. (a) Select any one of the following and discuss in detail the factors you will consider for its location (10+10)
- (i) a thermal power plant
 - (ii) a nuclear power plant
 - (iii) a call centre and
 - (iv) a milk processing plant.
- (b) An activity has a select time of 4.00 minutes per cycle and a calculated normal time of 4.64 minutes per cycle. Allowance are 10 percent.
- (i) What was the performance rating factor of the worker studied ?
 - (ii) What is the standard time of the activity ?

SECTION - B

6. (a) What is the effect of safety stock, safety lead time, and safety margin on inventory ? Discuss the effectiveness of these measures in offsetting uncertainty and process variability. (10+10)
- (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 run that should be scheduled per year
 - (iii) Length of each production run.
7. Write short notes on *any five* of the following :
- (a) Bill of Materials 5x4=20
 - (b) The Kanban system
 - (c) Robotics
 - (d) Pareto Diagram
 - (e) Aggregate Production Planning
 - (f) Delphi Technique
 - (g) Cellular Manufacturing
 - (h) CAPP.
-