

Sixth Semester Examination - 2007

PRODUCTION AND OPERATION MANAGEMENT

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate full marks for the questions.

1. Answer briefly to the following questions :

2×10

- (a) Which type of system will be most appropriate for a product organization which has very little scope for product variety but huge volume of production ?

P.T.O.

- (b) Write down two disadvantages of MRP System ?
- (c) What do you understand by Organizational Learning ?
- (d) Write down the various phases of Project Life-Cycle ?
- (e) What do you mean by Modified Mean in time series analysis ?
- (f) Write down four Inventory classification methods.
- (g) Write down four responsibilities of a Purchase Manager.
- (h) In which scheduling method, the orders are scheduled according to their due dates ?
- (i) What are the essential conditions for making a JIT system successful ?
- (j) What are the objectives for maintaining inventory in an organization ?

2. XYZ Company has six jobs which are to be processed through two machines A and B in the order A-B. The processing time in hour for each job is given in the table below.

JOB	MACHINE-A	MACHINE-B
1	8	7
2	10	15
3	11	10
4	12	14
5	16	13
6	20	9

Determine the optimal sequence, the total elapsed time and the idle time of each machine.

10

3. A project is having the following activities and their time estimates.

Activity	Predecessor	Time (days)		
		Optimistic	Most Likely	Pessimistic
A	-	2	4	6
B	A	8	12	16
C	A	14	16	30
D	B	4	10	16
E	C, B	6	12	18
F	E	6	8	22
G	D	18	18	30
H	F, G	8	14	32

(a) Draw the network diagram and find the critical path and duration. Find also the Total Float, Free Float and Independent Float for each activity. 6

(b) What is the probability that the project will require at least 75 days? 4

4. An annual sale of sugar in Big Bazaar is 20000 kg. The lead time is constant and is 10 working days. The cost of placing a order is Rs.1,600 and the annual holding costs are 20% of the average inventory investment, where the unit cost is Rs.20. It is observed from the past data that the demand during lead time has been up to a maximum level of 150 kg per day.

(a) What is the re-order level when the safety stock level determined by you is kept in stock? 3

(b) What is the average level of inventory stock held? 4

(c) The ordering cost and the carrying cost associated with this fixed order inventory policy? Assuming there are 250 working days in a year. 3

5. Explain how the below mentioned factors affect process-design decisions: 10

- (a) Nature of product demand
- (b) Degree of vertical integration
- (c) Product and volume flexibility
- (d) Degree of automation
- (e) Product quality.

6. In the table below lists the demand of color television in the city of Bhubaneswar for a nine month period (January through September).

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept
Demand	100	130	150	170	160	180	140	130	140

(a) Forecast April through September using three-month moving average. 3

(b) Use simple exponential smoothing with $\alpha = 0.3$ to estimate April through September. 4

(c) Use MAD to decide which method produced the better forecast over six month period. 3

7. (a) After carrying out an analysis of the environment, the management of Mittal Steels felt that, their continued success in the Indian market will depend upon cost leadership strategy. What are the operation strategies to be followed to support the decision of the management ? 5

(b) Enumerate on how will you manage capacity in service operations ? 5

8. What are the important elements of total quality management ? Explain how each contributes to products and services of superior quality. 10