

Roll No.

Total No. of Questions : 08]

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Paper ID [IE508]

MAY 2008

(Please fill this Paper ID in OMR Sheet)

M.Tech. (Sem. - 2nd)

PRODUCTION AND INVENTORY CONTROL (IE - 508)

Time : 03 Hours

Maximum Marks : 100

Instruction to Candidates:

- 1) Attempt any **Five** questions.
- 2) All questions carry equal marks.

- Q1)** (a) What is batch production system? What are the advantages and drawbacks of batch production systems?
- (b) Explain the Johnson's rule for scheduling n jobs on two machines. Use Johnson's rule to schedule the following six cars needing repair in a workshop.

Car	Denting Time (Hrs)	Painting Time (Hrs)
1	4	11
2	7	7
3	3	10
4	12	8
5	11	10
6	9	13

- Q2)** What do you mean by qualitative and quantitative methods of demand forecasting? When do we use each of these methods of forecasting? Explain the Delphi technique & Time series analysis in detail.

Q3) The following table shows the advertisement expenditure and the sales of a company in the last 12 months. Fit the linear line of regression in this data.

Month	Advertisement Expenditure (in thousands of Rs.)	Sales (in millions of Rs.)
1	4	1
2	10	47
3	15	5
4	12	4
5	8	3
6	16	4
7	5	2
8	7	1
9	9	4
10	10	2
11	12	5
12	14	8

If the plan advertisement expenditure for the next month is Rs. 12,000 forecast the sales of the next month.

- Q4)** (a) Derive the formula for economic order quantity and total inventory related costs when the rate of replenishment is finite.
- (b) What is selective inventory management? Explain the various techniques of SIM.
- Q5)** (a) An item is demanded at the rate of 2200 units per year. Ordering cost is Rs. 300. Inventory carrying cost is 20% of the unit price per year. The supplier has offered a unit price of Rs. 100 per item but he is willing to reduce it to Rs. 93 per item if a purchase order of 1000 or more units is placed. Should the buyer accept this offer?
- (b) Thomson tooling has a department of defense contract for 1,50,000 bushings a year. Thomson orders the metal for the bushings in lots of 40,000 units from a supplier. It costs \$40 to place an order and the estimated carrying charges are 20% of the unit cost which is \$0.15 Thomson wants to know what percent their order quantities vary from optimal and what this variation is costing them?

Q6) Explain the following:

- (a) MRP
- (b) MRP II
- (c) ERP

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Q7) (a) What is Waste? Explain seven types of wastes in production systems as identified by Toyota production systems.

(b) “Inventory reduction can be used to highlight and solve the production system problems one by one”. Explain.

(c) Explain the relationship between JIT, TQM and Total employee involvement.

Q8) What is capacity planning? Explain the steps in capacity planning. Explain some of the strategies to modify the capacity in short run.