7244   *Roll No*

M. Sc. /II

OPERATIONAL RESEARCH –Paper XV-XVIII (ii)

(Advanced Inventory Management)

J

Time : 3 hours   Maximum Marks 75

(Write your Roll No on the top immediately on receipt of this question paper)
Attempt any **five** questions

1 (a)   Distinguish between capacity expansion and capacity optimization.   5

(b)   A company has two warehouses A_1 and A_2 and produces only one item   The
following information is given as

	A_1	A_2
Prob Density f"	1/150	1/100
IC	15	15
Π	48	48
k	5	5

Find the optimum order quantities Q_1 and Q_2 assuming appropriate units   10

2   Formulate and solve an inventory model of deteriorating items, where demand
is uniform with a constant rate and supply is finite Shortages are allowed and
are fully backlogged   15

3   Formulate and solve an inventory model for finding optimum order quantity by
incorporating the impact of inflation for a finite planning horizon   15

4.   Define Master Production Schedule and Material Requirement Planning

The product structure diagrams for end items D and E are shown below

D   E

A(2)   F(1)   R(2)   A(2)   B(3)   F(2)
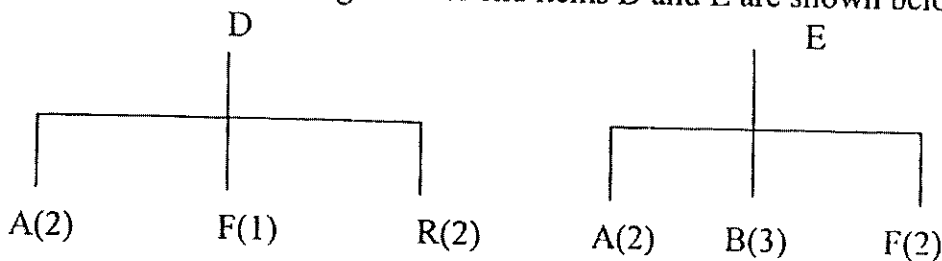
Given the following information, develop first the MPS for end items D & E.
Then develop the material plan for component F to support the MPS

Period	1	2	3	4	5	6
Gross requirements of D	7	11	9	5	8	6
Gross requirements of E	10	12	15	11	6	8

Item	Lot Size	Lead Time	On hand	Schedule Receipts
D	Q=EOQ	1	16	----------
E	Lot-for Lot	2	19	11 in period 2
F	Fixed period of 2	1	22	40 in period 1

Assume that for item D, the set up cost is Rs 250/- and inventory carrying Cost Rs 50/- unit/period   15

5 (a) Define value analysis Explain the role of value analysis in an organization   8

(b) Explain the codification of items in multi-item inventory system   7

6. Formulate and solve simple (R,T) model when shortages are allowed and fully lost   15