Total No. of Questions :10] *[Total No. of Printed Pages :4*

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ME - 705

B.E. VII Semester

Examination, December 2012

Operations Research & Supply Chain

Time : Three Hours

Maximum Marks : 100 ***Minimum pass Marks : 35***

Note : *1. Attempt any five questions.*
2. Assume data suitably if necessary.

Unit - I

1. a) A company makes 2 types of optical products camera & binocular on facilities

$F_1, F_2, F_3, F_4, F_5, F_6$, having production capacities as under: 12

Facilities	Production Capacity
F_1	100 cameras or 150 Binoculars
F_2	80 cameras or 80 Binoculars
F_3	100 cameras or 200 Binoculars
F_4	120 cameras or 90 Binoculars
F_5 (testing shop)	60 cameras
F_6 (testing shop)	60 Binoculars

Facilities F_1 to F_4 can be planned for sharing the production of cameras & binoculars. F_5 & F_6 are respectively testing facilities for testing cameras & binoculars separately.

If the profit contribution of cameras & binoculars are ₹ 40 & ₹ 30 respectively. Determine the product mix for maximum profit.

b) What is slack & surplus variables? Explain physical significance. 8

OR

2. a) Find the fisible solution of the following transportation problem: 10

Warehouses / Factories	W1	W2	W3	W4	supply
F1	14	25	45	5	6
F2	65	25	35	55	8
F3	35	3	65	15	16
Requirement	4	7	6	13	30

b) Explain the following:

i) Teasible solution 2

ii) Optimul solution 2

iii) LINDO 6

Unit - II

3. a) Write the concept of supply chain management with flow diagram. 10

b) Explain BPO & its purposes. 10

OR

4. a) Write short notes on: 10

i) Bullwhip effect

ii) Logistic

b) Compare the traditional role of purchasing with the role in supply chain. 10

Unit - III

5. a) Find the economic order quantity & the reorder point, given: 12

Annual demand = 1200 units

Ordering cost = ₹ 6 per order

Holding cost = ₹ 1.35 per unit / year

Lead time = 5 days

Cost per unit = ₹ 13.50

b) Define "e-business" with advantages. 8

OR

6. a) Explain the uses of little's law. 10

b) Write about MRP & JIT in brief. 10

Unit - IV

7. a) If for a period of 2 hours in a day train arrive at the yard every 20 minutes but the service time continues to remain 36 minutes, then caluclate for this period: 10

i) The probability that the yard is empty.

ii) Average queue length, on the assumption that the line capacity of the yard is limited to 4 trains only.

b) Write short note on game theory & explain its characteristics. 10

OR

8. a) Find the range of value p & q which will render the entry (2, 2) a saddle point for the game: 10

		Player B		
		B_1	B_2	B_3
Player A	A_1	2	4	5
	A_2	10	7	q
	A_3	4	p	6

b) Define the following:

i) Mixed strategy 2

ii) Pure strategy 2

iii) Deduce the "Little's law" formula. 6

Unit - V

9. a) What do you understand by travelling salesman problem? 6

b) Explain decision making & its types. Also describe various techniques of decision making. 14

OR

10. Explain the following: 20

i) Heuristic method.

ii) Metaheuristic method.

iii) Decision making under uncertainty.

iv) Decision making under certainty.

v) Risk in decision making.

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