Subject Code: MB1316/R13

M B A - I Semester Regular/Supply Examinations, Dec/Jan – 2015-16

QUANTITATIVE ANALYSIS FOR BUSINESS DECISION

Time: 3 hours **Max Marks: 60**

Answer any **FIVE** of the following

All questions carry equal marks. **Q.No.8 is compulsory**

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1. A car hire firm has two cars which it fires out day by day. The number of demands for a car on each day is distributed as Poisson variate with mean 1.5. Calculate the proportion of days on which (i) Neither car is used, and
   (ii) Some demand is refused.

2. List the approaches for decisions under risk and explain with examples.

3. Solve the following LP problem using simplex method.

   Maximize $Z = 10X_1 + 15\ X_2 + 20\ X_3$

   Subject to

   $2\ X_1 + 4\ X_2 + 6\ X_3 \leq 24$

   $3\ X_1 + 9\ X_2 + 6\ X_3 \leq 30$

   $X_1, X2,$ and $X3 \geq 0$

4. A manufacturing company has three factories F_1, F_2, and F_3 with monthly manufacturing capacities of 7000, 4000 and 10,000 units of a product. The product is to be supplied to seven stores. The manufacturing costs in these factories are slightly different but the important factor is the shipping cost from each factory to a particular store. The following table represents the factory capacities, store requirements and unit cost (in rupees) of shipping from each factory to each store. Here, slack is the difference between the total factory capacity and the total requirement.

		Stores							Factory
		S_1	S_2	S_3	S_4	S_5	S_6	S_7	Capacity
Factory	F_1	5	6	4	3	7	5	4	7000
	F_2	9	4	3	4	3	2	1	4000
	F_3	8	4	2	5	4	8	3	10,000
Store demand		1500	2000	4500	4000	2500	3500	3000	

   Find the optimal transportation plan so as to minimize the transportation cost.

5. What is transportation problem? Explain how would you obtain solution using NWC, LCM, VAM.

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6. Player A and B Play a game in which each player has three coins [25p, 50p and 100p (one rupee)]. Each of them selects a coin without the knowledge of the other person. If the sum of the values of the coins is an even number, A wins B's coin. If that sum is an odd number, B wins A's coin.
   a) Develop a payoff matrix with respect to player A.
   b) Find the optimal strategies for the players.

7. Develop a zero-one programming model for assignment problem.

8. **Case Study:**
   A project consists of the following activities and the time estimates (in days). Summarize the CPM calculations in a tabular form including total, free and independent floats. Hence, find the critical path.

Activity	Duration	Activity	Duration	Activity	Duration
1-2	6	1-3	8	2-3	2
2-4	4	2-5	1	3-4	5
3-5	3	4-5	2	4-6	8
5-6	11	6-7	9	6-8	4
7-8	6				

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