

**A14**

**Sreenidhi Institute of Science & Technology**

(An Autonomous Institution)

**Code No: 4Z213**

**MBA I - YEAR II – SEMESTER AUGUST 2015 (Regular)**

**QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS**

**Time: 3 Hours Max. Marks: 60**

**Note: No additional answer sheets will be provided.**

**Part – A**

**Max. Marks: 10**

**Answer all the QUESTIONS**

1. Define the Operations Research.

2. Define Slack and Surplus Variables.

3. What is Routing Problem?

4. Explain Criterion of Pessimism**.**

5. Define Two-Person zero –sum games.

6. What is Queuing Theory?

7. What is an artificial variable and why it is necessary to introduce it?

8. How do you convert an Unbalanced Transportation Problem in to Balanced one?

9. Define the Pure Strategy and Mixed Strategy.

10. What is Decision Tree?

**Part – B**

**Max. Marks: 50**

**ANSWER ANY FIVE. ALL QUESTIONS CARRY EQUAL MARKS.**

1. Discuss the significance and scope of Operations Research in Modern Management.
2. Solve the following LPP using Simplex method

**Max z = 5x1+3x2**

**S to C :** **x1 + x2 ≤2**

**5x1+ 2x2 ≤ 10**

**3x1+ 8x2 ≤12**

**And x1,x2 ≥0**

1. A Company has four factories from which it ships, its product units to four warehouses which are the distribution centers. Transportation cost per unit between various combinations of factories and ware houses are as:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Factory | Warehouses | | | | Available |
| 1 | 2 | 3 | 4 |
| 1 | **48** | **60** | **56** | **58** | **140** |
| 2 | **45** | **55** | **53** | **60** | **260** |
| 3 | **50** | **65** | **60** | **62** | **360** |
| 4 | **52** | **64** | **55** | **61** | **220** |
| Requirement | **200** | **320** | **250** | **210** |  |

Find the optimal solution which minimize the distribution cost?

1. a. What are the different environments in which decision are made?

b. What are the Advantages and limitations of Decision Tree Approach?

1. Two competitors A and B are competing for the same product. Their different strategies are given in the following pay off matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Company B | | | | |
| Company A |  | I | II | III | IV |
| I | 3 | 2 | 4 | 0 |
| II | 3 | 4 | 2 | 4 |
| III | 4 | 2 | 4 | 0 |
| IV | 0 | 4 | 0 | 8 |

Use dominance principle to find the optimal strategies.

1. A Department store has a single cashier. During the rush hour customers arrive at the rate of 30 customers per hour. The average no. of customers that can be processed by the cashier is 40 per hour. Assume Poisson arrival, exponential distribution and FCFS queue discipline. Find

i) What is the probability that cashier idle?

ii) What is the average no. of customer in the queuing system?

iii) What is the average no. of customer in the queue?

iv) What is the average time a customer spends in the system?

v) What is the average time a customer spends in the queue waiting for service?

7. a. What are the Elements of a queuing system?

b. What are the Managerial applications of Transportation Problems?

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