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Code No: 721CN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MBA II Semester Examinations, June/July-2018
QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS

Time: 3hours **Max.Marks:75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A **5 × 5 Marks = 25**

1.a) What is a model? Distinguish between analogue and iconic models. [5]
b) What is feasibility region? Is it necessary that it should always be a convex set? [5]
c) Explain the Hungarian assignment method. Is it better than other methods of solving assignment problem? [5]
d) Describe the steps involved in the process of decision-making. [5]
e) What is queuing theory? Under what types of situations can it be applied successfully? [5]

PART - B **5 ×10 Marks = 50**

2. Write an essay on the scope and methodology of operation research. Explain the different phases of an OR study and techniques in solving OR problem. [10]

OR

3. What are the different applications of OR in Financial management? Explain with suitable examples. [10]

4. Solve the problem given below, both graphically and using Simplex method. [10]
Maximize $Z = 5x_1 + 2x_2$
Subject to $4x_1 + 2x_2 \leq 16$
$3x_1 + x_2 \leq 9$
$3x_1 - x_2 \leq 9$
$x_1, x_2 \geq 0$

OR

5. What is a transportation problem? Explain how would you obtain solution using NWC, LCM, VAM. [10]

6. Solve the following assignment problem by Enumeration method. [10]

Time (in minutes)			
Worker	Job 1	Job 2	Job 3
A	4	2	7
B	8	5	3
C	4	5	6

OR

7. Develop a zero-one programming model for an assignment problem. [10]

8. Explain and illustrate the following principles of decision-making:
a) Laplace b) Maximin c) Maximax d) Hurwicz e) Savage and f) Expectation [10]

OR

9. 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. [10]

10. Customers arrive at a hair dressing shop according to Poisson distribution. The average time between successive arrivals is 6 minutes. There are three hair dressers, all of same efficiency. The service time of the customers is exponentially distributed with a mean equal to 10 minutes per customer. Find (a) the expected number of customers in the shop (b) the expected time a customer spends in the shop (c) the average time a customer has to wait in the queue (d) the expected number of hairdressers idle. [10]

OR

11. A TV repairman finds that the time spent on his jobs has an exponential distribution with a mean 30 minutes. If he repairs sets on the first-come-first-served basis and if the arrival of sets is with an average rate of 10 per 8 hour day, what is repairman's expected idle time each day? Also obtain average number of units in the system. [10]

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