Code No: 742AD **R17**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MBA II Semester Examinations, April/May-2019
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. Write about the following:
   a) Meaning and any two definitions of Operations Research. [5]
   b) Characteristics of Transportation Problem. [5]
   c) Assignment Problem and its characteristics. [5]
   d) Types of Decision Making Environments. [5]
   e) Components of a Queuing system. [5]

PART - B **5 × 10 Marks = 50**

2. Briefly describe the Applications of Operations Research in different management areas. [10]

OR

3. Describe the steps involved in processing for developing an Operations Research Model. [10]

4. Find the Dual of the following:
   Minimize $Z = 8X_1+10X_2$; Subject to:
   $2X_1+3X_2 \geq 8$;
   $5X_1+6X_2 \geq 18$;
   $X_1+2X_2 \geq 13$;
   $2X_1+3X_2 \geq 10$ and $X_1, X_2 \geq 0$. [10]

OR

5. Provide a Mathematical Model of Transportation Problem. What is Degeneracy in Transportation Problem? How can it be resolved? [10]

6. What is the mathematical formulation of an Assignment Problem? Give certain variations of the Assignment Problem. [10]

OR

7. Solve the following Assignment Problem:

Jobs → / Workers ↓	1	2	3
A	8	6	5
B	8	6	2
C	6	6	3

Note: The cost involved for each worker to his concerned Job is given in Rs. Find the optimum solution to the above problem by Hungarian Method. [10]

8. What is Critical Path in Network Analysis? What are its advantages? [10]

OR

9. For the following given problem,
a) Construct the Network Diagram; and
b) Determine the Critical Path and Project Duration.

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
Time (Days)	4	1	1	1	6	5	4	8	1	2	5	7

[10]

10. Discuss the Structure of Queuing System and Queue Discipline. [10]

OR

11. In a MBA college, for finger print attendance, students arrive at the machine in Poisson distribution, forming a single waiting line. Their average arrival time is 10 minutes and average time to complete the operation is 5 minute.
Determine: (a) Average no. of students in the System, (b) Average no. of students in the Queue; (c) Average time a student spends in the Queue; and (d) Average time a student spends in the System. [10]

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