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Total No. of Printed Pages: 2

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BBA (Semester – 6th)
OPERATION RESEARCH
Subject Code: BCOM1311
Paper ID: [OE2150121]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Briefly explain the following:

- a. Assumptions of linear programming
- b. Travelling salesman problem of assignment model
- c. PERT Vs. CPM
- d. Assumptions of game theory
- e. List down the important assumptions of linear programming
- f. Pure Vs. Mixed strategies of game model
- g. Degeneracy in transportation model
- h. Deterministic Vs. Probabilistic models of inventory control
- i. Dummy activities in networking
- j. Difference between slack and float

Section – B

(5 marks each)

Q2. Explain the process of converting a primal into dual taking an imaginary LPP.

Q3. Elaborate the steps for testing the optimality in transportation model.

Q4. The following table shows the machine time (in hours) for 5 jobs to be processed on two different machines in the order of AB:

Job	1	2	3	4	5
Machine – A	3	7	4	5	7
Machine - B	6	2	7	3	4

Passing is not allowed. Find out the optimal sequence in which jobs are to be performed along with total elapsed time and idle time of different machines (if any).

Q5. Following are the details for a project:

Activity	Predecessor Activity	Duration
A	--	3
B	--	6
C	A	7
D	B	14
E	C, D	13
F	C, D	5
G	E	2
H	F	15

You are required to:

- Draw the network diagram
- Number the events using Fulkerson's method
- Find the duration for completion of the project
- Find the critical path

Q6. Solve the following game problem:

Player - P	Player - Q				
		Q1	Q2	Q3	Q4
	P1	6	4	8	0
	P2	6	8	4	8
	P3	8	4	8	0
	P4	0	8	0	16

Section – C

(10 marks each)

Q7. A hospital wants to purchase three different types of medical equipment and five vendors have quoted their prices for supplying one or all the three machines. However, the hospital's policy is not to accept more than one machine from any of one of the vendors. the data relating to the price (in thousands) quoted by the different vendors is given below:

V en do r	Machines			
		1	2	3
	A	30	31	27
	B	28	29	26
	C	29	30	28
	D	28	31	27
	E	31	29	26

Using Hungarian method, determine how best the hospital can purchase three machines.

Q8. What do you mean by operations research? Discuss its nature and role in managerial decision making quoting the relevant examples.

Q9. Elaborate the concept and assumptions of EOQ. Using the imaginary figures, explain the process for determining the EOQ in case of no discount being offered by the vendor.