

U.G. 6th Semester Examination - 2021**BBA****Course Code : BBBACCHT601****Course Title : Operation Research**

Full Marks : 40

Time : 2 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **ten** questions of the following:

1×10=10

- a) Name any two phases of O.R.
- b) What do you mean by O.R model?
- c) What is linear programming?
- d) What do you mean by 'Analogue model'?
- e) What is meant by unbalanced transportation problem?
- f) What do you mean by Assignment problem?
- g) What is unbound solution to an LPP?

- h) Give the full form of 'MODI' method and 'VAM'.
- i) State the optimality condition of simplex method.
- j) What is DSS?
- k) What is Transportation Problem?
- l) What is a Dummy Activity?
- m) Define Saddle pont.
- n) What is the basic difference between Pure strategy and Mixed strategy?
- o) What is Called Fair Game?

2. Answer any **five** of the following questions: 2×5=10

- a) What do you mean by Total Float?
- b) Point out any two differences between an Assignment problem and a Transportation problem.
- c) State two merits of OR.
- d) What is the limitation of graphical method of solution to LPP?
- e) What are the basic features of the standard form of LPP?
- f) What is merge event in network diagram?

- g) What are the Common Errors in Drawing Networks?
- h) What are the basic assumptions of Two Person Zero sum game?

3. Answer any **two** of the following questions: $5 \times 2 = 10$

- a) Obtain the initial solution for the following Transportation Problem using VAM:

Origin/Destination	D1	D2	D3	D4	Supply
O1	21	16	25	13	11
O2	17	18	14	23	13
O3	32	17	18	41	19
Required	6	10	12	15	

- b) Solve the following game:

		Player B		
		B1	B2	B3
Player A	A1	1	7	2
	A2	6	2	7
	A3	5	1	6

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- c) What are the steps involved in simplex method? Explain briefly for solving a maximisation problem. 1+4

4. Answer any **one** of the following questions:

$10 \times 1 = 10$

- a) A project schedule has the following characteristics:

Activity	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Time (Days)	15	15	3	5	8	12	1	14	3	14

- i. Construct a network diagram.
- ii. Determine Critical Path.
- iii. Compute Total Float, Free Float and Independent Float. 3+3+4

- b) Use simplex method to solve the LPP. 10

$$\text{Max } Z = 3X_1 + 2X_2$$

$$\text{Subject to } X_1 + X_2 \leq 4$$

$$X_1 - X_2 \leq 2$$

$$X_1, X_2 \geq 0$$

- c) What are the essential characteristics of Operation Research? Mention different phases in an operations research study. Point out some limitations of Operation Research. 3+4+3
