

Roll No.

Total No. of Pages : 03

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B.Com. (Sem.-6)

OPERATION RESEARCH

Subject Code : BCOM602-18

M.Code : 79471

Date of Examination : 22-11-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTIONS-B** consists of **FOUR** Sub-sections : Units-I, II, III & IV.
3. Each Sub-section contains **TWO** questions each, carrying **TEN** marks each.
4. Student has to attempt any **ONE** question from each Sub-section.

SECTION-A

- 1. Attempt all questions.**
- a) Unbalanced Transportation Problem
 - b) What is Simplex Method
 - c) Slack and Float
 - d) Hungarian Method
 - e) Game Theory
 - f) Big-M method
 - g) Dummy Activity
 - h) Critical Path
 - i) Carrying Costs
 - j) ABC Analysis.

SECTION-B

UNIT-I

2. Discuss in detail the methodology of Operations Research.
3. Solve the following LLP

$$\text{Maximise } Z = 20X_1 + 30X_2$$

$$\text{Subject to } 2X_1 + 5X_2 \leq 50$$

$$4X_1 + 3X_2 \leq 50$$

$$\text{Where } X_1 \text{ \& } X_2 \geq 0$$

UNIT-II

4. Solve the game :

A	B		
	5	20	-10
	10	6	2
	20	15	18

5. Explain the following models along with real world examples:

a) Deterministic Model b) Probabilistic Model.

UNIT-III

6. What do you mean by Queuing System? What are the various Characteristics of Queuing System?
7. Determine the critical path and project duration for the following project :

Activity	Immediate Predecessor	Time (days)
A	-	3
B	-	7
C	A	4
D	B	2
E	C,D	5
F	A	6
G	E,F	3

UNIT- IV

8. The following table gives the running costs per year and resale price of certain equipment. Its purchase price is Rs 6,000. At what age the replacement is due?

Year	1	2	3	4	5	6	7	8
Maintenance Costs (Rs.)	1000	1200	1400	1800	2300	2800	3400	4000
Resale Value (Rs.)	3000	1500	750	375	200	200	200	200

9. There are three types of materials i.e. X,Y,Z. The consumption pattern is as follows :

	X	Y	Z
Max. Consumption	1,000	1,500	1,200
Min. Consumption	400	300	600
Avg. Consumption	700	900	900
Re-order Quantity	800	1,200	1,000
Re-order Period	2-4 months	1-3 months	4-6 months

Find :

- a) Re-order Level
- b) Min. Level
- c) Max. Level
- d) Average Level.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.