

Roll No.

Total No. of Pages : 03

Total No. of Questions : 09

B.Com. (Hons.) (Sem.-6)
OPERATION RESEARCH
Subject Code : BCOM-602-18
M.Code : 79471
Date of Examination : 06-07-22

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. **Write briefly :**

- a) Arrival Rate
- b) Saddle Point.
- c) Decision Tree
- d) Scope of Operations Research.
- e) Principle of Dominance.
- f) Hungarian Method.
- g) Game Theory.
- h) Degeneracy in Transportation.
- i) Reorder Level.
- j) Limitations of Dominance method in game theory.

SECTION-B

UNIT-I

2. Define Operations Research. Discuss the scope and limitations of Operations Research.
3. Ajay Foods Ltd. has 4 sales representatives who are to be assigned different regions. The monthly sales expected from each of the sale representative (in lakhs) in different sales region is given below:

Sales Representatives	Sales Region			
	I	II	III	IV
P	200	150	170	220
Q	160	120	150	140
R	190	195	190	200
S	180	175	160	190

Suggest optimal assignment and the total maximum sales increase per month.

UNIT-II

4. Solve the following game theory problem:

Player X	Player Y			
		Y ₁	Y ₂	Y ₃
X ₁		3	-2	4
X ₂		-1	4	2
X ₃		2	2	6

5. What is dynamic programming? Write step by step procedure to solve a general problem by D.P approach.

UNIT-III

6. Discuss the arrival and service processes of waiting line models. Write the standard method of expressing the queuing problem.
7. Discuss the concept of network analysis. Explain the PERT & CPM models and their utility.

UNIT-IV

8. What is meant by Economic Ordered Quantity? Discuss its utility in Inventory Control.
9. a) What are the various costs that one should take into consideration while suggesting a replacement policy?
- b) A fleet owner finds from his past records that the cost per year of an auto whose purchase price is Rs 60,000 is as given below:

Year	Running Cost (Rs.)	Resale Value (Rs.)
1	10,000	30,000
2	12,000	15,000
3	14,000	7,500
4	18,000	3,750
5	23,000	2,000
6	28,000	2,000
7	34,000	2,000
8	40,000	2,000

Assuming the rate of return to be 8%, determine at what age is its replacement due.

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.