Roll No. | | | | | | | | | | | | **Total No. of Pages : 03**

Total No. of Questions : 18

BBA (RD) (Sem.–5)

OPERATION RESEARCH

Subject Code : BBARD-501-18

M.Code : 78627

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) Explain applications of Operation Research in brief.

2) What is the importance of LPP?

3) Write down the steps of Northwest Corner Rule.

4) What is the Travelling Salesman Problem?

5) What is the significance of the Sequencing Problem?

6) Differentiate between PERT and CPM.

7) What do you understand by group replacement policy?

8) Define inventory cost.

9) What are the limitations of Operation Research?

10) What do you mean by an unbalanced transportation problem?

SECTION-B

UNIT-I

11) Explain the methodology of Operations Research. Discuss its importance in the decision-making process.

12) Suppose an industry is manufacturing two types of products P1 and P2. The profits per Kg of the two products are Rs. 30 and Rs. 40 respectively. These two products require processing in three types of machines. The following table shows the available machine hours per day and the time required on each machine to produce one Kg of P1 and P2. Formulate the problem in the form of linear programming model.

Profit/Kg	**P1 Rs.30**	**P2 Rs.40**	**Total available Machine hours/day**
Machine 1	3	2	600
Machine 2	3	5	800
Machine 3	5	6	1100

UNIT-II

13) Obtain an initial basic feasible solution to the following transportation problem using least cost method.

	D_1	D_2	D_3	D_4	Supply
O_1	1	2	3	4	6
O_2	4	3	2	5	8
O_3	5	2	2	1	10
Demand	4	6	8	6	

Here O_i and D_j denote i^{th} origin and j^{th} destination respectively.

14) What are the various steps to summarize the Hungarian method?

UNIT-III

15) Give Johnson's procedure for determining an optimal sequence for processing *n* items on two machines. Give the justification of the rule used in the procedure.

16) Difference between PERT and CPM. Under what circumstances would you consider PERT as opposed to CPM in project management?

UNIT-IV

17) A firm is thinking of replacing a particular machine whose cost price is Rs.12,200. The scrap price of this machine is only Rs. 200. The maintenance costs are found to be as follows:

Year maintenance :	1	2	3	4	5	6	7	8
Cost(Rs.) :	220	500	800	1,200	1,800	2,500	3,200	4,000

Determine when the firm should get the machine replaced.

18) A certain item costs Rs. 235 per ton. The monthly requirement is 5 tons and each time the stock is replenished, there is a setup cost of Rs. 1,000. The cost of carrying of inventory has been estimated at 10% of the value of the stock per year. What is the optimal order quantity?

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