

Roll No.

Total No. of Pages : 03

Total No. of Questions : 09

BBA (Sem.-5)

OPERATIONAL RESEARCH

Subject Code : BBA-501-18

M.Code : 78193

Date of Examination : 12-12-2022

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-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

I. Write a short note on the following :

- a) Inter Disciplinary approach of Operations Research
- b) Linear Relationship
- c) Unbounded Solution
- d) NWCM Method
- e) Unbalanced Assignment Model
- f) Sequencing Problem
- g) CPM
- h) Slack
- i) Individual Replacement Policy
- j) Production Rate

SECTION-B

UNIT-I

- What is operations research ? Explain briefly its application, explain the features of O.R. Approach.
- A manufacturer has two products A and B, both of which are made in steps by machine 1 and machine 2. The process time per hundred for two products on two machines are (set up times are negligible)

Product	Machine 1	Machine 2
A	4 hours	5 hours
B	5 hours	2 hours

For the coming period machine 1 has 100 hours and machine 2 has available 80 hours. The contributor for Product A is Rs. 10 per 100 units and product B is Rs. 5 per 100 units. The manufacturer in market, which can absorb both products as much as he can produce for immediate period ahead. Determine how much of product A and Product B he should produce to maximize his contribution.

UNIT – II

- A distribution system has the following constraints.

Factory	Capacity (units)	Warehouse	Demand (Units)
A	45	I	25
B	15	II	55
C	40	III	20

The transportation cost per unit associated with each route are as follows :

	I	II	III
A	10	7	8
B	15	12	9
C	7	8	12

Find the optimum transportation schedule and the minimum total cost of transportation.

- Describe the assignment problem giving a suitable example. Give two areas of its application.

UNIT-III

- The activities involved in a project are detailed below :

Duration (Weeks)

JOB	OPTIMISTIC	MOST LIKELY	PESSIMISTIC
1-2	3	6	15
2-3	6	12	30
3-5	5	11	17
7-8	4	19	28
5-8	1	4	7
6-7	3	9	27
4-5	3	6	15
1-6	2	5	14
2-4	2	5	8

Draw a network diagram.

- Explain the four elements that characterize ; sequencing problem. Explain the principal assumptions made while dealing with sequencing problems.

UNIT IV

- A company that operates for 50 weeks in a year is concerned about its stocks of copper cable. This costs Rs 240 a meter and there is a demand for 8,000 meters a week. Each replenishment costs Rs 1,050 for administration and Rs 1,650 for delivery, while holding costs are estimated at 25 per cent of value held a year. Assuming no shortages are allowed, what is the optimal inventory policy for the company? How would this analysis differ if the company wanted to maximize its profits rather than minimize cost? What is the gross profit if the company sells the cable for Rs 360 a meter.
- What is Replacement? Describe some important replacement situations.

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.