Class– BBA (Sem. IV)

Subject – OPERATIONS RESEARCH

PAPER – BBA - 406

Time Allowed : 3 Hrs **Maximum Marks :50**

Section – A

Note:- Attempt any 10 questions out of 12 . Each question carries 1 mark. Length should not exceed 5 lines.

1. (i) Define Operations Research.
   (ii) Unbalanced Assignment Problem
   (iii) Saddle Point
   (iv) Two person zero sum game
   (v) Pure Strategy V/s Mixed Strategy
   (vi) Non Convex V/s Convex Sets
   (vii) PERT
   (viii) Limitations of LPP Method.
   (ix) Travelling Salesman Problem
   (x) Infeasible Solution
   (xi) Odds Method
   (xii) Iconic Model $1 \times 10 = 10$

Section - B

Note :- Attempt any 2 questions out of 4. Each question carries 10 marks. Length should not exceed 5 pages.

2. Explain briefly the main phases of an O.R. study & techniques used in solving O.R. problems.

3. A company produces two types of pen, say A & B. Profit on pen A & B is ₹ 5 & ₹ 3 respectively. Raw material required for each pen A is twice as that of B. The supply of raw material is sufficient only for 1000 pens of type B per day. Pen A requires special clips & only 400 such clips are available. For pen B, only 700 clips are available. Find graphically the product mix to minimise profit.

4. Min $Z = 2x_1 + 2.25\ x_2$

   Sub. to

   $2x_1 + 4x_2 \geq 40$

   $5x_1 + 2x_2 \geq 50$

   where x_1 & $x_2 \geq 0$

5. Give short notes on:-

   (i) Degeneracy in Simplex Method.

   (ii) Operations Research and Management Decision Making. $2 \times 10 = 20$

Section - C

Note :- Attempt any 2 questions out of 4. Each question carries 10 marks. Length should not exceed 5 pages.

6.

Operator	Weekly Output				
	M_1	M_2	M_3	M_4	M_5
A	4	6	11	16	9
B	5	8	16	19	9
C	9	13	21	21	13
D	6	6	9	11	7

Cost per unit ₹ 20, selling price ₹ 30. Find the maximum profit per month.

7. Solve the following game.

	B		
	B_1	B_2	B_3
A_1	5	20	–10
A_2	10	6	2
A_3	20	15	18

8. Characteristics of a project schedule are given below:

Activity	t_o	t_p	t_m
1-2	1	3	2
2-3	1	7	4
2-7	2	4	3
3-4	1	5	3
3-5	0	0	0
4-6	0	0	0
5-6	3	13	5
7-8	4	12	8
6-9	4	14	6
8-9	1	3	2

Determine expected time, draw a network & critical path. Compute various floats.

9. Write short notes on :-

(i) Prisoner's Dilemma

(ii) Features & limitations of game theory

$2 \times 10 = 20$

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