2316

50

# 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 came
  - (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.
  - Explain briefly the main phases of an O.R. study & techniques used in solving O.R. problems.

50/4

4

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- 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 soduct mix to minimise profit.
- 4. Min  $2 = 9x_1 + 2.25 x_2$ Sub. to  $2x_1 + 4x_2 \ge 40$

$$5x_1 + 2x_2 \ge 50$$

where  $x_1 & x_2 \ge 0$ 

- 5. Give short notes on:
  - (i) Degeneracy in Simplex Method.
  - (ii) Operations Research and Management Decision Making.  $2 \times 10 = 2 \text{J}$

### Section - C

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

6. Weekly Output

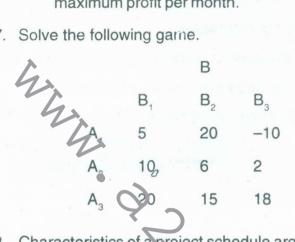
	M	M <sub>2</sub>	$M_3$	M <sub>4</sub>	M <sub>5</sub>
Α	4	6	-11	16	9
В	5	8	16	19	9
С	9	13	21	21	13
D	6	6	9	11	7

2 50/4

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

7. Solve the following game.



8. Characteristics of a project schedule are given below:

Activity	,t <sub>o</sub>	24	t <sub>m</sub>
1-2	1	3	2
2-3	1	7	4
2-7	2	4	30
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
3.5			

50/4

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

- Write short notes on :-
  - Prisoner's Dilemma
- A (ii) Fe Features & limitations of game theory

 $2 \times 10 = 20$ 

4