

BBA-406(N)

**B. B. A. (Fourth Semester)
EXAMINATION, May, 2018**

(New Course)

Paper Sixth

OPERATIONS RESEARCH

3 Hours]

[Maximum Marks : 70

Attempt questions from all Sections as directed.
The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section—A

(Short Answer Type Questions)

Questions are compulsory. Each question carries 10 marks.

1. Describe application areas of Operations Research.

2. Write notes on any *three* Operations Research techniques.

3. Do you agree that

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(D) Draw the graphs of the following in equations :

(i) $2x + 5y \geq 12$

(ii) $x - 3y \leq 9$

(E) Write methods to obtain an initial feasible solution for a Transportation problem.

(F) What do you mean by unbalanced assignment problem?

(G) What do you mean by EMV and EOL?

(H) What do you mean by criterion of Optimism?

(I) Write a short note on PERT and CPM techniques.

(J) Give an example of Burst event in network.

Section—B

(Long Answer Type Questions)

Note : Attempt any two questions. Each question carries 10 marks.

2. Explain the concept, scope and tools of OR as applicable to Business and Industry.

3. Solve the following L. P. P. graphically :

Maximize :

$$z = x_1 + 2x_2$$

Subject to :

$$2x_1 + x_2 \leq 70$$

$$x_1 + x_2 \leq 40$$

$$x_1 + 3x_2 \leq 90$$

and $x_1, x_2 \geq 0$.

4. Solve the following L. P. P. by using Simplex method :

Maximize :

$$z = x_1 + x_2 + 3x_3$$

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Subject to :

$$3x_1 + 2x_2 + x_3 \leq 3$$

$$2x_1 + x_2 + 2x_3 \leq 2$$

and $x_1, x_2, x_3 \geq 0$.

5. Find an optimal solution to the following Transportation problem :

Sources	Destination			Supply
	X	Y	Z	
A	2	7	4	50
B	3	3	7	70
C	5	4	1	80
D	1	6	2	140
Demand	70	90	180	340

Section—C

(Long Answer Type Questions)

Note : Attempt any two questions. Each question carries 10 marks.

6. Solve the following minimal assignment problem :

	Man				
	1	2	3	4	5
I	12	8	7	15	14
II	7	9	17	14	10
III	9	6	12	6	7
IV	7	6	14	6	10
V	9	6	12	10	6

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[5]

- (a) Draw the network diagram and find the project completion time.
 - (b) Calculate total float for each activity.
9. Write short notes on any *two* of the following :
- (a) V. A. M.
 - (b) Three Time Estimates
 - (c) Artificial Variable
 - (d) Critical Path