

B.B.A. Semester - 5 (Remedial) (CBCS) Examination**February/March. -2020****STATISTICS GROUP: FUNDAMENTALS OF OPERATION RESEARCH (ELECTIVE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1 (A) What is operations research? Explain with 3 definition. (14)

(B) Give characteristics of operations research.

OR

Q.1 Give the role and significance of O.R. in business and industry for scientific decisions.

Q.2 Solve by graphic method. (14)

$$\text{Max } z = 0.1X_1 + 0.2 X_2$$

Subject to constraint

$$X_1 + X_2 \leq 1,00,000$$

$$X_1 \leq 75,000$$

$$X_2 \leq 75,000$$

$$0.1 \times 1 + 0.2 \times 2 \geq 0.12(X_1 + X_2)$$

$$4 \times 1 + 9X_2 \leq 6 (X_1 + X_2)$$

$$X_1, X_2 \geq 0$$

OR

Q.2 (A) What do you understand by a linear programming problem?

(B) Explain graphic method for solution on LPP.

Q.3 (14)

$$\text{Maximize } Z = 800X_1 + 600X_2 + 300X_3$$

Subject to constraint

$$10X_1 + 4X_2 + 5X_3 \leq 2,000$$

$$2X_1 + 5X_2 + 4 X_3 \leq 1,009$$

$$X_1, X_2, X_3 \geq 0$$

Solve by simplex method.

OR

Q.3 (A) Explain simplex method for maximization case.

(B) Explain the following:

- (i) Slack variables
- (ii) Surplus variables
- (iii) Artificial variables

Q.4 Solve the following T.P.:

(14)

	W1	W2	W3	W4	W5	Supply
P1	5	8	6	6	3	80
P2	4	7	7	6	6	50
P3	8	4	6	6	3	90
Demand	40	40	50	40	80	

OR

Q.4 (A) Discuss one methods of finding initial feasible solution of transportation problem.

(B) Explain unbalance in T.P. How you solve it?

Q.5 A captain of a cricket team has to allot five middle batting positions to five batsmen. (14)

The average runs scored by each batsman at these position are as follows:

	Batting positions				
Batsman	III	IV	V	VI	VII
A	40	40	35	25	50
B	42	30	16	25	27
C	50	48	40	60	50
D	20	19	20	18	25
E	58	60	59	55	53

Make the assignment so that expected total average runs scored by these batsmen are maximum.

OR

Q.5 (A) What is an assignment problem?

(B) Give difference between T.P. and A.P.
