## Unit-IV

8. What techniques are used to solve decision making problem under uncertainity? Which technique result is an optimistic decision? Why? 10

9. Solve the game whose Pay off matrix is given below: 10

| | Player-B | | | |
|---|---|---|---|---|
| Player-A | $B_1$ | $B_2$ | $B_3$ | $B_4$ |
| $A_1$ | 3 | 2 | 4 | 0 |
| $A_2$ | 3 | 4 | 2 | 4 |
| $A_3$ | 4 | 2 | 4 | 0 |
| $A_4$ | 0 | 4 | 0 | 8 |



**A** **(Printed pages 4)**

**Roll. No. _____**

# CH-6/2833

## B.Com. (Hons.) (Semester-VI)

## Examination, 2015

## OPERATION RESEARCH

## (BCH-601)

*Time Allowed : Three Hours ]* *[ Maximum Marks : 70*

**Note :** Answer **five** questions in all. Question **No.1** is **compulsory** which carries 30 marks. Attempt **one** question from each Unit which are of 10 marks each.

1. Write short notes on the following : 3×10=30

   (a) Concept of Pay-off matrix.

   (b) Pure & mixed strategy.

   (c) Advantages of LPP.

   (d) Algorithm of assignment problem.

(e) Scope of Operation Research.

(f) Unbounded solution in graphical method.

(g) Objective of sensitivity analysis.

(h) Merit of MODI method of transportation problem.

(i) Application areas of Linear Programming.

(j) The rule of dominance in games theory.

**Unit-I**

2. What is the methodology of operation research, Draw a flow chart to explain various steps involved in the methodology. 10

3. How can operation research models be classified? Explain. Discuss about the best classification in terms of learning and understanding the fundamentals of operation research. 10

**Unit-II**

4. Explain the various steps involved in the computation of an optimum solution through graphical method to a Linear Programming Problem. 10





5. Solve the following LPP using Simplex method:

Max. $Z = x_1+x_2+3x_3$ 10

Subject to: $3x_1+2x_2+x_3 \leq 3$

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

$x_1, x_2, x_3 \geq 0$

**Unit-III**

6. Solve the following Transportation Problem using Vogel's method. 10

| | | Warehouse | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | $w_1$ | $w_2$ | $w_3$ | $w_4$ | $w_5$ | $w_6$ | Availability |
| Factory | 1 | 9 | 12 | 9 | 6 | 9 | 10 | 5 |
| | 2 | 7 | 3 | 7 | 7 | 5 | 5 | 6 |
| | 3 | 6 | 5 | 9 | 11 | 3 | 11 | 2 |
| | 4 | 6 | 8 | 11 | 2 | 2 | 10 | 9 |
| Requirement | | 4 | 4 | 6 | 2 | 4 | 2 | 22 (Total) |

7. Briefly discuss the methods for solving an assignment problem. How is the Hungarian method better than other methods for solving an assignment problem. 10