

**CDOE**  
**BACHELOR OF BUSINESS ADMINISTRATION (CBCS-2019 COURSE)**  
**B.B.A. SEM - V : WINTER :- 2021**  
**SUBJECT: INTRODUCTION TO OPERATION RESEARCH**

**Day : Monday**  
**Date 21-02-2022**

**W-21935-2021**

**Time : 02:00 PM-05:00 PM**  
**Max. Marks: 60**

**N.B.**

- 1) Attempt any **THREE** questions from Section – I and any **TWO** questions from Section – II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in the **SAME** answer book.
- 4) Use of non-programmable calculator is allowed.

**SECTION – I**

**Q.1** Use the graphical method to solve the following LP problem: **(12)**

Maximize  $Z = 2x_1 + x_2$

Subject to the constraints:

$$x_1 + 2x_2 \leq 10$$

$$x_1 - x_2 \leq 2$$

$$x_1 - 2x_2 \leq 1$$

$$\text{and } x_1, x_2 \geq 0$$

**Q.2** Discuss advantages and limitations of operations research. **(12)**

**Q.3** What is Transportation Problem? Explain applications of Transportation Problem. **(12)**

**Q.4** The department has five employees with five jobs to be performed. The time (in hours) each men will take to perform each job is given in the effectiveness matrix. **(12)**

Jobs	Employees					
		I	II	III	IV	V
	A	10	5	13	15	16
	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated, one per employee, so as to minimize the total man-hours?

**Q.5** Write short notes on any **THREE** of the following: **(12)**

- a) CPM
- b) Vogel's approximation method
- c) Applications of LPP
- d) Origin and development of Operations Research

P.T.O.

## SECTION – II

- Q.6** PERT now has proven to be an effective management tool that can be utilized by companies of all sizes in almost every industry. Discuss. **(12)**
- Q.7** Explain the steps to find Initial Basic Feasible Solution by using: **(12)**  
**a)** Least Method  
**b)** North-west corner rule
- Q.8** What is an assignment problem? Discuss its any two applications. **(12)**

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