

**SUPPLEMENTARY**  
**BACHELOR OF BUSINESS ADMINISTRATION (BUSINESS PROCESS**  
**MANAGEMENT) (CBCS-2018 COURSE)**  
**B.B.A. (BPM) Sem-VI :SUMMER- 2022**  
**SUBJECT : INTRODUCTION TO OPERATIONS RESEARCH**

Day : Friday

Time : 10:00 AM-01:00 PM

Date : 26-08-2022

**S-20646-2022**

Max. Marks : 60

**I.N.D.**

- 1) Attempt **ANY THREE** questions from Section – I.
- 2) Attempt **ANY TWO** questions from Section – II.
- 3) Figures to the **RIGHT** indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SAME** answer book.
- 5) Use of Non- Programmable Calculator is allowed.

**SECTION – I**

**Q.1** Define Operations Research. Explain the scope of Operations Research in brief. **(10)**

**Q.2** Solve the following L.P.P. by Graphical Method. **(10)**

Minimize  $z = 4x + 2y$

Subject to :

$$x + 2y \geq 2$$

$$3x + y \geq 3$$

$$4x + 3y \geq 6$$

$$x \geq 0, y \geq 0$$

**Q.3** Solve the following A.P. for minimization **(10)**

Men	Jobs			
	A	B	C	D
I	15	13	12	18
II	17	19	12	16
III	16	14	15	17
IV	15	17	17	18

**Q.4** Find the I.B.F.S. of following T.P. by **(10)**

- i) N.W.C.R.
- ii) Least Cost Method

Sources	Destination				Capacity
	A	B	C	D	
X	4	1	3	4	60
Y	2	3	3	2	35
Z	3	5	4	3	40
<b>Demand</b>	<b>25</b>	<b>45</b>	<b>60</b>	<b>20</b>	

**Q.5** Write short notes on **ANY TWO** of the following : **(10)**

- a) Origin and development of Operations Research
- b) Applications of Transportation Problem
- c) Importance of Network analysis

**PTO**

SECTION – II

Q.6 Find the optimum solution of following T.P. for Minimization. (15)

Destination				
Sources	I	II	III	Supply
X	10	3	9	400
Y	12	10	5	300
Z	8	11	12	300
Demand	200	300	500	

Q.7 a) Explain the advantages of Operations Research in brief. (07)

b) Hungarian method for solving assignment problem. (08)

Q.8 For the following project schedule (15)

Activity:	1-2	1-3	1-6	2-7	2-4	4-6	3-5	5-6	7-6	6-8	7-8
Duration in days:	2	14	13	12	11	13	11	12	15	14	15

Draw Network Diagram and find :

- i) Earliest time and latest time of each activity
- ii) Critical path
- iii) Duration of project

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