Paper Code: MBA3204

School of Management, BBD University

Program: IMBA Sem: IV

First Sessional Test Paper Even Sem (2023-24)

Subject: Operations Research

Time: 60 Minutes Max. Marks: 30

SECTION-A

(This section contains very short answer type questions)

Q. No. 1. Attempt *All parts* of the following: **[5*1 = 5]**

a) What is slack variable?
b) What is operations research?
c) What is infeasible solution?
d) What is decision theory?
e) What do you mean by penalties?

SECTION-B

Q. No. 2. Attempt *any Two* of the following: **[7.5*2 = 15]**

a) What are the roles of operations research in managerial decision making.
b) Use the graphical method to solve the following LP problem.
Maximise: $Z = 3x_1 + 2x_2$
Subject to: $2x_1 + x_2 \leq 40$, $2x_1 + x_2 \leq 24$, $2x_1 + 3x_2 \leq 60$, and $x_1 + x_2 \geq 0$
c) *Difference between* Transportation and Assignment Problem.
d) *Solve the assignment problem for optimal solution using Hungarian Method.*

Worker	Job			
1	45	40	51	67
2	57	42	3	55
3	49	52	48	64
4	41	45	60	55

SECTION-C

Q. No. 3. Attempt any *One of* the following: **[10*1 = 10]**

a) A newspaper boy has the following probabilities of selling a magazine:

No. of copies sold	10	11	12	13	14	Total
Probability	0.10	0.15	0.20	0.25	0.30	1.00

Cost of copy is 30 paisa and sale price is 50 paisa. He cannot return unsold copies. How many copies should he order?

b) A firm own facility at six places, it has manufacturing plants at places A, B and C with daily production of 50,40 and 60 units, respectively. At points D, E and F it has three warehouses with daily demands of 20, 95 and 35 units, respectively. Per unit shipping cost are given in the following tale. If the firm wants to minimize its total transportation cost, how should it route it products?

c) Solve the following LPP by simplex method:
Max. $Z = 100x + 60y + 40z$
Subjected to $x + y + z \leq 100$, $10x + 4y + 5z \leq 600$, $2x + 2y + 6z \leq 300$,
$x, y, z \geq 0$