Printed page: 04 Roll No: Subject Code: GPG023

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, (NIET BUSINESS SCHOOL) GREATER NOIDA

PGDM (Global)

TRIMESTER-IITHEORY EXAMINATION (2024-2025)(COP)

Subject - Quantitative technique for business Decisions.

Time: 2Hrs.30 min Max. Marks:60

General Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

1. *This Question paper comprises of three Sections -A, B, & C. It consists of Short type questions & Subjective type questions.*
2. *Maximum marks for each question are indicated on right hand side of each question.*
3. *Illustrate your answers with neat sketches wherever necessary.*
4. *Assume suitable data if necessary.*
5. *Preferably, write the answers in sequential order.*
6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION – A 15

1. Attempt **all** parts:-

1-a. Define Operation research . (CO1,K2) 1

1-b. Define Linear Programming Problems. (CO2,K2) 1

1-c. Give the name of method in which, for find I.B.F.S. we start from cell (1,1) Transportation problems . (CO3,K2) 1

1-d. Define pure strategy in game. (CO4,K4) 1

1-e. Define sequencing problem. (CO5,K4) 1

2. Attempt **all** parts:-

2.a. Give two characteristics of O.R. (CO1,K2) 2

2.b. Define surplus variables and slack variables (CO2,K2) 2

2.c. Write the different methods for find I.B.F.S. in Transportation problems (CO3,K2) 2

2.d. Solve the game for the following pay of matrix: 2

Player B

$player\ A \begin{bmatrix} -7 & 2 \\ -5 & -4 \end{bmatrix}$ (CO4,K4)

2.e Write the process Johnson's method. (CO5,K4) 2

SECTION – B 15

3. Answer any **three** of the following-

3-a. Discuss the models of O.R. (CO1,K2) 5

3-b. Write dual of the following problem: 5

Min. $Z= 10x_1+20x_2$

s.t. $3x_1+2x_2 \geq 18$

$x_1+3x_2 \geq 8$

$2x_1- x_2 \leq 6$

$x_1 x_2 \geq 0$.(CO2,K2)

3-c. Find initial basic feasible solution of following Transportation Problem by VAM: 5

	A	B	C	Supply
I	2	7	4	5
II	3	3	1	8
III	5	4	7	7
IV	1	6	2	14
Demand	7	9	18	

(CO3,K2)

3-d. Write the working rule of Hungarian method for Assignment problems. (CO4,K4) 5

3-e. Explain the method of processing of n jobs through two Machines. (CO5,K4) 5

SECTION – C 30

Case Let & Application Based

4. Answer any **one** of the following-

4-a. Discuss the Phases of O.R. (CO1,K2) 6

4-b. Write applications of O.R. in different fields. (CO1,K2) 6

5. Answer any **one** of the following- 6

5-a. Write the basic requirement for Linear Programming Problems. (CO2,K2) 6

5-b. Solve given LPP by Simplex method 6

Max. $Z= 40x_1+35x_2$

s.t. $2x_1+3x_2 \leq 60$

$4x_1+3x_2 \leq 96$

$x_1, x_2 \geq 0$ (CO2,K2)

6. Answer any **one** of the following-

6-a. Find initial basic feasible solution of following Transportation Problem by : I) North west corner rule II) Lowest cost entry method : (CO3,K2) 6

	A	B	C	D	Supply
I	19	30	50	10	7
II	70	30	40	60	9
II	40	8	70	20	18
Demand	5	8	7	14	

6-b. Discuss the steps of optimal solution of Transportation problems . (CO3,K2) 6

7. Answer any **one** of the following-

7-a. Find the optimal solution for the assignment problem with the following cost matrix: (CO4,K4) 6

	I	II	III	IV
A	5	3	1	8
B	7	9	2	6
C	6	4	5	7
D	5	7	7	6

7-b. Obtain the optimum strategies for both the players and determine the value of game. 6

Player B

$$\text{Player A} \begin{bmatrix} -5 & 3 & 1 & 20 \\ 5 & 5 & 4 & 6 \\ -4 & -2 & 0 & -5 \end{bmatrix}$$ (CO4,K4)

8. Answer any **one** of the following-

8-a. Explain the method of processing of n jobs through three Machines (CO5,K4) 6

8-b. Determine the sequence of jobs that will minimize the total elapsed time. And also calculate the total elapsed time. (CO4,K4) 6

Task	I	II	III	IV	V	VI	VII	VIII	IX
Machine I	4	10	8	18	12	16	14	10	8
Machine II	12	16	14	8	6	18	6	16	22