Subject Code: N PGDM023

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

PGDM (Standard)

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

Subject …-Quantitative technique for business decision

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 surplus variables. (CO2,K2)	1
1-c.	Define unbalanced Transportation problems. (CO3,K4)	1
1-d.	Define Assignment problems. (CO4,K4)	1
1-e.	Explain Sequencing problems. (CO5,K4)	1

2. Attempt **all** parts:-

2.a.	Define a model. (CO1,K2)	2
2.b.	Define LPP. (CO2,K2)	2
2.c.	Give the necessary and sufficient condition for existence of a feasible solution of a Transportation problems . (CO3,K4)	2
2.d.	Write the principle of dominance in game. (CO4,K4)	2
2.e	Discuss Johnson's method.(CO5,K4)	2

SECTION – B 15

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

3-a.	Give difference between deterministic and probabilistic models of O.R.(CO1,K2)	5
3-b.	Write the steps for mathematical formulation of a Linear Programming Problems. (CO2,K2)	5

3-c. Find initial basic feasible solution of following Transportation Problem by North west corner rule. 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,K4)

3-d. Solve the game for the following pay of matrix: 5

Player B

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

3-e. There are six jobs each of which must go through the two machines A and B in the order AB. Determine the sequence of jobs that will minimize the total elapsed time. 5

Job	1	2	3	4	5	6
Machine I	5	9	4	7	8	6
Machine II	7	4	8	3	9	5

(CO5,K4)

SECTION – C 30

Case Let & Application Based

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

4-a. Discuss historical development and scopes of O.R. (CO1,K2) 6

4-b. Give the advantages and limitations of O.R, (CO1,K2) 6

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

5-a. Give the working rule of Simplex method. (CO2,K2) 6

5-b. Solve by Graphical method given LPP: 6

Max. Z= 100x+300y

s.t. $x+2y \leq 32$

$x+y \leq 24$

$x,y \geq 0$ (CO2,K2)

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

6-a. Discuss the working rule of MODI METHOD. (CO3,K4) 6

6-b. Determine the optimum basic feasible solution of following Transportation Problem 6

	D1	D2	D3	D4	a_i
O1	5	3	6	2	19
O2	4	7	9	1	37
O3	3	4	7	5	34
bj	16	18	31	25	

(CO3,K4)

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

7-a. Describe the Hungarian method for solving the Assignment problems. (CO4,K4) 6

7-b. Using the principle of dominance , solve the following game: 6

Player B

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

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

8-a. Explain the method of processing of m jobs through three machines A,B,C in order ABC. (CO5,K4) 6

8-b. Write the component of CPM Network.(CO5,K4) 6