Assignment For Academic Year 2024-25 (Beginning January 2025)

B.A. -3rd Year **Course Code: MATH317TH**

Course Title: Transportation and Game Theory (SEC-4)

ASSIGNMENT-1

Attempt any THREE of the following questions. **15 Marks**

Ques 1. Solve the Transportation Problem for IFS by (i) North West corner method (ii) least cost entry method (iii) Vogel's Approximation Method

	C_1	C_2	C_3	C_4	Supply
W_1	14	28	20	16	60
W_2	14	24	22	12	60
W_3	10	30	16	18	60
Demand	40	50	40	60	180 / 190

Ques 2. Solve the transportation problem for optimal solution using MODI method.

	A	B	C	Supply
X	3	1	20	2
Y	7	2	15	2
Z	1	18	3	4
Demand	3	3	2	

Ques 3. A cement factory manager is considering the least way to transport cement from his three manufacturing centers P, Q, R to depots A,B,C,D and E. The weekly production and demands along with transportation costs are given below:

	A	B	C	D	E	Supply (Tons)
P	6	3	5	6	6	50
Q	4	5	4	4	5	25
R	5	7	4	6	6	30
Demand (Tons)	20	40	20	10	15	105

What should be the distribution programme?

Ques 4. Solve the following transportation problem to maximize profit and give criteria for optimality.

	1	2	3	4	Supply
A	35	20	17	28	200
B	39	30	25	25	60
C	33	33	23	25	140
Demand	80	40	120	60	

Ques 5. A charted Accountant has four articles for audit work and four audits have to be performed. Articles differ in efficiency and tasks differ in their intrinsic difficulty. Time

each audit take is given in the effectiveness matrix. How the tasks should be allocated to each article so as to minimize the total man-hour?

Articles

Audit Type	I	II	III	IV
A	14	50	32	20
B	24	54	6	50
C	74	36	34	28
D	36	50	46	18

ASSIGNMENT-2

Attempt any THREE of the following questions. **15 Marks**

Ques 1. Consider the problem of assigning five jobs to five persons, the assignments are given as follows:

	I	II	III	IV	V
A	8	4	2	6	1
B	0	9	5	5	4
C	3	8	9	2	6
D	4	3	1	0	3
E	9	5	8	9	5

Ques 2. Maximize the assignment problem (Assign five jobs to the five machine so as to maximize the total expected profit)

(Jobs)

Machine	A	B	C	D	E
1	5	11	10	12	4
2	2	4	6	3	5
3	3	12	5	14	6
4	6	14	4	11	7
5	7	9	8	12	5

Ques 3. Solve the following Salesman problem given by the following data: $C_{12} = 18$, $C_{13} = 2$, $C_{14} = 8$, $C_{23} = 3$, $C_{34} = 4$, $C_{25} = 8$, $C_{35} = 4$, $C_{45} = 8$. Where $C_{ij} = C_{ji}$ and there is no route between cities i and j if a value of C_{ij} is not known.

Ques 4. Reduce the following game by dominance property and solve it:

Player B

Player A	1	2	3	4	5
I	3	5	3	9	6
II	5	6	2	7	8
III	8	7	9	8	7
IV	4	0	8	5	3

Ques 5. Solve the game by using graphic method whose payoff matrix is given

B

A	I	II	III	IV
I	2	5	-1	-2
II	3	2	5	6