

**S.Y.B.SC. (Computer Science) SEM –IV (2014 COURSE) : SUMMER
2019**

SUBJECT : OPTIMIZATION TECHNIQUES

Day: Tuesday
Date: 16/04/2019

S-2019-1146

Time: 03.00 PM TO 05.00 PM
Max. Marks: 40

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.

Q.1 Attempt **ANY TWO** of the following: **[10]**

a) Write advantages of linear programming problem.

b) Solve the following L.P.P. by graphically

Maximize $Z = x + 3y$

Subject to,

$$3x + 6y \leq 8$$

$$5x + 2y \leq 10$$

$$x, y \geq 0$$

c) Solve the following transportation problem by north west corner method.

	D1	D2	D3	Supply
O1	2	7	4	5
O2	3	3	1	8
O3	5	4	1	7
O4	1	6	2	14
Demand	2	9	18	

Q.2 Attempt **ANY TWO** of the following: **[10]**

a) Explain matrix minima method.

b) Find initial basic feasible solution to transportation problem by Vogel's approximation method and optimize it by MODI method.

	D1	D2	D3	D4	Supply
P1	19	30	50	12	7
P2	70	30	40	60	10
P3	40	10	60	20	18
Demand	5	8	7	15	35

c) Solve the following assignment problem

Subordinate

	I	II	III
Task A	9	12	11
Task B	8	13	17
Task C	20	12	13
Task D	21	15	17

- Q.3** Attempt **ANY TWO** of the following: [10]
- a) Solve the following assignment problem ,where no assignment can be made form job 2 to machine A and job 3 to machine B.

		Machine			
		A	B	C	D
Job	1	4	7	5	6
	2	-	8	7	4
	3	3	-	5	3
	4	6	6	4	2

- b) Solve the following game .

$$A \begin{matrix} & B \\ \begin{bmatrix} 6 & 2 \\ 4 & 6 \end{bmatrix} \end{matrix}$$

- c) Explain dominance principle for solving mxn game.

- Q.4** Attempt **ANY FIVE** of the following: [10]

- a) Write dual of following L.P.P.

$$\text{Max } Z = 5x + 7y$$

Subject to,

$$x + y \leq 4$$

$$3x + 8y \leq 24$$

$$10x + 7y \leq 35$$

$$x, y \geq 0$$

- b) Explain prohibited assignment problem.
 c) Explain balanced transportation problem with suitable example.
 d) Define: Value of the game.
 e) Explain feasible solution.
 f) Solve the following assignment problem.

		Jobs		
		I	II	III
Operators	A	7	6	5
	B	3	7	3
	C	2	9	7

- g) Determine whether the following game has saddle point.

		Player B		
		I	II	III
Player A	I	6	8	6
	II	4	12	2

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