	Sixth Semester B.E. Degree Examination
USN	

10CS/IS

n, Dec.2014/Jan.201 irch

Time: 3 hgs...

3

. Marks 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- a. What is operations research? Briefly explain the various phase of operations research study.
  - b. A person equires minimum 10, 12 and 12 units of chemicals for the deficiency of C respectively for his garden. A siquid product contains 5, 2 and 1 units of the and C respectively per jar. A dry product contains 1, 2 and 4 units of A. B and Compare the liquid product sells for Rs.3 per jar and dry product sells for Rs.2 per jar, how now of each should be purchased in order to minimize the cost and incer requirement. (06 Marks)
  - c. Use graphical method to solve the following:

Max  $z = 100x_1 + 40x_2$ 

Subjected to  $5x_1 + 2x_2 \le 1000$ 

$$3x_1 + 2x_2 \le 900$$

$$x_1 + 2x_2 \le 500$$

$$x_1, x_2 \ge 0$$

(06 Marks)

a. Solve the following LPP by uning supplemental

Max  $z = 3x_1 + 2x_2 + 5x_1$ 

Subjected to x<sub>1</sub> + 2x<sub>8</sub>+ ... ≤

$$3x_1 + 2x_2$$
 160  
 $x_1 + 4x_2 \le 426$ 

$$x_4 + 420$$

(10 Marks)

b. Explain the steps olved a setting up of a simplex methods

(10 Marks)

a. Solve the colo line LPP by using Big M method:

Max z = -1

Subjected to  $+x_2 = 3$ 

$$|x_1 + 3x_2| \ge 6$$

$$x_1 + 2x_2 \le 4$$

$$x_1, x_2 \ge 0$$

(10 Marks)

the following LPP by using two-phase method:

 $\text{Max } z = 5x_1 + 8x_2$ 

bjected to  $3x_1 + 2x_2 \ge 3$ 

$$x_1 + 4x_2 \ge 4$$

$$x_1 + x_2 \le 5$$

$$x_1, x_2 \ge 0$$

(10 Marks)

Tof 2

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(10 Mud

- a. Explain the steps involved in revised simplex method.
  - b. Use revised simplex method to solve the following LPP:

Min 
$$z = x_1 + x_2$$

Subjected to  $x_1 + 2x_2 \ge 7$ 

$$4x_1 + x_2 \ge 6$$

$$x_1, x_2 \ge 0$$

Marks)

- PART B a. Explain the role of duality theory in sensitivity analysis.
- Write the dual of the following LPP:

i) Max 
$$z = 3x_1 - x_2 + x_3$$

Subjected to  $4x_1 - x_2 \le 8$ 

$$8x_1 + x_1 + 3x_3 \ge 12$$

$$5x_1 - 6x_1 \le 13$$

$$A_1, X_2, X_1 \ge 0$$

ii) Min z = 2x + 8x,

Subjected to  $3x_1 + \xi_2 \ge 12$ 

$$2x_1 + x_2 + 6x_3 \le 6$$

$$5x_1 - x_2 + 3x_3 \Rightarrow 4$$

$$x_1, x_2, x_3 \ge 0$$

(10 Marks)

a. Find the initial solution to the following fram. problem using VAM: (10 Marks)

		Destination				
		$D_1$	$\mathbf{D}_2$	$\mathbf{D}_{j}$	Da	из Ту
	Fi	3	.3	4		
Factory	F <sub>2</sub>	4	2.4	44	2	25
	Fi	1		E.		75
	Demand	1204	8	V .	2	300

b. Explain flungarian algori im when hiple.

(10 Marks)

- Define the following with remed to games:
  - i) Pay off

198

- iii) Saddle points

(03 Marks)

b. Solve the following game graphical method:

Player A

(07 Vincks)

Solve the landwing same by dominance property:

## Player B

(10 Marks),

- with thort notes on:
  - enetic algorithm.
  - taheuristics.
  - Tabu search algorithm.

Simulated annealing algorithm.

(20 Marks)

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ALL BRANCHES | ALL SEMESTERS | NOTES | QUESTON PAPERS | LAB MANUALS