

B. ELECTRICAL ENGINEERING EXAMINATION, 2018(5th Year, 1st Semester, Supple)**ADVANCED COMPUTING TECHNIQUES**

Time: Three Hours

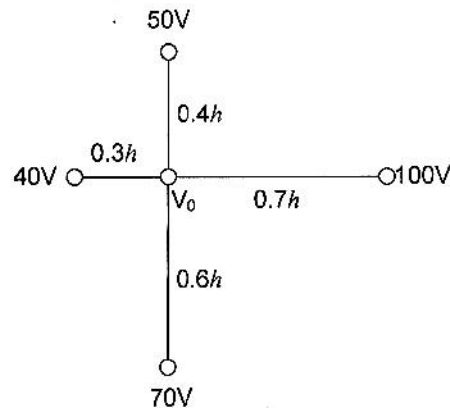
Full Marks: 100

(50 marks for each part)

Use a separate answer-script for each part.

PART- IAnswer *any three* questions.**Two marks** are reserved for neat and well organized answers.

1. a) Deduce the FDM equations in a two dimensional system with equal nodal distances. 8
- b) Deduce the FDM equations in a two dimensional system with unequal nodal distances. 8
2. a) Explain the method of 'Acceleration of Convergence by relaxation.' 6
- b) Find the voltage V_0 as shown in figure below. 10



3. Write a short note on Finite Element Method (FEM). 16
4. Explain back propagation method of ANN clearly indicating the importance of choice of weights in ANN. 16

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5. a) Distinguish between (i) Crisp Set, (ii) Fuzzy Set and (iii) Membership Function with respect to Fuzzy Logic. 6
- b) Give the scheme of implementing a Fuzzy Logic Controller in a car. The input parameters can be (a) speed, (b) acceleration and (c) distance to destination. The output will be power flow to the engine. 10

**BACHELOR OF ENGINEERING (ELECTRICAL ENGINEERING) FIFTH YEAR FIRST
SEMESTER (OLD) SUPPLEMENTARY EXAM - 2018**

SUBJECT: - ADVANCED COMPUTING TECHNIQUES

Full Marks: 100

(50 marks for this part)

Time: Three hours

Use a separate Answer-Script for each part

No. of Questions	PART -II Answer any Three (Two marks reserved for well organized answers)	Mark
6)	Solve the following LP problem using simplex algorithm. Maximize $z = 20x_1 + 30x_2$ Such that, $x_1 + 2x_2 \leq 10$ $3x_1 + 2x_2 \leq 18$	(16)
7)	Perform Three iterations of the non-linear simplex algorithm to <i>Minimize</i> $f(x_1, x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ The initial simplex is formed by the points A = (4, 4), B = (5,4) and C = (4,5) and the parameters of the algorithm are, $\alpha = 1.0$, $\beta = 0.5$ and $\gamma = 2.0$, where the notation have their usual meanings. Permissible error for convergence, $\epsilon = 0.2$.	(16)
8) a)	Briefly discuss the Marquardt's method for solving the non-linear optimization problems	(8)
b)	Illustrate the method of "Lagrange multiplier".	(8)
9)	Solve the following integer programming problem using Branch and Bound technique. Solution of the individual LP problems has to be found out using graphical method. <i>Minimize</i> $z = x_1 + 4x_2$ Subject to $2x_1 + x_2 \leq 8$ $x_1 + 2x_2 \geq 6$ $x_1x_2 \geq 0$ x_1, x_2 are integer	(16)
10) a)	Briefly discuss simulated annealing.	(8)
b)	Discuss the Newton's method of solving Non-Linear optimization problems.	(8)