Enrollment No:-_____ Exam Seat No:-_____

C.U.SHAH UNIVERSITY

Summer-2015

Subject Code: 4TE03CIT1 **Subject Name: Circuit Theory**

Course Name: B.Tech(EEE,EE,IC) Date: 7/5/2015

Semester:III Marks: 70

Time:02:30 TO 05:30

Instructions:

1) Attempt all Questions of both sections in same answer book/Supplementary.
2) Use of Programmable calculator & any other electronic instrument prohibited.
3) Instructions written on main answer book are strictly to be obeyed.
4) Draw neat diagrams & figures (if necessary) at right places.
5) Assume suitable & perfect data if needed.

SECTION – I

Q.1 (a) Answer the Following 07

i. Reciprocity theorem is applicable to circuits having only one source. True/False?
ii. Dual of Thevenin's Theorem is ____ Theorem.
iii. Define Initial Condition and Final Condition.
iv. KVL is a consequence of _____.
v. KCL is applicable to _____ networks.
vi. How a dependent source differs from independent source?
vii. State the value of the charge of an electron.

Q.2 (a) State and explain Thevenin's theorem with example. 05

(b) Explain Norton's theorem in brief giving suitable example. 05

(c) State and Explain Compensation theorem in brief. 04

OR

Q.2 (a) Explain in Brief: Ideal and Practical Energy Source 05

(b) Explain Superposition Theorem in brief with example. 05

(c) State and Explain Millman's theorem in brief . 04

Q.3 (a) What is the power absorbed in the resistors of Fig.1? Assume i_0 = 1A. 07

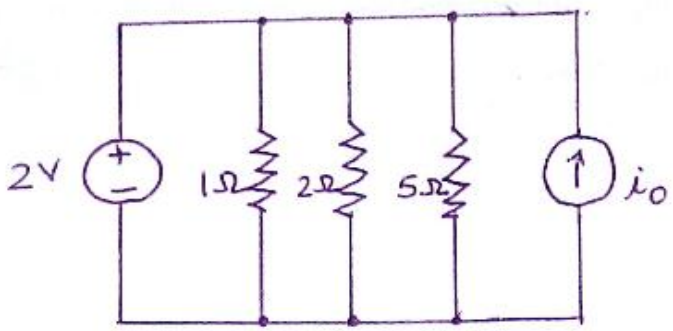

FIGURE :- 1

(b) Find the current and power dissipated in the 5Ω resistor in the circuit shown in Fig.2. 07

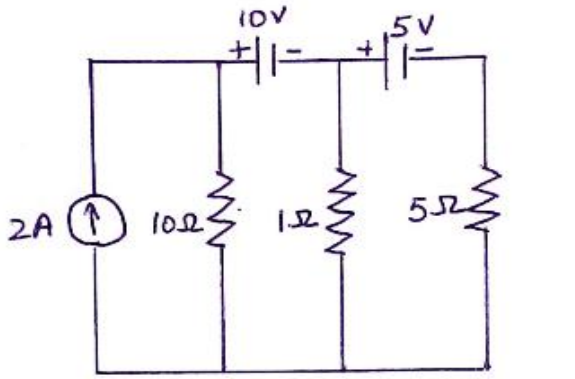

FIGURE :- 2

OR

Q.3 (a) Determine the current through the 5Ω resistor in the circuit of Fig.3 using Thevenin's theorem. 07

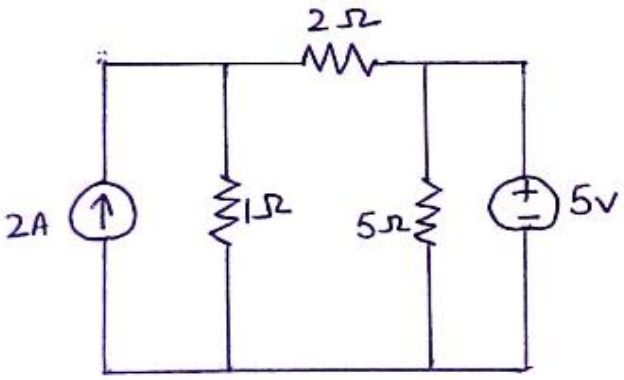

FIGURE:- 3

(b) Find the current in the 1Ω resistor in the circuit of Fig.4 using Norton's theorem. 07

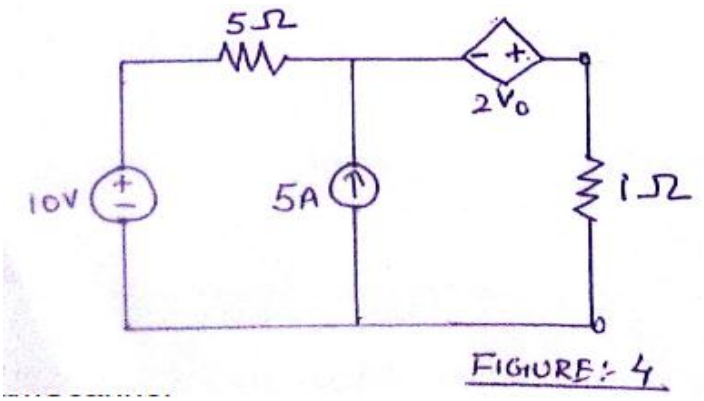

FIGURE:- 4

SECTION - II

Q.4 (a) Define the following 01

1) Node 2) Electromotive force 3) Mutual inductance 4) Dual with reference to Network. 5) Lumped parameter 6) Mesh 7) Loop 01

05

Q.5 (a) Explain the procedure for formulation of graph, tree and incidence matrix. 05

(b) State and explain Tellegen's theorem. 05

(c) Write a short note on Z parameters. 04

OR

Q.5 (a) Describe Laplace transformation method for solving differential equations; 05

state its advantage over the classical method.

(b) Define Network. Give a classification of various types of networks. 05

(c) Explain the classification of Time domain and Frequency domain analysis 04

Q.6 (a) Derive formulae to convert given 'Y' parameters into 'h' parameters. 07

(b) Explain the concept of poles and zeros and their significance. 07

OR

Q.6 (a) State and explain initial and final value theorem. 07

(b) What are the relationship between voltage and current in resistor, inductor and capacitor? Also mention the initial and final conditions for R, L and C components in different cases. 07