Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name : Circuit Theory
Subject Code : 4TE03CIT1 **Branch: B.Tech (EEE, Electrical)**
Semester : 3 **Date : 04/12/2018** **Time : 02:30 To 05:30** **Marks : 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a) V= I* ____ (R, L, C) . Fill the best option using ohm's Law.
b) Battery is an example of _____(Voltage source, Current Source)
c) Draw the symbol of an ideal voltage source.
d) V= V1+V2+V3 . This formulae is applicable to series circuit.(True/False)
e) State the name of sources applicable to circuit operation.
f) State the name of analytical methods using which the network can be simplified.
g) State the name of any two network theorem applicable to circuit solution.
h) What is linear differential equation? Give suitable example.
i) State what do you mean by open circuit and short circuit ?
j) The Laplace transform of f(t) = 1/t is ___ (1, $1/s^2$, 0, -1)
k) The inverse Laplace Transform of (1/s) is _____. (1, 0 , t^2, sint)
l) The poles of the transfer function is a value where function is infinite.(True/False)
m) Write down the equation of two port network in terms of ABCD parameters.
n) Draw the circuit of Lattice network.

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

(a) State and explain Kirchoff's Current Law and Voltage Law. **(7)**
(b) Find the value of total current and equivalent resistance when two resistors having value of 6 ohm and 4 ohm are connected in (i) series combination (ii) parallel combination . The source voltage is 10 V. **(7)**

Q-3 **Attempt all questions** **(14)**

(a) Briefly explain about ideal current sources and ideal voltage sources. **(7)**
(b) Briefly explain about graph and its subparts with suitable example. **(7)**

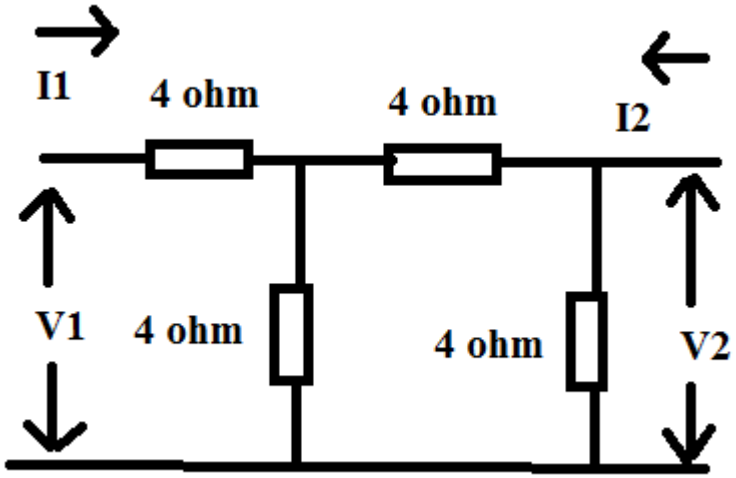
Q-4 **Attempt all questions** **(14)**

(a) Explain Thevenin's Theorem. **(7)**
(b) State the Super Position Theorem with suitable examples. **(7)**

Q-5 **Attempt all questions** **(14)**

(a) Write down voltage and current relationships in resistor, inductor and capacitor. Obtain these relationships in "s" domain also. State assumptions if any in obtaining the relationship. **(7)**

(b) For the network shown in the figure find the value of h parameters. **(7)**



Q-6 **(14)**

The open circuit impedance parameters of a two port network are $Z_{11}= 5\Omega$, $Z_{22}=4\Omega$, $Z_{12} =Z_{21}=3\Omega$. Find the ABCD parameter of the network.

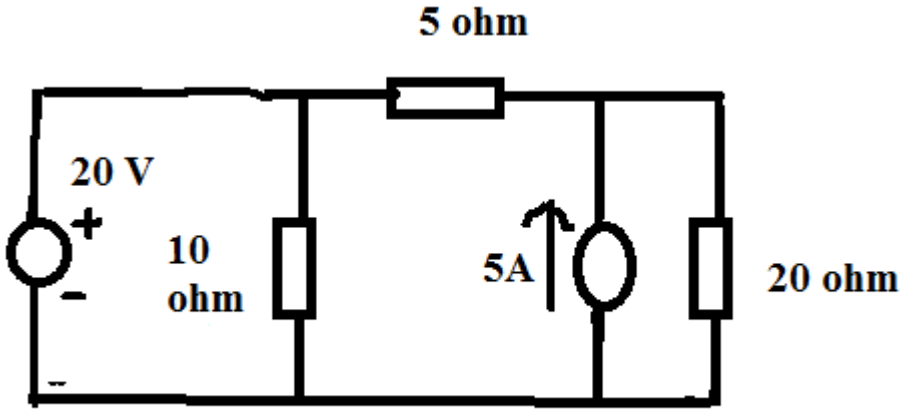
Q-7 **Attempt all questions** **(14)**

(a) Find the Laplace transformation of sin(t), e^{at} . **(7)**

(b) Find the inverser Laplace Transformation of (s/s^2+a^2) **(7)**

Q-8 **Attempt all questions** **(14)**

(a) Find the power loss across the 5 ohm resistor. **(7)**



(b) Explain the terms (i) Non-Linear (ii) Uni-lateral (iii) Passive (iv) Reciprocal (v) Time variant (vi) Lumped parameter and (vii) Dual with reference to Network **(7)**