VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)

Term End Examination - May 2013

Course : EEE101 - Basic Electrical and Electronic Engineering Slot: D1

Class NBR : 2179/2238/2372/2374/2377/2379/2385

Time : Three Hours Max.Marks:100

(Assumptions can be made wherever necessary)

Answer any TEN Questions
(10 X 10 = 100 Marks)

1. For the circuit in Fig. 1, find the Thevenin equivalent between terminals a and b.

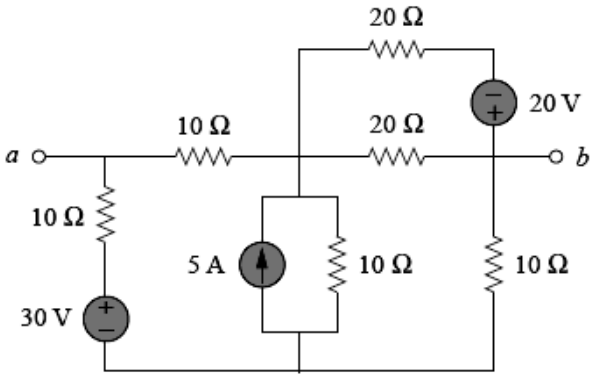

Fig. 1.

2. Obtain the node-voltage equations for the circuit in Fig. 2 by inspection. Determine the node voltages V_1 and V_2.

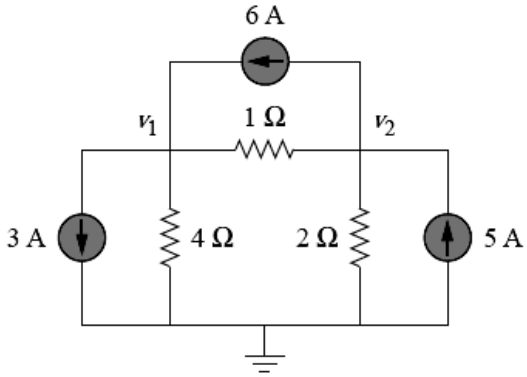

Fig. 2.

3. Find the equivalent resistance between terminals a and b in the circuit of Fig. 3.

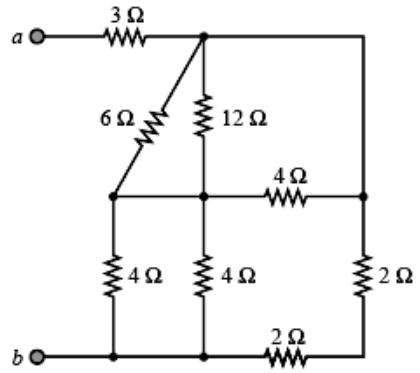

Fig. 3

4. If $V_o = 8\angle 30^\circ V$ in the circuit of Fig. 4, find I_S

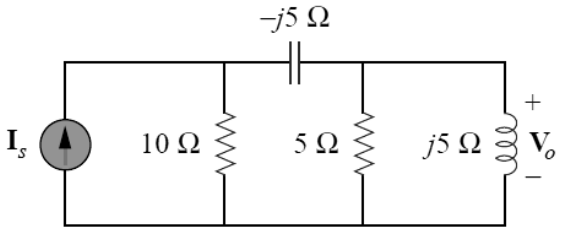

Fig. 4.

5. A Capacitor C is connected in series with a 40 Ω resistor across a supply of frequency 60 Hz. A current of 3A flows and the circuit impedance is 50 Ω. Calculate

   (a) the value of the Capacitance, C,

   (b) the supply voltage

   (c) the phase angle between the supply voltage and current

   (d) the potential drop across the resistor, and

   (e) the potential drop across the capacitor

   Draw the phasor diagram.

6. Convert the given non-standard sum-of-product Boolean expression to canonical form and simplify using K map minimization technique. Also implement the same using NOR Logic. $F = \bar{A}C + \bar{A}B + A\bar{B}C + BC$.

7. (a) Convert $8B3F_{16}$ to binary.

   (b) Convert 001101011_2 to octal.

   (c) Convert 188.54_{10} to binary.

   (d) Add (-8)+(-9) using 2's complement

   (e) Add (-8)+(9) using 2's complement

8. Explain Half adder and Full adder with truth table and logic diagram.

9. With the help of V-I Characteristics explain the working of PN Junction Diode under forward and reverse biased condition.

10. Explain the operating mechanism of IGBT with neat diagram.

11. With neat sketch brief the construction of a dc machine.

12. Explain the principle of operation of a synchronous motor. Also give its applications.

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