FACULTY OF ENGINEERING

B.E. 2/4 (EEE) I-Semester (Main)s Examination, November / December 2012

Subject : Electrical Circuits - I

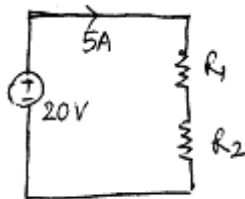Time : 3 Hours   Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Find out the values of R_1 and R_2 so that the drop across R_1 is twice the drop across R_2.   (3)


2. Derive the equation for energy stored in the capacitor.   (2)
3. Define the terms with respect to the graph of a circuit
   (i) Tree (ii) co-tree (iii) Loop   (3)
4. What are the properties of an incidence matrix?   (2)
5. Find the average value of the waveform.   (3)
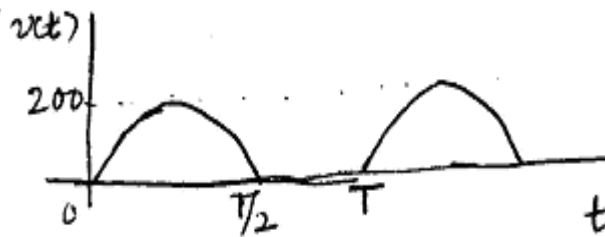
6. What is the true power in an ac circuit ?   (2)
7. Explain the effect of variation of resistance on the selectivity of the circuit. (3)
8. What is an ideal transformer? Explain.   (2)
9. What do you mean by balanced and unbalanced loads?   (2)
10. Prove that at any instant of time the sum of the induced voltages in a three phase circuit is zero.   (3)
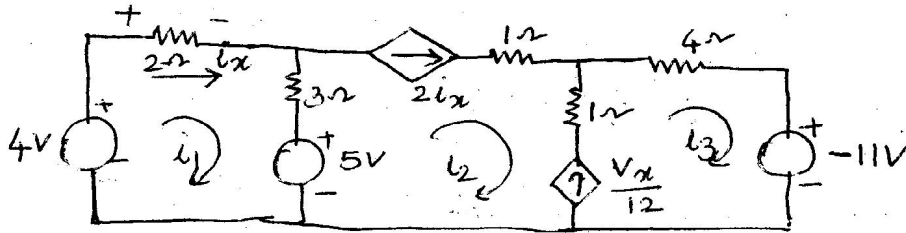
PART – B (5x10=50 Marks)

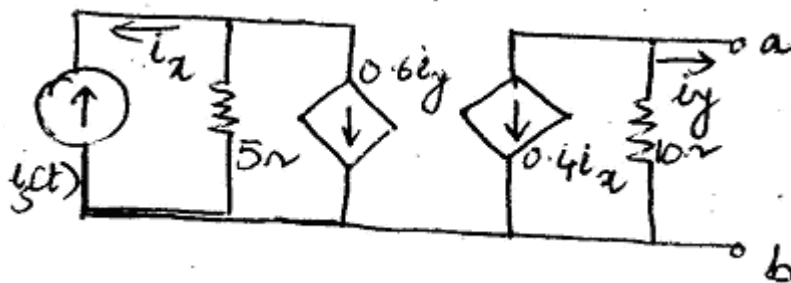11. Find the values of all resistors in the circuit and calculate the total power dissipated in them.   (10)
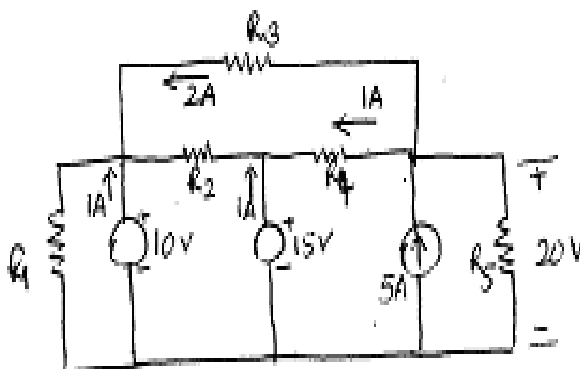
12. Apply mesh analysis to solve i_1, i_2 and ibc $_3$ (10)


13. Find the Thevenin's equivalent of the circuit. (10)

14. A circuit consists of a series connected resistance of 10 ohms a capacitance of 150μ F and an inductance of 16mH connected across a supply of 100v at 50Hz. Evaluate (a) circuit current (b) power factor and (c) power consumed by the circuit. Draw the phasor diagram also. (10)

15. A voltage of 200 0° V is applied across two impedances in parallel as shown. Find KVA, KVAR, KW of the circuit. (10)
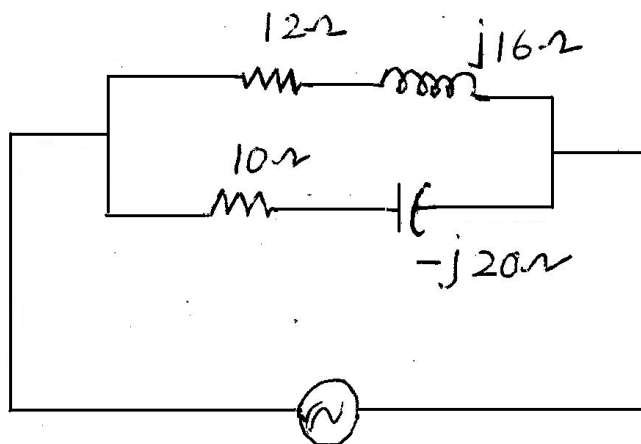
16.(a)   Find the transmission parameters of the circuit. (10)
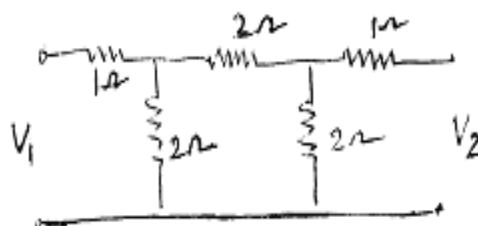
17.(a) Derive the expression between phase and line currents for balanced delta (Δ) connected load. (5)
(b) With two wattmeter method of power measurement of a balanced load, the readings of the two wattmeters are 5.92 KW and 2.61 KW. Find power and power factor. (5)

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