B.E. DEGREE EXAMINATION, APRIL/MAY – 2013
II SEMESTER
ELECTRICAL AND ELECTRONICS ENGINEERING
EE9151 ELECTRIC CIRCUIT ANALYSIS

Time: 3 Hours **Max. Marks: 100**

Answer all questions

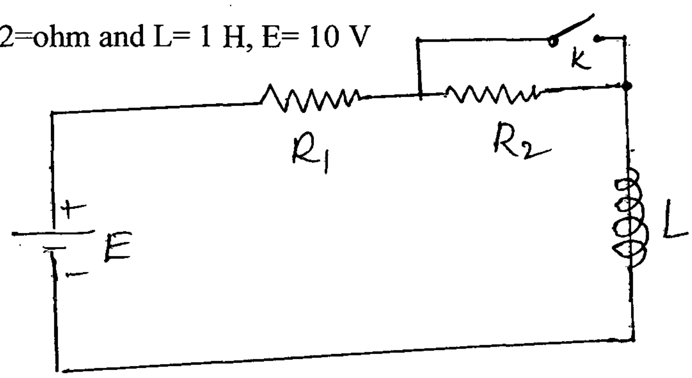
PART- A (10 X 2 = 20)

1. State Ohm's law
2. Define: RMS value of an alternating quantity
3. State Superposition theorem
4. What is admittance?
5. Explain the variation of current with frequency in a RLC series circuit and also the resonance condition
6. A source is having an impedance of (8-j6) ohms at certain frequency. What should be the load impedance for maximum power transfer?
7. A 400 volt, three phase, four wire system has a balanced load of (8+j6) ohms in each phase. Calculate the neutral wire current.
8. Write an expression for transient current of RL circuit with DC excitation.
9. Explain the significance of two wattmeter method of three phase power measurement.
10. Define: Laplace transform

PART- B (5 X 16 = 80)

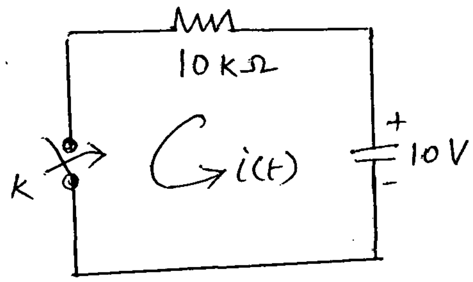
11. (i) Two batteries A and B with internal resistances of 8 ohms and 4 ohms respectively are connected in parallel. The emf of battery is 120 V and that of battery B is 140 V. A load of 80 ohms is connected across the battery terminals. Using Kirchoff's laws, determine the magnitude and direction of current flowing in each of batteries and in the external resistance.

12. (a) In the circuit shown in Fig. below, the battery voltage is applied for a steady state period. Obtain the complete expression for the current after closing the switch K. Assume R1=1 ohm, R2=ohm and L= 1 H, E= 10 V



(OR)

12. (b) A capacitor of capacitance 5 micro-farad being charged initially to 10 V is connected to a resistance of 10 K and is allowed to discharge through it by switching of a switch K. Find the expression of discharging current.

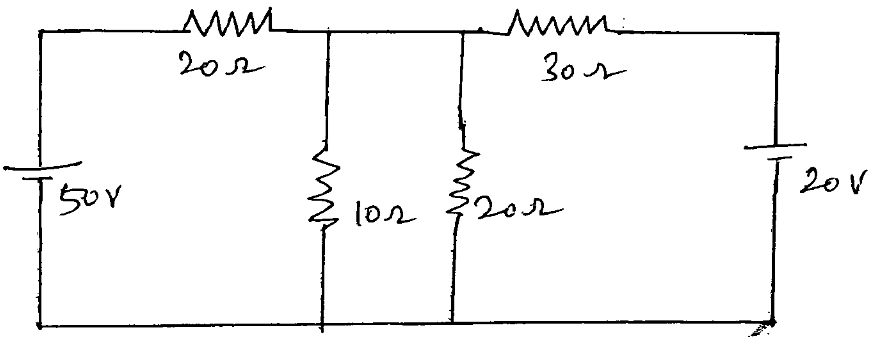


13.(a) (i) A resistance of 5 ohms and a capacitance of 159 micro farad are connected in parallel and fed from 100 V, 50 Hz supply. Find (1) total current (2) power factor (3) apparent power (4) active power

(OR)

13. (b) A series RLC circuit has R=1.5 ohms, X_c =5 ohms and the inductance is impure having resistance of 3 ohms and inductive reactance of 1 ohm. Find the impedance and the circuit current. Calculate the frequency of resonance. The supply is 100 V, 50 Hz.

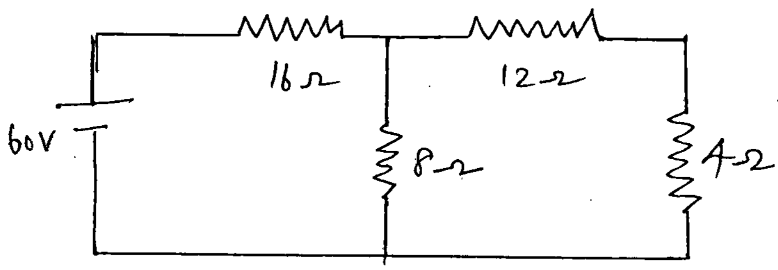
14. (a) Use Nodal analysis to determine the voltage across 10 Ω resistance of the given circuit in Fig.



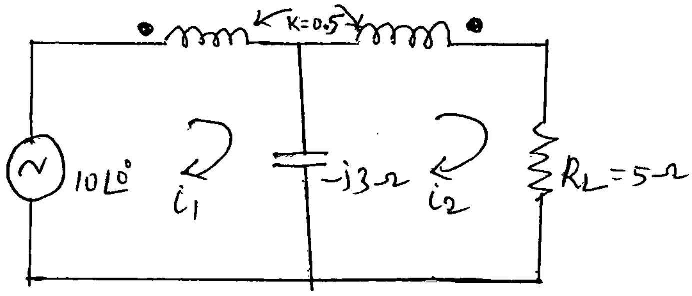
(OR)

14. (b) (i) State and explain Thevenin's theorem as applied to electric circuits.

(ii) Apply Thevenin's theorem to the network shown in fig. and determine the current in the 4 ohms resistance.



15. (a) Find the drop across R_L in the figure shown below.



(OR)

15.(b) In a given a balanced 3 phase, 3-wire system with Y connected load for which line voltage is 230V and impedance of each phase is (8+j6) Ω. Find the line current, real and reactive power absorbed.