ECE249: BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

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1. Find the equivalent resistance across terminal a-b as shown in Fig-1.

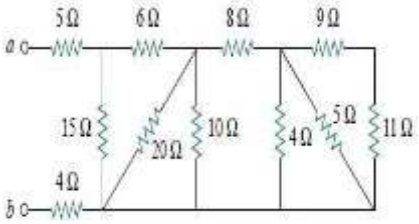

Fig-1

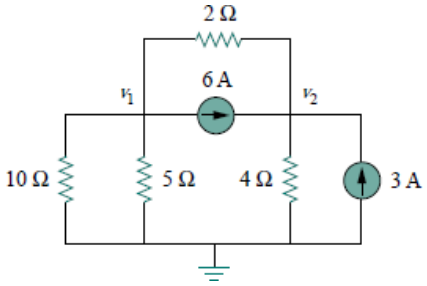

Fig-2

2. Obtain the node voltages in the circuit in Fig-2
3. Calculate the mesh currents i_1 and i_2 in the circuit of Fig-3.

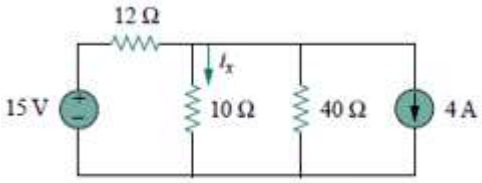

Fig.3

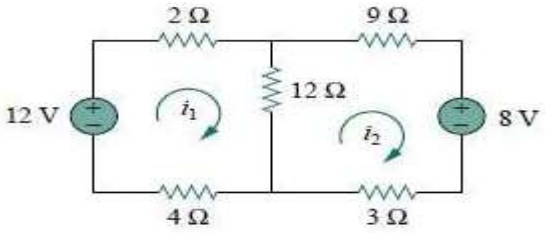

Fig.4

4. Calculate i_x and the power dissipated by the 10Ω resistor using superposition theorem as shown in Fig-4.
5. If voltage **v = 6 cos (100t−30◦)** is applied to a 50 μF capacitor, calculate the current through the capacitor.
6. A current source in a linear circuit has is **i= 10 cos (10 ^{3}πt − 60°) A**.
   (a) What is the amplitude of the current?
   (b) What is the angular frequency?
   (c) Find the frequency of the current.
   (d) Calculate current at t = 1 ms