





11. a) In the circuit shown in Figure 11 (a), find the current in each branch using Mesh analysis.

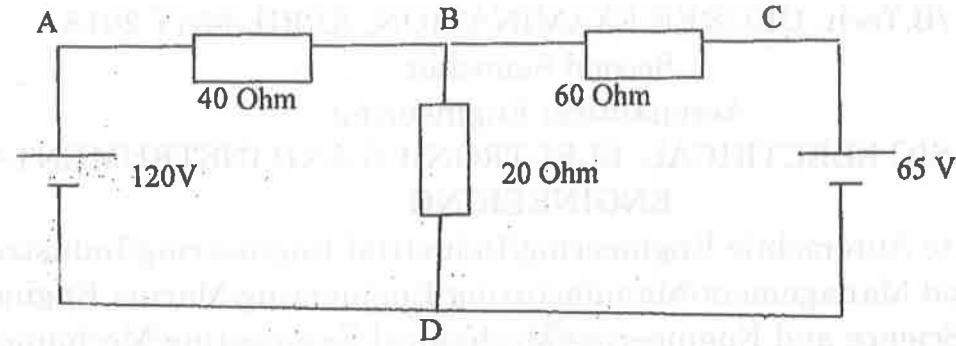


Figure 11(a)

(OR)

- b) In the circuit shown in Figure 11(b), find the current in each branch using super position theorem.

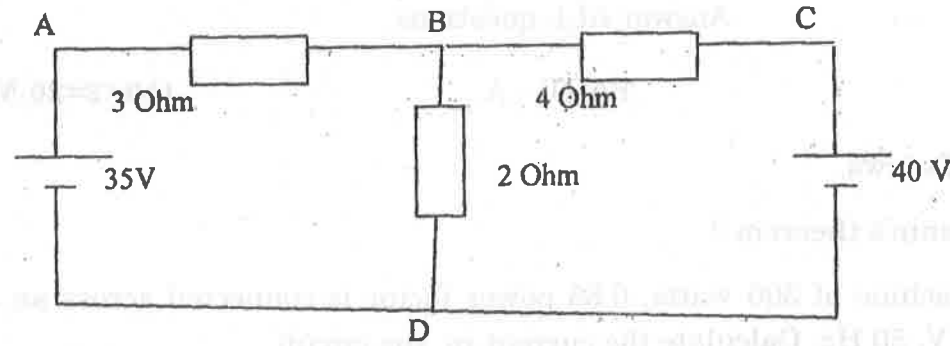


Figure 11 (b)

12. a) A balanced three phase load consists of three coils, each of resistance 8 ohm and inductive reactance of 10 ohm. Determine the line current and power absorbed when the coils are star connected, delta connected across 400 V, 3 phase supply.

(OR)

- b) Explain with a neat diagram the staircase using circuit diagram.

13. a) Explain the principle of operation of a transformer with neat sketch. Also state where it is used in power system.

(OR)

- b) Explain the principle of operation of a three phase induction motor with essential constructional feature. Also define a slip of an induction motor.



14. a) i) What are P Type and N Type materials and how they are obtained? (8)  
 ii) What is PN Junction? (5)

(OR)

- b) What are Inverting and Non-inverting amplifiers? Find the Voltage Gain of both amplifiers.

15. a) Explain the working principle of Hall Effect transducer. Also give some of its applications.

(OR)

- b) Explain the two wattmeter method of power measurement in a three phase circuit with a neat circuit diagram.

16. a) The 3 phase 4 Wire, 75 kW LT industry draws power from the Utility Grid. 5 Amps max capacity energy meter is fixed in the industry. The current transformer having with ratio of 200/5 Amps is connected in the lines and its secondary is connected to Energy meter.

- i) Why current transformer is needed? Explain. (10)

- ii) What factor to be used along with Energy meter reading to arrive the actual consumption? Explain. (5)

(OR)

- b) Find the voltage across  $R_L$  in Figure 16 (b) when (i)  $R_L = 1000$  ohm (ii)  $R_L = 2000$  ohm (iii)  $R_L = 9000$  ohm. Use Thevenin's theorem to solve the problem.

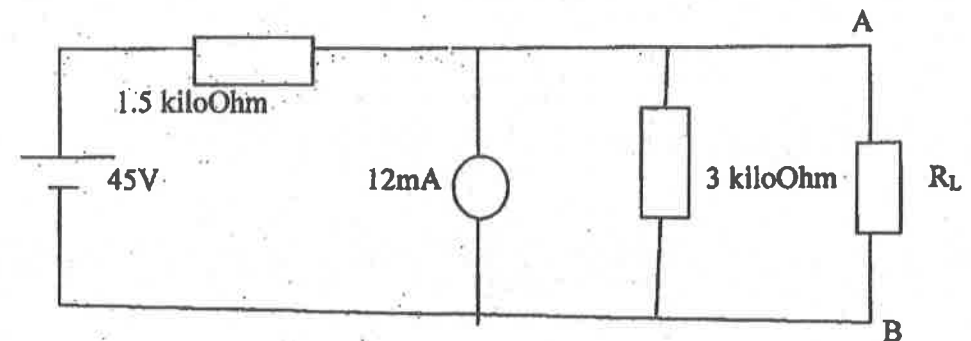


Figure 16 (b)