BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Unit Test-II
Question Bank

ECN-K Scheme (312332)

UNIT 3 Three phase circuits (06 M)

4 M Questions

1. Three impedances each of value (6 + j8) Ω are connected in delta across 250V, 3φ, 50Hz AC. Calculate -

i) Phase current

ii) Line current

iii) Power factor
iv) Power.

2. Three equal impedances having R = 20 ohm in series with C = 50 µF, are connected in delta across 415 V, 3-ph, 50 Hz AC supply. Determine :
(i) Impedance per phase
(ii) Phase and line currents
(iii) Total 3-ph power consumed by load

3. Three coils each with a resistance of 10 Ω and inductance of 0.35mH are connected in star to a 3-phase, 440 V, 50 Hz supply. Calculate the line current and total power taken per phase.

4. State relationship between line voltage and phase voltage, line current & phase current in a balanced star connection. Draw complete phasor diagram of voltages & current.

5. Explain 'Neutral Shift' in case of 3-phase star-connected unbalanced load.

6. Each phase of delta-connected load comprise a resistor of 50Ω and capacitor of 50µF in series. Calculate the line and phase currents when the load is connected to a 440V, 3 phase, 50 Hz supply.

UNIT 4 Network Reduction Methods for D.C Circuits (12 M)

2 M Questions

1. Define the terms - Mesh, Node
2. Give equations of delta to star transformation.
3. Give equations of Star to Delta transformation.
4. State Kirchoff's Current Law.
5. State Kirchoff's Voltage Law.

4 M Questions

1. Using mesh analysis, find current in 5 Ω resistor in the network shown in Fig. 5(b).

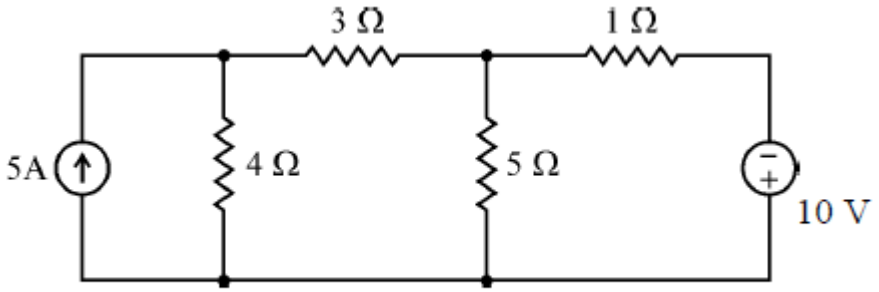


Fig. No. 5 (b)

2. Find current through 20Ω resistor of Fig. No. 5 using mesh analysis.

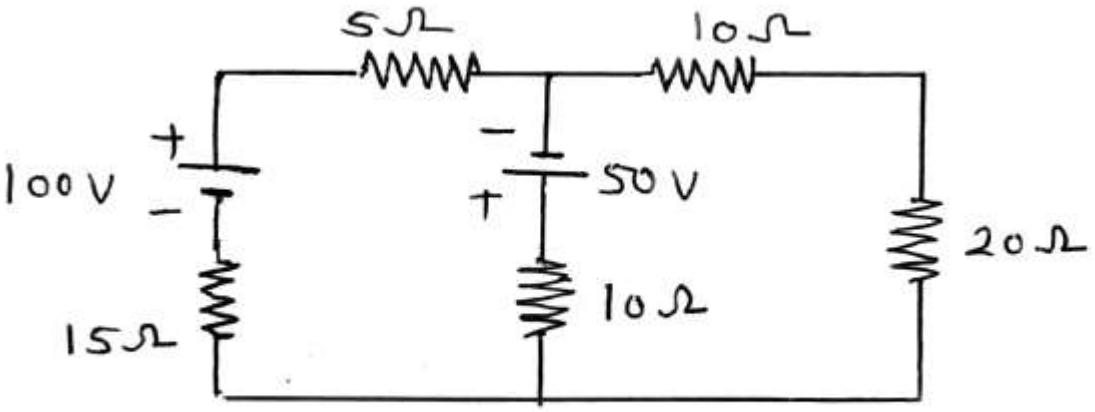


Fig. No. 5.

3. Find voltage across 3Ω resistor of Fig. No. 7. using Nodal analysis.

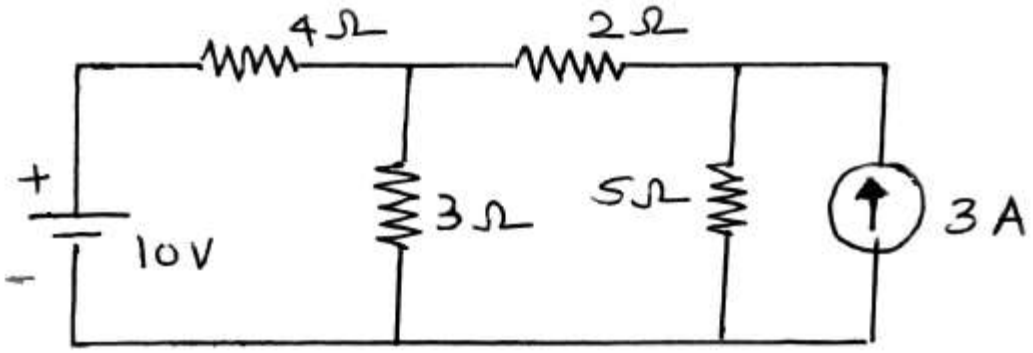


Fig. No. 7.

4. Using Node analysis, find current I in the circuit shown in Fig. No. 1.

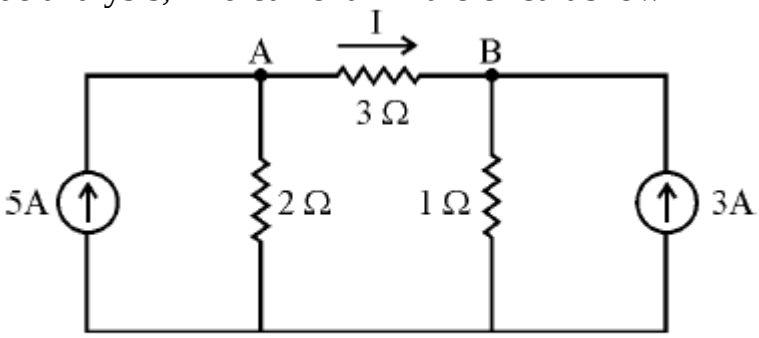
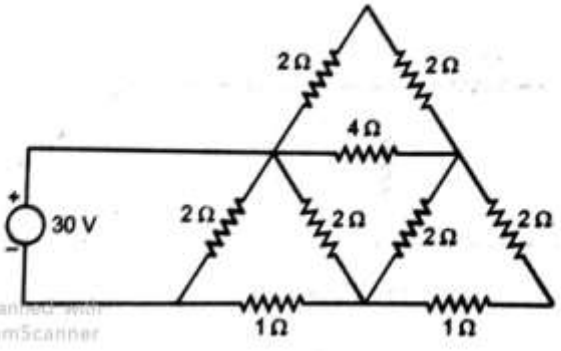
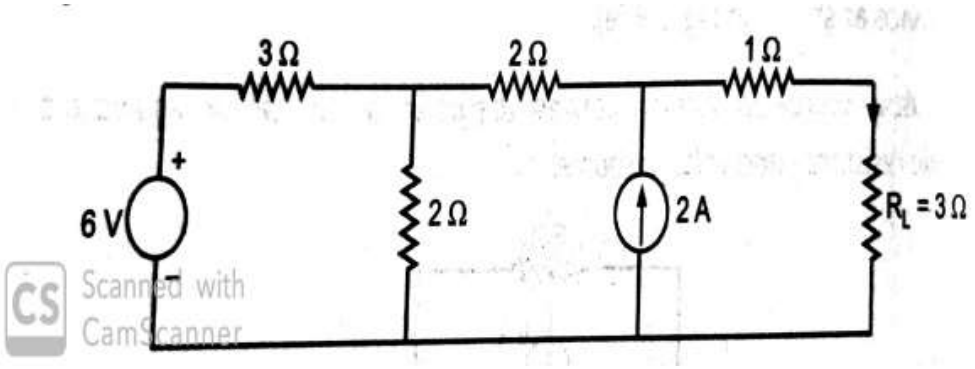


Fig. No. 1

5. With neat circuit diagram, explain how to convert voltage source into current source and vice-versa.
6. Using star/Delta conversion, find the current drawn from the supply by the circuit shown in fig.



7. Apply Source conversion technique for the given circuit



8. Reduce the network shown in Fig. No. 3 by applying Star/Delta or Delta/Star transformation and determine equivalent resistance RAB.

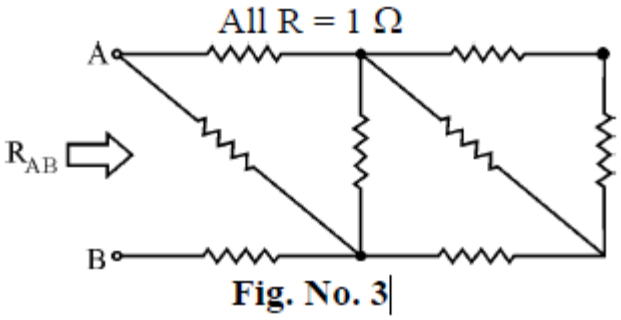


Fig. No. 3

UNIT 5 Network Theorems

2 M Questions

1. State superposition theorem applied to d.c. circuits.
2. State Thevenin's theorem.
3. State Reciprocity theorem.
4. State the maximum power transfer theorem for DC circuit
5. State Norton's theorem.

3 M Questions

1. Use Norton's theorem to find the current through 3 Ω resistance, for the circuit shown in fig. no. 5

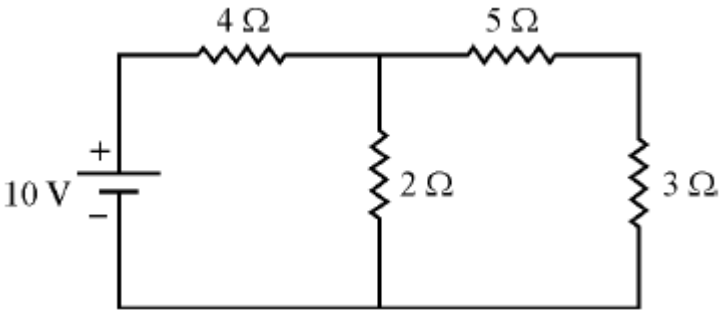


Fig. 5

2. State the Thevenin's theorem. Also write stepwise procedure for applying Thevenin's theorem to simple circuits.

3. For network shown in Fig. No. 4, determine value of R so that maximum power is delivered to it. Also compute the maximum power delivered.

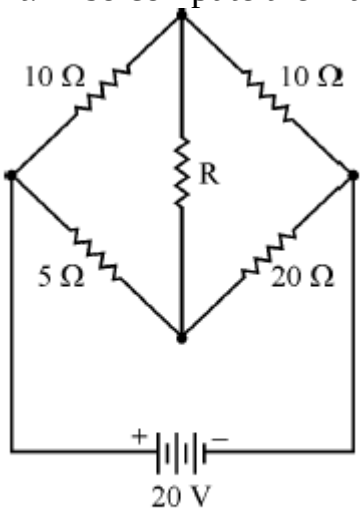


Fig. No. 4

4. Apply superposition theorem to compute current I in the network shown in Fig. No. 5.

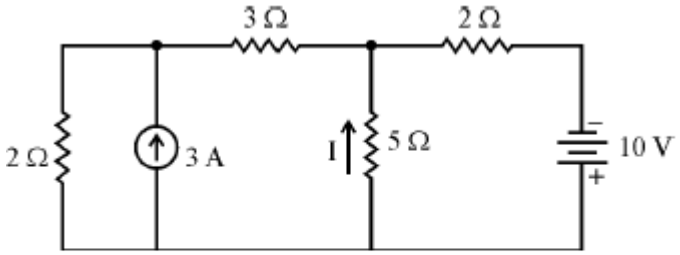


Fig. No. 5

5. Convert following circuit as shown in fig. no. 3 into Thevenins circuit across A & B.

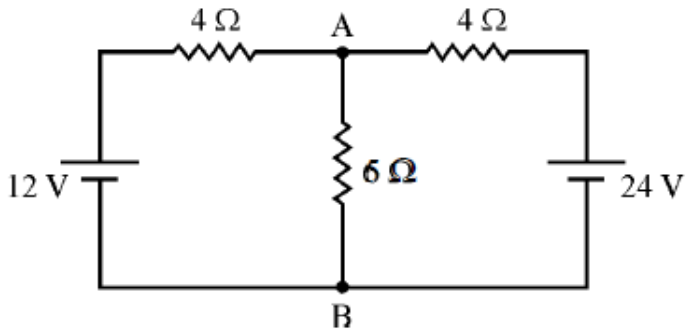


Fig. 3