BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Question Bank (K - Scheme)

Name of subject: CIRCUITS & NETWORKS **Unit Test :I**

Subject code: 313325 **Course : EJ**

Semester: III

CHAPTER-1(DC Network Analysis) -14 Marks

(2 Marks)

1) Define: (i) Node (ii) Branch iii)mesh
2) Write the formula for Delta to Star conversion giving examples
3) Give four steps to solve nodal analysis.
4) Write the formula for star to delta.
5) Write steps to convert voltage source to current source
6) Draw (i)Practical voltage source (ii)ideal current source

(4 Marks)

1) Explain the steps for converting practical voltage source into practical current source. Give its application. Draw neat diagrams of both the sources.
2) Three resistances 32 Ω , 40 Ω , 48 Ω are connected in star circuit. Determine its equivalent delta circuit.
3) Using Mesh Analysis find current through 4 Ω resistance.(Refer fig. 1)

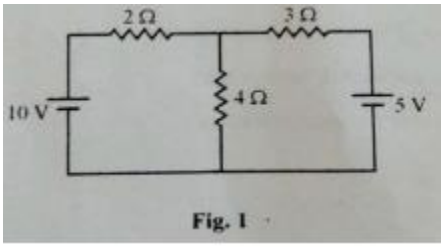
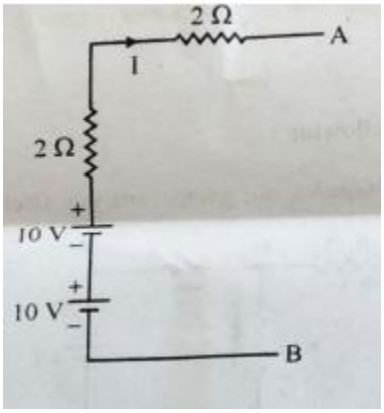
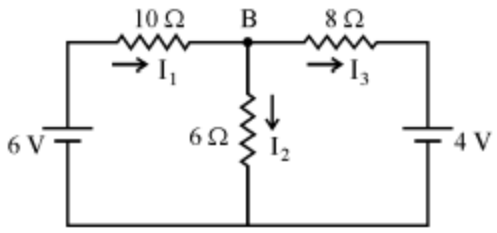


Fig. 1

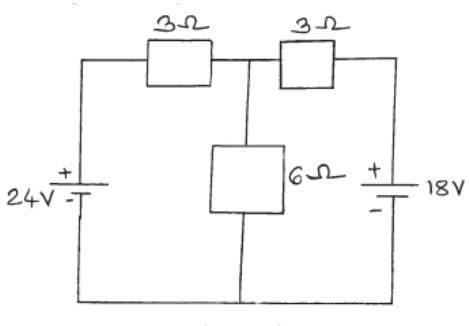
4) Using source transformation technique find the resultant current (I) through circuit.



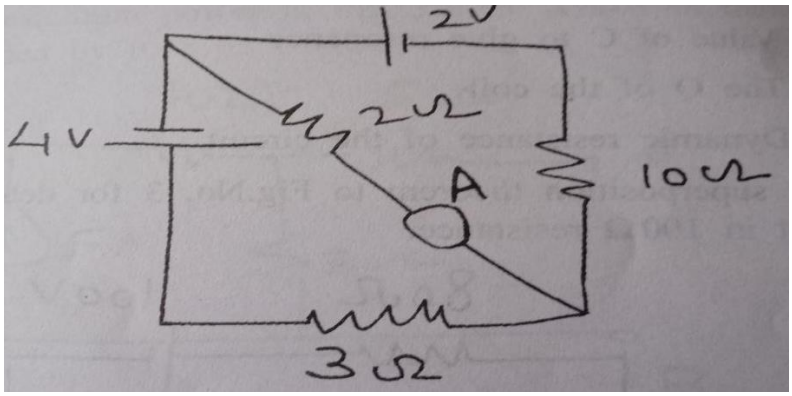
5) Calculate the nodal voltage VB using nodal analysis.



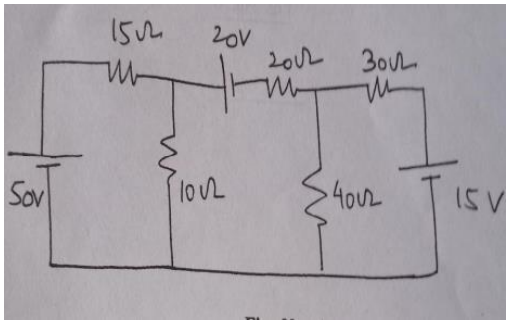
6) Find the current in 6Ω resistor in the circuit shown in Fig. No. 1 using mesh analysis.



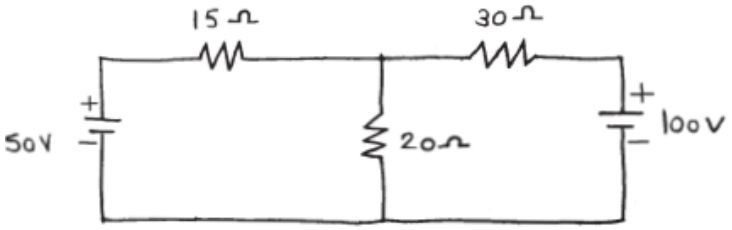
7) Explain Use mesh analysis to calculate ammeter current for given fig



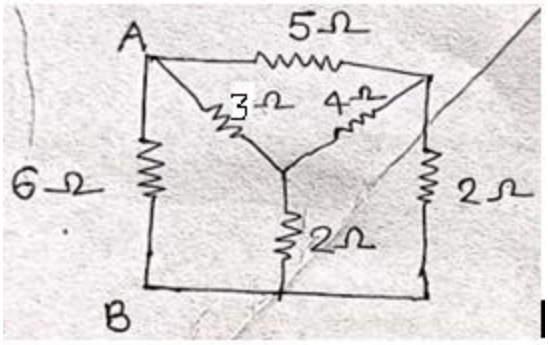
8) Explain the suitable example to convert a practical current source into equivalent voltage source.
9) Derive an expression for delta to star transformation.
10) Find current in 40 Ω and 10 Ω in Fig using node voltage analysis method.



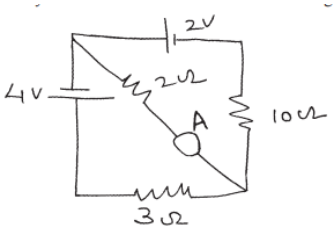
11) Three resistance each of 12Ω are connected in star convert it into equivalent delta connection.
12) Give the stepwise procedure for finding current using mesh analysis.
13) Determine the current through 20Ω resistance in Fig. using node analysis.



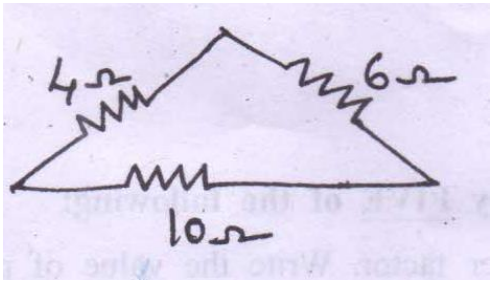
14) i) Explain with suitable example converting practical current source into equivalent voltage source. ii) Practical voltage source into equivalent current source.
15) Derive the formulae for star to delta transformation.
16) Using Star/Delta conversion, find the equivalent resistance between AB for the given circuit



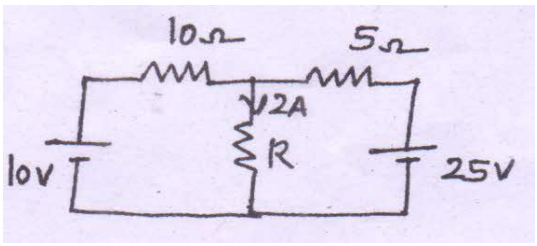
17) Use mesh analysis to calculate ammeter current in Fig. No. 1.



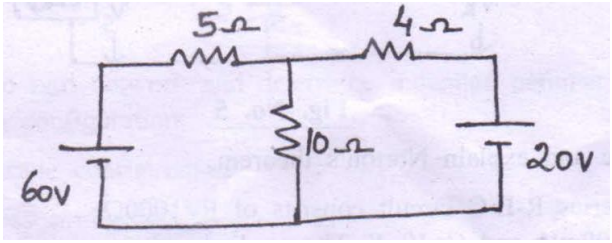
18) Convert given delta to its equivalent star for the given circuit



19) Using nodal analysis find the value of resistance R for given circuit



20) Using mesh analysis find the voltage drop across 10 Ω resistor for given circuit



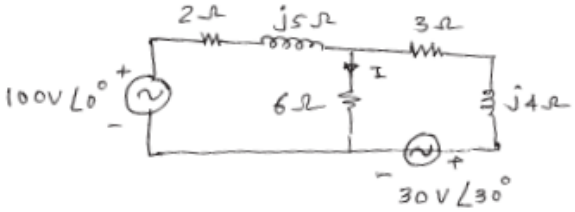
CHAPTER-2(Network Theorems) -18 Marks

(2-Marks)

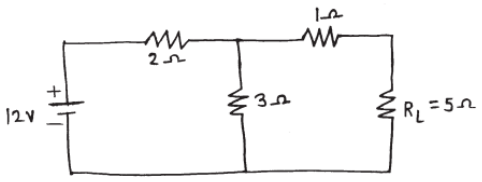
1) State the reciprocity theorem.
2) State maximum power transfer theorem.
3) State Thevenin's theorem.
4) State Norton's theorem.

(4-Marks)

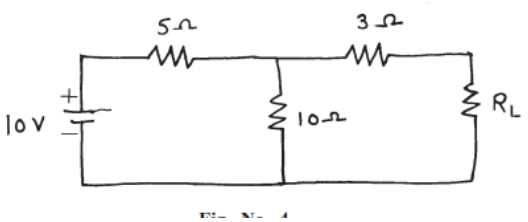
1) Find value of 'I' of given fig. using superposition theorem.



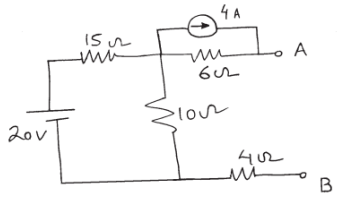
2) Derive the condition so that power transferred from source to load is maximum.
3) Calculate the value of current in 5Ω resistance using Norton's theorem for network shown in given fig



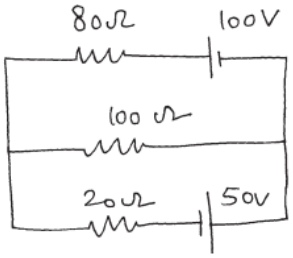
4) Find the value of load resistance RL to get maximum power transfer to it a shown in Fig. No. 4. Also find Pmax.



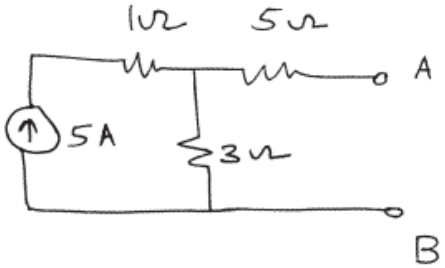
5) State and explain Thevenin's theorem with suitable example.
6) Write the steps for finding the current through an element by Norton's theorem.
7) State super position theorem. Write steps to find current in an element using super position theorem.
8) Find the Norton equivalent resistance for the network shown in fig



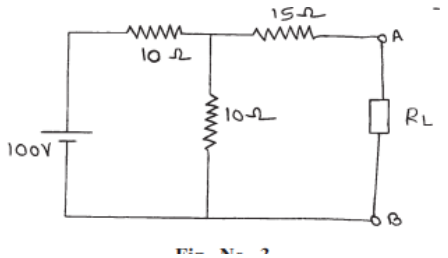
9) Apply superposition theorem to Fig.No. 3 for determining the current in 100Ω resistance.



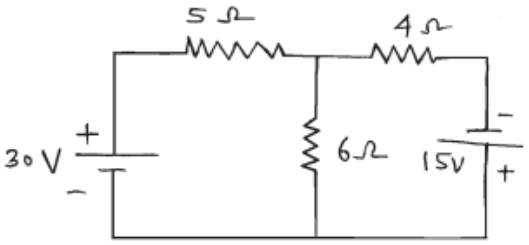
10) Find the value of resistance to be connected across AB so as to consume maximum power in Fig. Also find maximum power consumed by it.



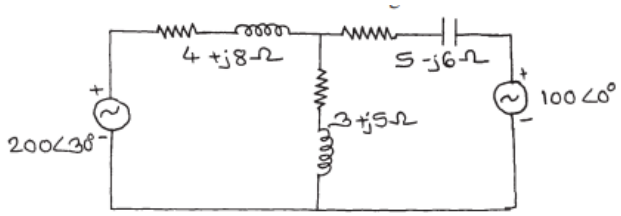
11) Find Norton's equivalent circuit of the Fig. shown



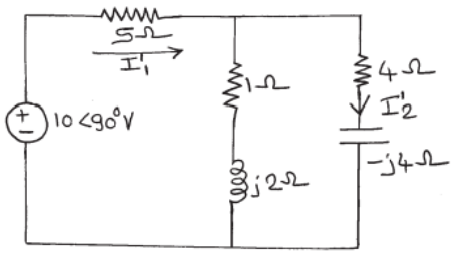
12) Find current though 6 Ω resistor using superposition theorem. Fig



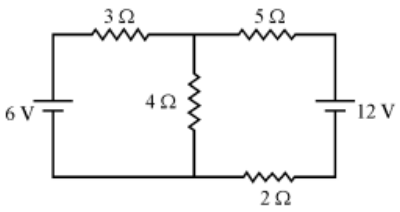
13) Find current through impedance 3 + j5 using superposition theorem in the circuit as shown in Fig.



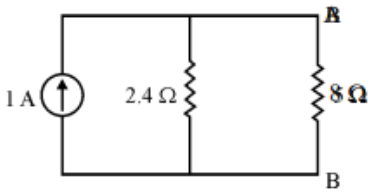
14) Verify the reciprocity theorem in the circuit given in Fig.



15) Using super-position theorem find current through 4 Ω resistance in given fig.

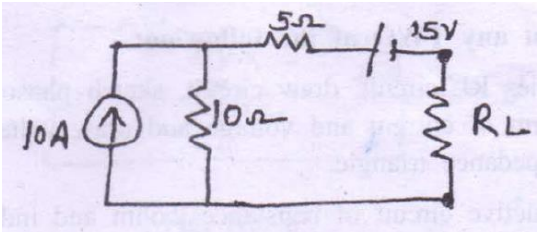


16) Calculate current through 8 Ω resistance using Norton's theorem in given fig

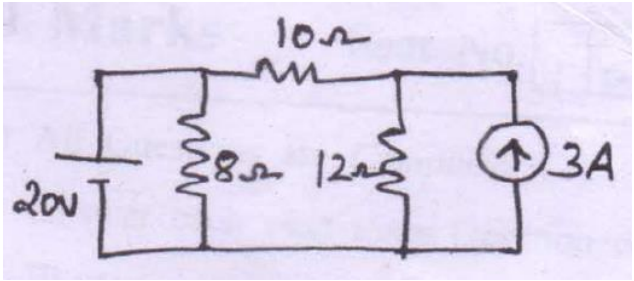


17) State and explain : (i) Maximum power transfer (ii) Reciprocity theorem

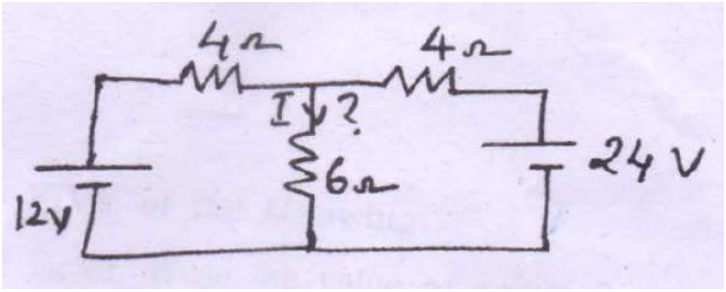
18) Find R_L for maximum power transfer for given circuit



19) Using superposition theorem find the current in each branch for given circuit



20) Find current through 6 Ω resistance for given circuit using Thevenin's theorem



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