4414

BOARD DIPLOMA EXAMINATION, (C-14)
JUNE-2019
DAEIE - FOURTH SEMESTER EXAMINATION

NETWORK THEORY

Time: 3Hrs   Max.Marks: 80

PART-A

10x3=30M

Instructions: 1) Answer **all** questions.
               2) Each question carries 3 marks
               3) Answer should be brife & straight to the point and shall not exceed five simple sentences.

1) Define active circuit and passive circuit.

2) State the limitations of Ohm's law.

3) State Kirchhoff's laws.

4) Define node, Loop and mesh.

5) Write the number of node voltage equations required to solve the given network.
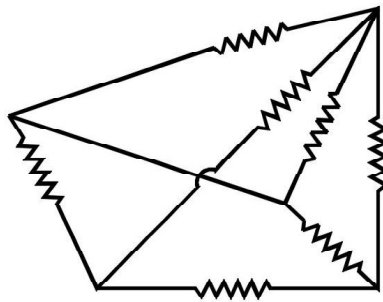
6) Define a) Ideal voltage source b) Ideal current source.

7) State the of Super Position Theorem.

8) Write the equations for voltage and current in a pure inductive circuit and draw the wave froms.

9) Write short notes on impedance triangle of R-L series circuit.

10) Define series resonance and write the expression for resonant frequency of an R-L-C series circuit.
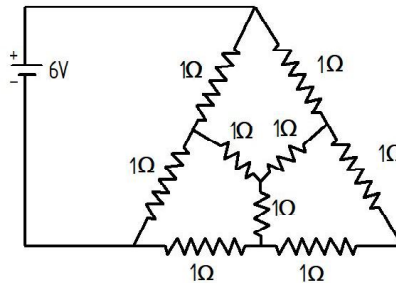
PART - B

Instructions: 1) Answer any **five** questions.
   2) Each question carries **ten** marks
   3) Answer should comprehensive and they criterion for valuation is the content but not length of the Answer.
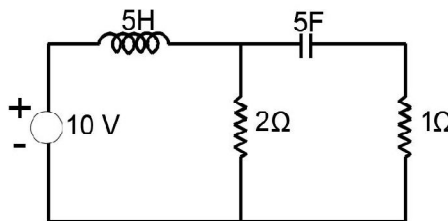
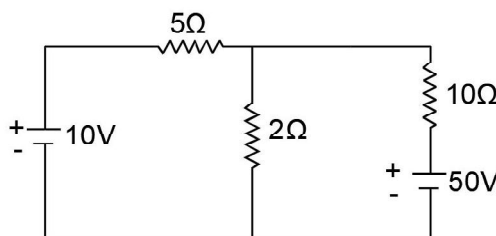11) Calculate the current in each breanch circuit shown below by using KVL.
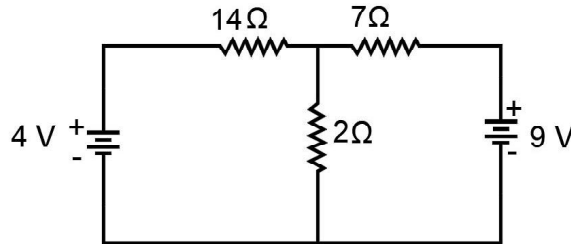
12) Find the current supplied by battery to the network shown below.

13) a) Explain tree and co-tree with diagram.
    b) Draw the dual network for the given network shown below.

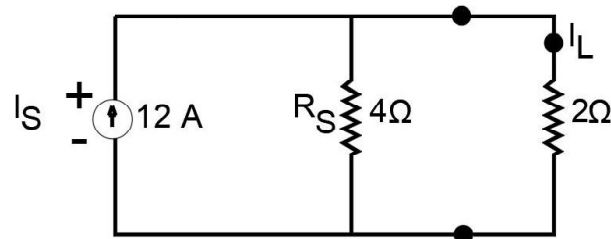14) Write the mesh current equations in the circuit shown below and determine the currents.

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15) State and explain maximum power transfer theorem.

16) a) Write the differences between Thevenin's and Norton's theorems.

b) Convert the current source to a voltage source and find the current in 2Ω resistor.

17) Explain the term impedance of an A.C. circuit. Derive an expression for the impedance of an A.C. circuit consisting of a resistance, an inductance and a capacitance in series.

18) A 15 Ohms resistor and 200 μF capacitor are connected in series to a 60 V sinusoidal supply. The circuit current is 3 A. Calculate i) Voltage across the resistor and capacitor. ii) Supply frequency.
iii) Phase angle between current and voltage.

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