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BOARD DIPLOMA EXAMINATION, (C-14)
MARCH /APRIL-2019
DAEIE - FOURTH SEMESTER EXAMINATION
NETWORK THEORY

Time: 3Hrs

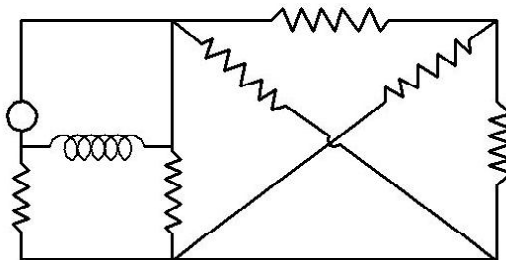
Max.Marks: 80

PART-A**10x3=30M**

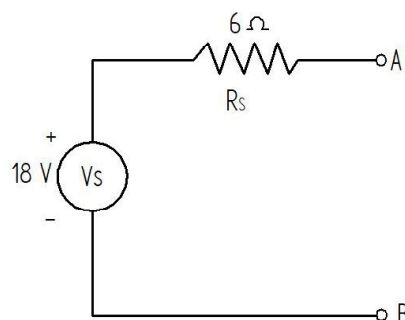
Instructions: 1) Answer **all** questions. Each question carries **three** marks.

2) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1) Define the terms a) Junction b) Branch c) Loop.
- 2) Find the equivalent delta connected resistance when three resistances 30Ω , 40Ω and 60Ω are connected in star.
- 3) Differentiate between active and passive circuits.
- 4) Define tree, Co-tree and twigs.
- 5) Determine the number of mesh equations required to solve the given network.



- 6) State Norton's theorem.
- 7) Convert the voltage source into current source.



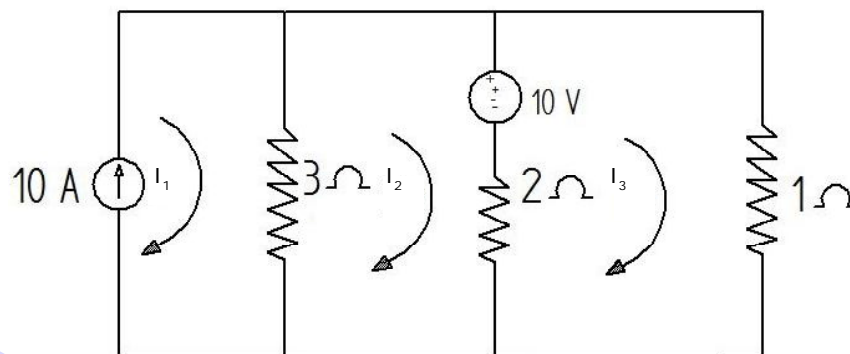
- 8) Define Q factor for series resonance circuit.
- 9) Define the terms a) Resistance b) Inductance c) Capacitance.
- * 10) Write the equations for voltage and current in a pure capacitive circuit.

PART - B

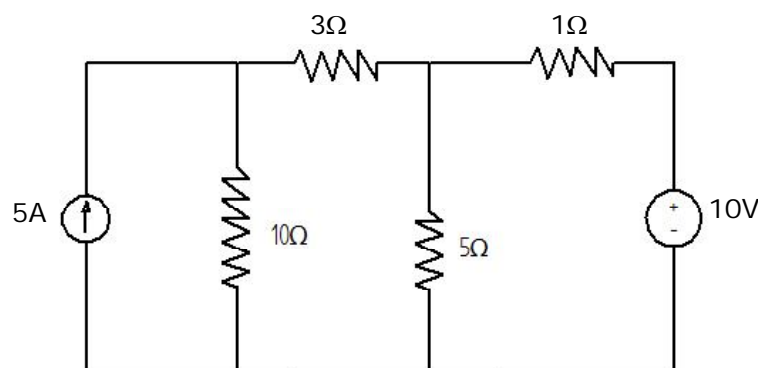
10x5=50M

Instructions: 1) Answer any **five** questions. Each question carries **ten** marks.
 2) Answer should be comprehensive and criterion for valuation is the content but not the length of the answers.

- 11) Two batteries E_1 and E_2 having emfs of 6v and 2v respectively and internal resistance 2Ω and 3Ω respectively, are connected in parallel across a 5Ω resistor. Calculate i) Current through each battery ii) Terminal voltage iii) Energy dissipated in 5Ω resistor in 10 minutes.
- 12) Derive the transformation formula for star to delta transformation.
- 13) Write the mesh current equations in the circuit shown below and determine the current I_1, I_2 and I_3

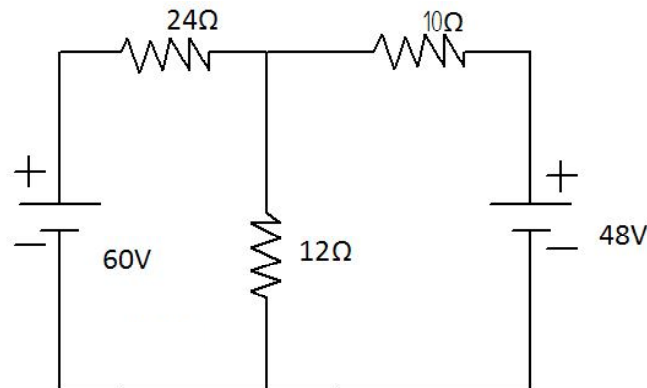


- 14) Write the node voltage equations and determine the currents in each branch for the network shown below.



15) State and explain Thevenin's theorem.

16) Determine the current in each branch of the network shown below
* by using super position theorem.



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

18) a) Derive an expression for resonant frequency for a series resonant circuit.

b) A coil of resistance 10Ω and inductance 5 mH is connected in series with a capacitor of 'C' Farads. when the circuit is connected across 100 V , 50 Hz supply, the current is to be found maximum. Calculate
i) Value of capacitance ii) The current.

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