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C14–EC–403

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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2016

DECE—FOURTH SEMESTER EXAMINATION

NETWORK ANALYSIS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

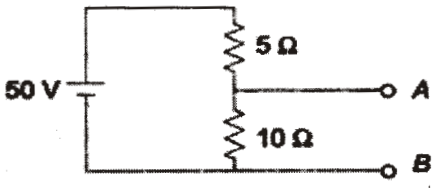
Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define Ohm's law. State the limitations of Ohm's law.

2. What is the voltage across 10 resistor in the circuit shown below?



3. State Thevenin's theorem.

4. State the maximum power transfer theorem for DC source.

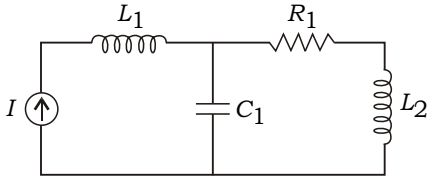
5. Define the following :

(a) Branch

(b) Node

(c) Loop

6. Draw the dual of the network shown below :



7. Define time constant of *R-L* circuit.

8. Give the conditions for symmetry and reciprocity in terms of *Z*-parameters.

9. Define characteristic impedance and propagation constant.

10. List the applications of equalizer.

PART—B

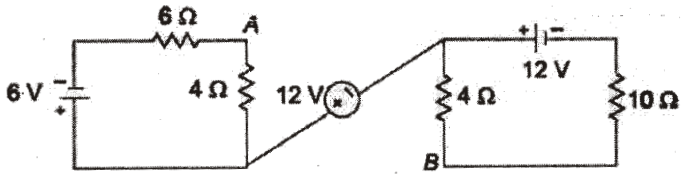
10×5=50

Instructions : (1) Answer *any* **five** questions.

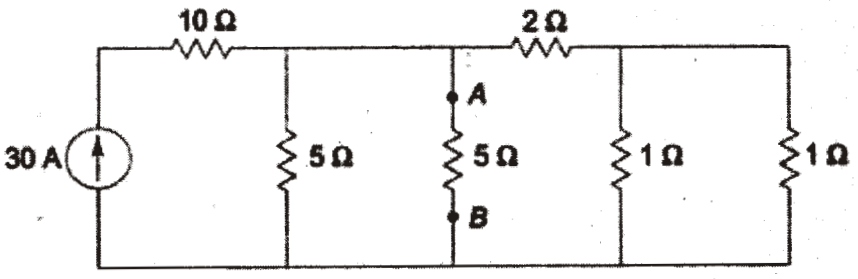
(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

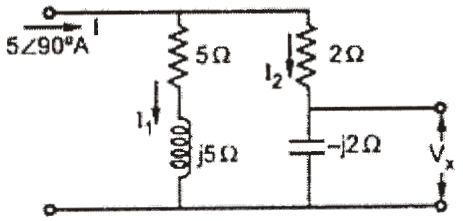
11. What is the voltage across *A* and *B* in the circuit shown below?



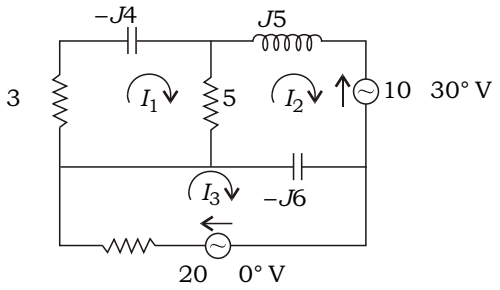
12. Determine the current through 5 ohm resistor in the circuit shown below using Norton's theorem across terminals *AB* :



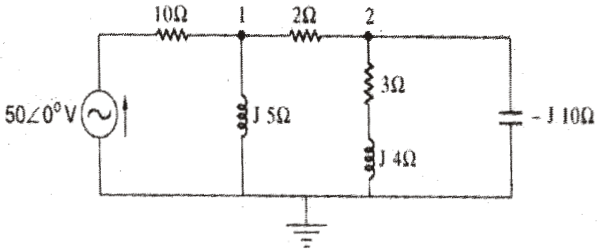
13. In the single current source circuit shown below, find the voltage V_x, interchange the current source and the resulting voltage V_x. Is the reciprocity theorem verified?



14. In the network shown in the figure below, write the mesh current equations and arrange them in matrix form, and find the current I_1 :

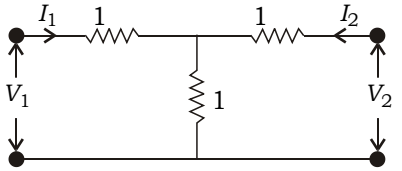


15. Determine the node voltages V_1 and V_2 in the network shown below, using node voltage method :



16. Explain the transient analysis of series *R-C* circuit for DC excitation.

17. Find the *Z*-parameters for the following circuit :



18. Derive an expression for the characteristic impedance of a symmetrical -network.

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