



C14-EC-403

4457

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2016
DECE—FOURTH SEMESTER EXAMINATION
NETWORK ANALYSIS

Time : 3 hours]

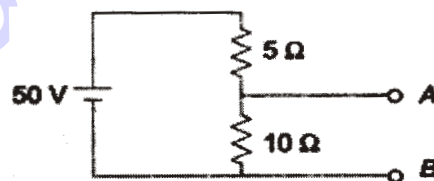
[Total Marks : 80

PART—A

3×10=30

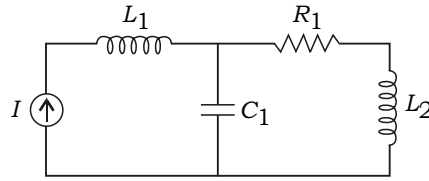
- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define Ohm's law. State the limitations of Ohm's law.
2. What is the voltage across 10 Ω 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 :



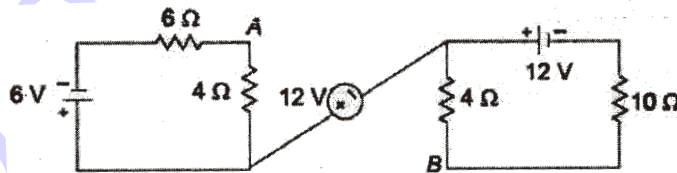
7. Define time constant of R - L circuit.
8. Give the conditions for symmetry and reciprocity in terms of Z -parameters.
9. Define characteristic impedance and propagation constant.
10. List the applications of equalizer.

PART—B

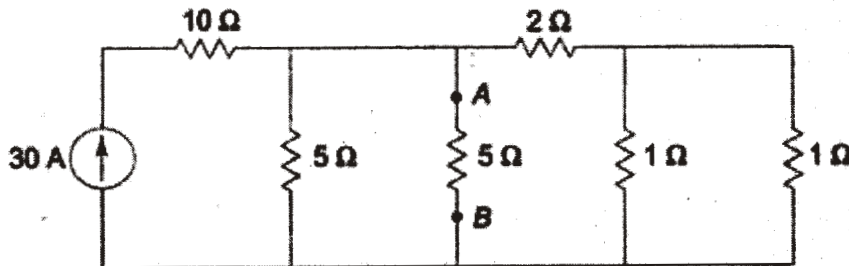
10×5=50

- 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.

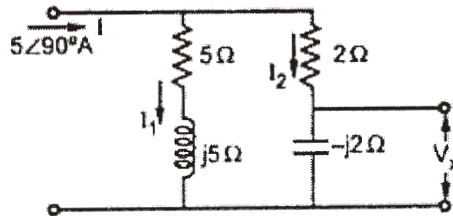
11. What is the voltage across A and B in the circuit shown below?



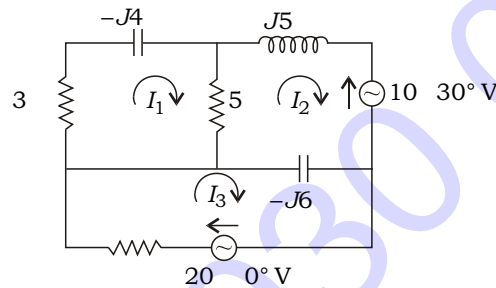
12. Determine the current through 5 ohm resistor in the circuit shown below using Norton's theorem across terminals AB :



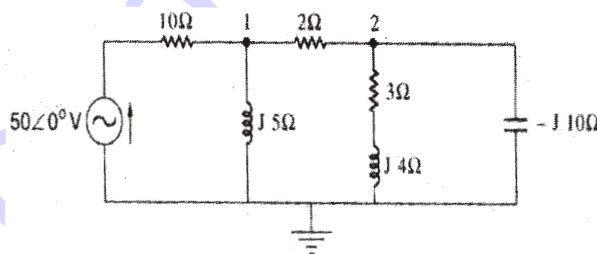
- * 13. In the single current source circuit shown below, find the voltage V_x , interchange the current source and the resulting voltage V_x . Is the reciprocity theorem verified?



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 :

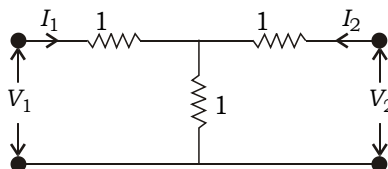


15. Determine the node voltages V_1 and V_2 in the network shown below, using node voltage method :



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 π -network.
