* 4457 *

C14–EC–403

4457

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DECE—FOURTH SEMESTER EXAMINATION

NETWORK ANALYSIS

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

PART—A 3×10=30

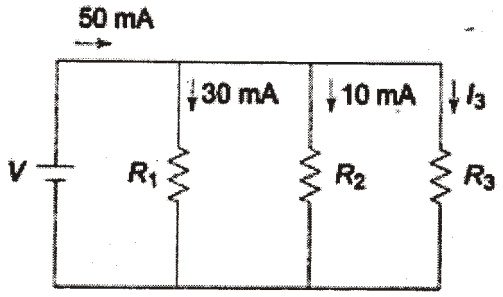
Instructions : (1) Answer **all** questions.

(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 active and passive elements.

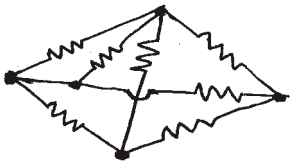
2. Determine the current through resistance R_3.



3. State superposition theorem.

4. State maximum power transfer theorem for DC circuits.

5. Determine the number of mesh current equations required for the network shown below.



6. Explain duality of a network.

7. Define steady state and transient response.

8. Define the conditions for symmetry and reciprocity in terms of *h*-parameters.

9. Draw the circuit of constant resistance equalizer.

10. Define terms Neper and Decibel.

PART—B

10×5=50

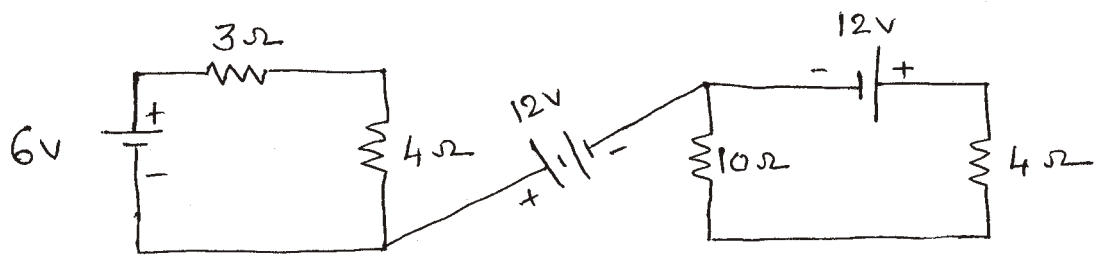
Instructions : (1) Answer *any* **five** questions.

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

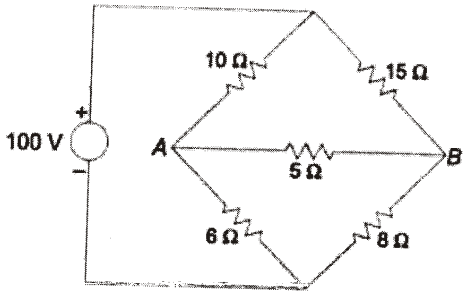
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the dot rule for coupled circuits. 4

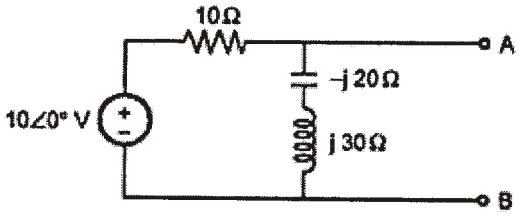
(b) Find the voltage across *A* and *B* in the circuit shown in figure below : 6



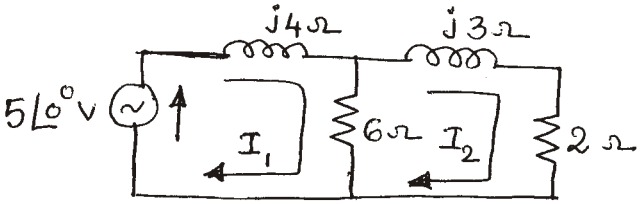
12. Use Thevenin's theorem to find current through 5 ohm resistor in the circuit shown below :



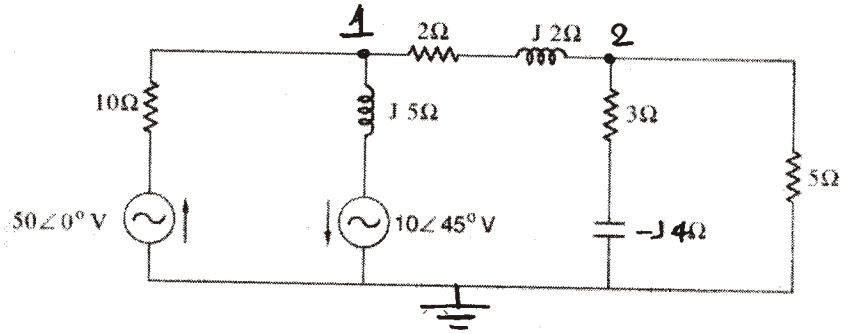
13. Find the load impedance required to be connected across the terminals *A-B* for the maximum power transfer, in the network shown in the figure below. Also find the maximum power delivered to the load :



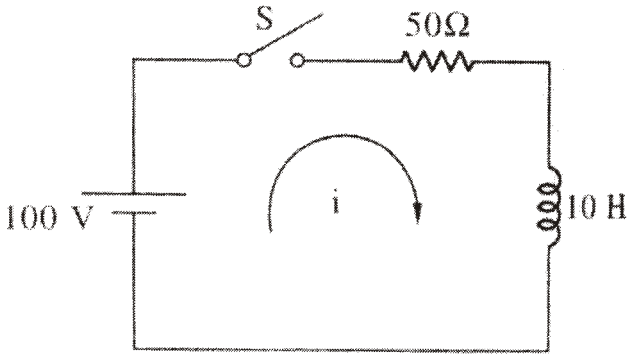
14. Write the mesh current equations for the given circuit and determine the currents I_1 and I_2 :



15. In the given network find the voltage at node 1 using node voltage method :

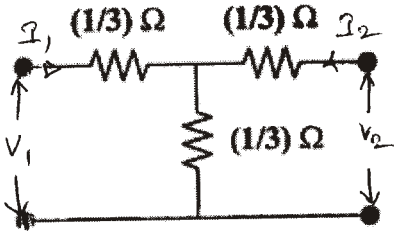


16. A series RL circuit with R 50 and L 10 H has a constant voltage v 100 volts applied at t 0 by closing a switch. Find *(a)* the equations for i, V_R and V_L and *(b)* the current at t 0 5 second.



17. Derive the expression for characteristic impedance of symmetrical T-network.

18. Determine Y-parameters for the following network :



★ ★ ★