



C14-EC-403

4457

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2018**  
**DECE—FOURTH SEMESTER EXAMINATION**  
**NETWORK ANALYSIS**

Time : 3 hours]

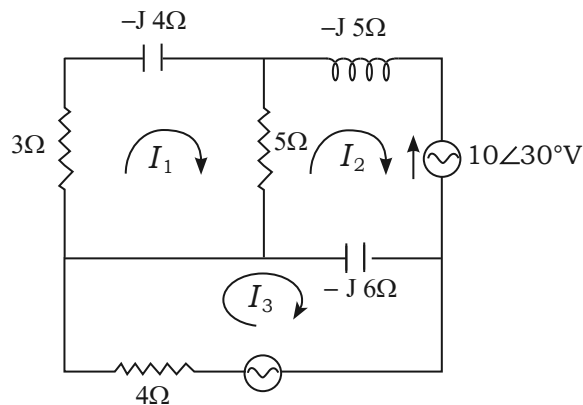
[ Total Marks : 80

**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. Distinguish between Active and Passive elements.
2. State Kirchoff's voltage law and Kirchoff's current law.
3. Define branch, node and loop of a network.
4. Write the mesh current equations of the network given below.



5. Define Thevenin's theorem.

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6. Give the transformation formulas from Star to Delta.

7. Define the time constant of an RL circuit.

8. Define the Z-parameters of a two-port network.

9. Define the term characteristic impedance.

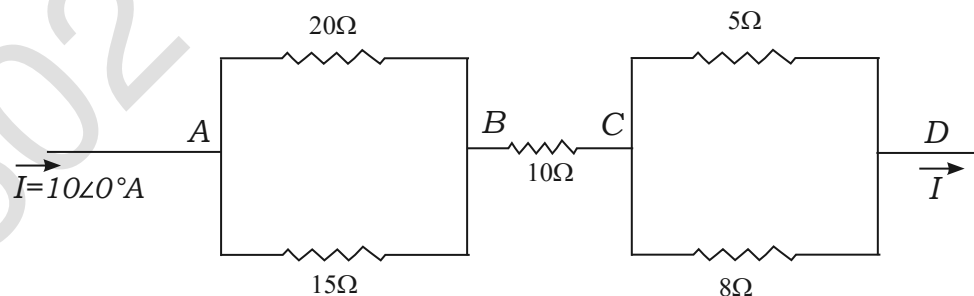
10. List the applications of equalizer.

**PART—B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

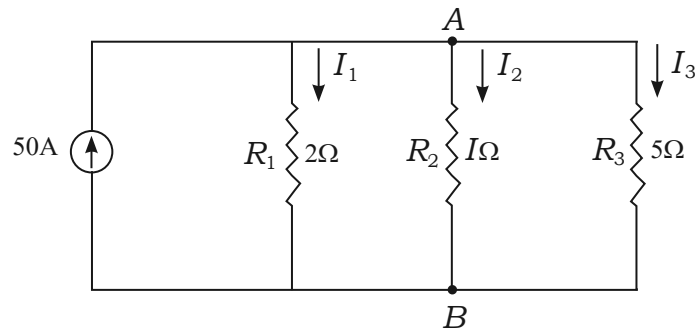
11. (a) In the following circuit find  $V_{AB}$ ,  $V_{BC}$  and  $V_{CD}$  :



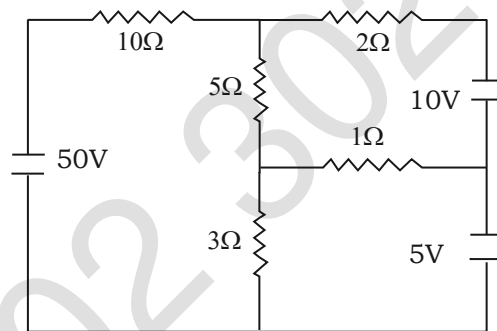
(b) Determine the currents  $I_1$ ,  $I_2$  and  $I_3$  using KCL :

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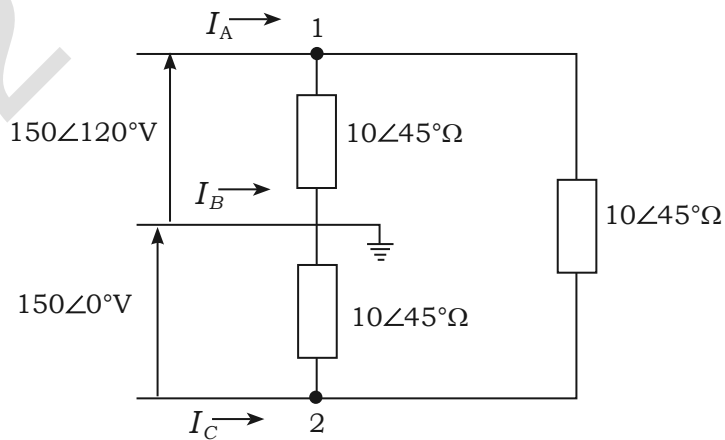
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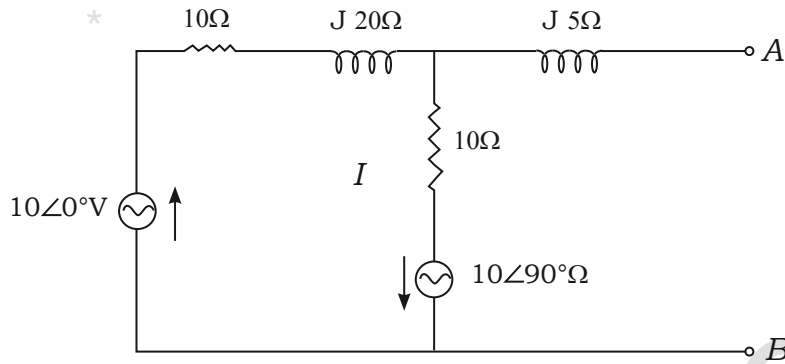
12. Determine the power absorbed by 5Ω resistor using mesh analysis.



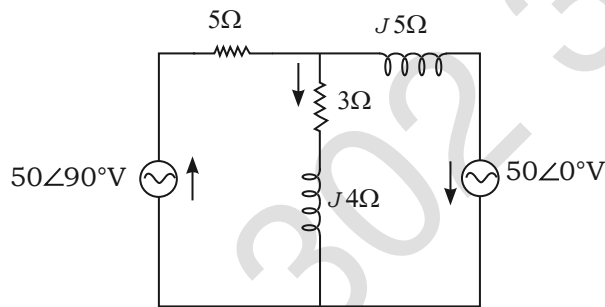
13. Find the currents  $I_A$ ,  $I_B$ ,  $I_C$  using nodal analysis for the circuit shown below :



14. Obtain the Thevenin's equivalent circuit between terminals AB

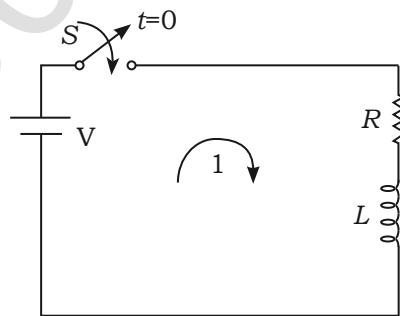


15. Determine the current  $I$  through  $(3+j4)\Omega$  using superposition theorem.

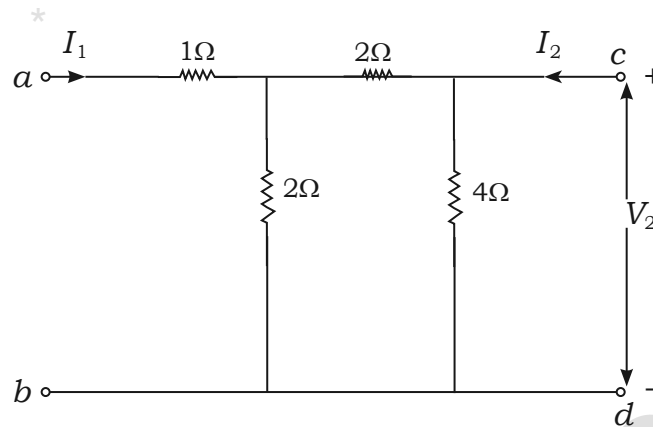


16. Derive the expressions for Voltages across  $R$  and  $L$  for  $t > 0$

The switch is closed at  $t = 0$



17. Find the Y parameters for the network shown below:



18. Derive the expression for characteristic impedance of a symmetrical T-Network.

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