C16-EC–305

6236

BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER / NOVEMBER—2023

DECE - THIRD 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.

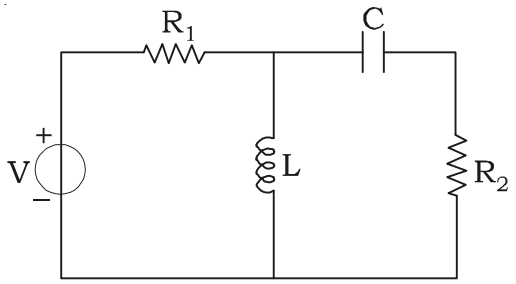
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define active and passive elements.

2. State Kirchhoff's current Law.

3. Define branch, node and loop.

4. Draw the dual of given network.



5. State the importance of impedance matching.

6. State the limitations of super position theorem.

7. Define time constant of RL circuit.

8. Define transient response.

9. Classify different types of filters.

10. State the function of the attenuatar.

PART—B

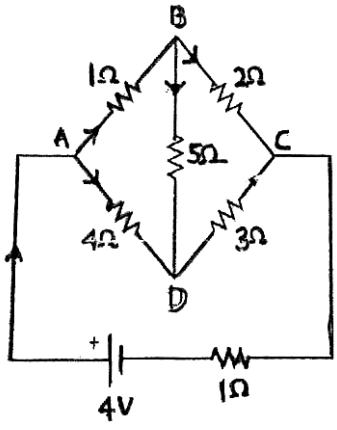
10×5=50

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

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

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

11. In the wheatstone bridge ABCD shown below. A battery of 4V with an internal resistance 1 Ω is connected acrass AC.Find the current through 5 Ω resistor. 10



12. The network in Fig. a shown below, consists of two voltage sources VI and V2 with $V1 = 30\angle 0°V$. Determine V2 such the current in the $(2 + j3)\Omega$ impedance is zero.

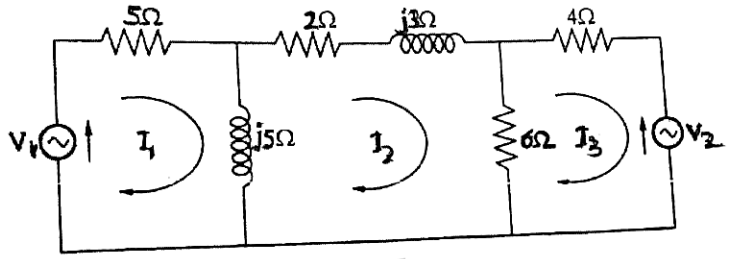
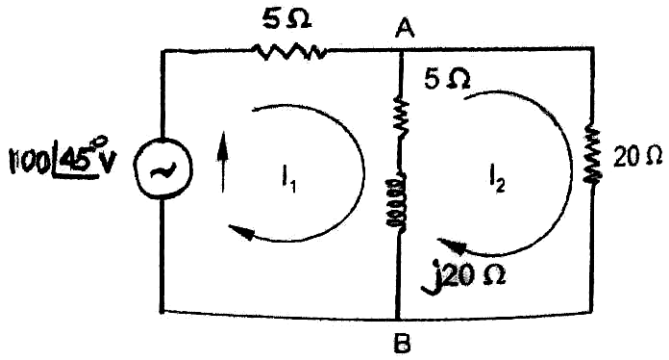


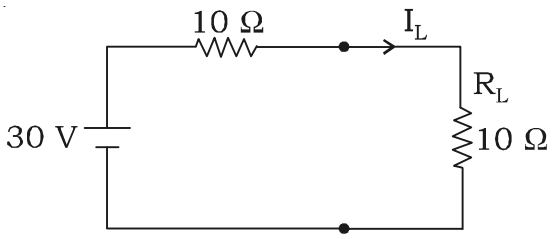
Fig. a

13. Find the voltage V_{AB} by mesh current method. (Apply Crammer's rule). 10



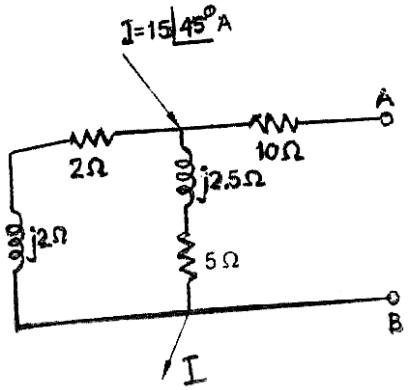
14. (a) State maximum power transfer theorem for DC and AC circuits. 5

(b)



Find the maximum power delivered to the load for the above circuit. 5

15. Obtain the Norton equivalent circuit at terminals AB of the newwork shown in the fig are below. 10



16. Derive the expression for transient current of an RL circuit with dc source. 10

17. A series RC circuit with R = 5000 Ω and $C = 20\ \mu F$ has a constant voltage V = 100 volts applied at $t = 0$ and the capacitor has no initial charge. Determine the current and voltage grades resistor and capacitor. 10

18. Explain T-attenuator with circuit diagram. 10

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