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C14-CE-403

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BOARD DIPLOMA EXAMINATION, (C-14)  
MARCH/APRIL—2017  
DECE—FOURTH SEMESTER EXAMINATION  
NETWORK ANALYSIS

Time : 3 hours |

Total Marks : 80

PART—A

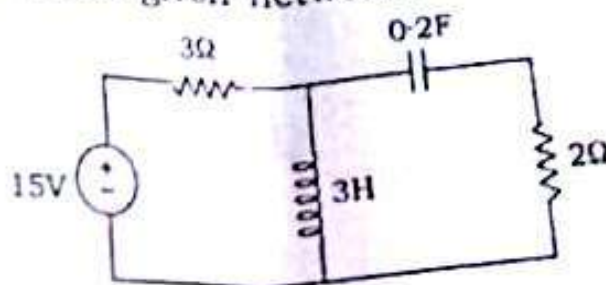
3×10=30

**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. Define mutual inductance and write the formula for coupling coefficient.
3. Write star-delta transformation formula.
4. Write the importance of impedance matching for maximum power transfer.
5. Define tree, co-tree and links.
6. Draw the duality of the given network.



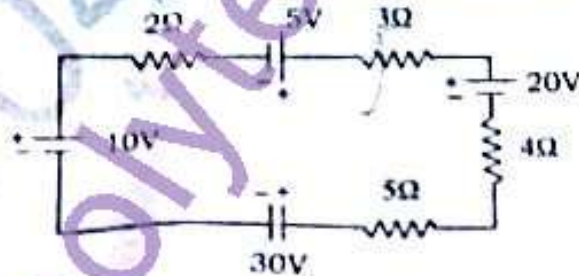
7. Define steady state and transient state.
8. State the condition for symmetry and reciprocity for Y-parameters.
9. Define filter and classify filters.
10. Write the applications of equalizer circuits.

**PART-B**

10×5=50

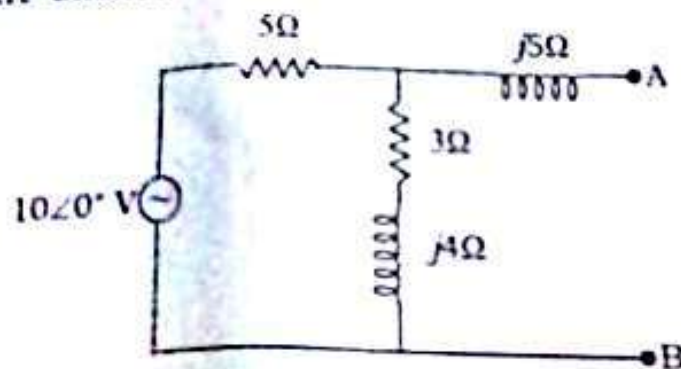
- Instructions :** (1) Answer any five questions.  
 (2) Each question carries ten marks.  
 (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Find the current flowing through 3 ohms resistor for the circuit shown below by applying Kirchhoff's voltage law.



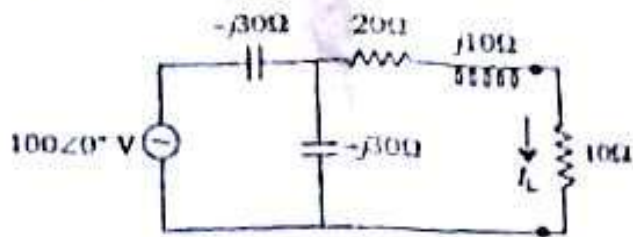
- (b) Explain the dot convention used in coupled circuits.

12. Obtain the thevenin's equivalent circuit across the terminals AB for the circuit shown below.

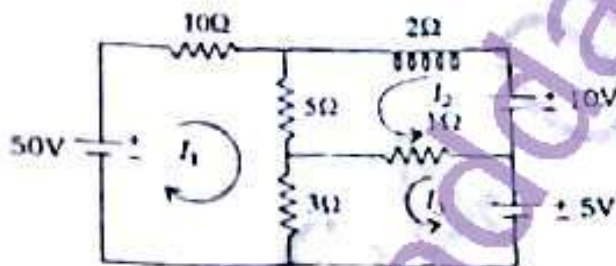




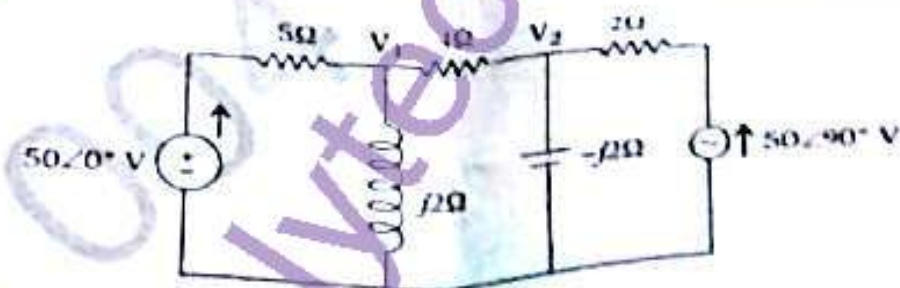
13. Find the maximum power delivered across the load resistance of 10 ohms for the circuit given below.



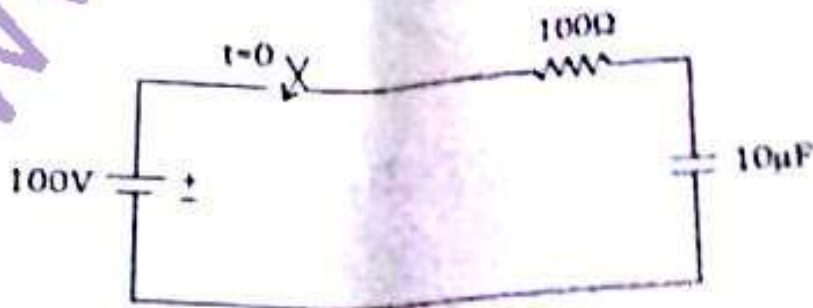
14. Find the power absorbed by the 5 ohms resistor for the circuit using mesh analysis.



15. Determine the values of  $V_1$ ,  $V_2$  for the circuit using node voltage analysis.



16. A series RC circuit with  $R = 100$  ohms and  $C = 10\mu\text{F}$  has a constant voltage  $V = 100$  volts is applied at  $t = 0$  and the capacitor has no initial charge. Find the equation of (i) current, (ii) voltage across the resistor and (iii) voltage across the capacitor.



- \* 17. (a) Explain the hybrid parameters of a two-port network with equivalent circuit. 7  
(b) Mention the condition for symmetry, reciprocity network for ABCD parameters. 3
18. (a) Derive the characteristics impedance of symmetrical T network. 5  
(b) Design a low-pass filter T-section having a cutoff frequency of 2kHz to operate with a terminated load resistance of 500 ohms. 5

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