6236

BOARD DIPLOMA EXAMINATION
MARCH/APRIL - 2019
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
NETWORK ANALYSIS
THIRD SEMESTER EXAMINATION

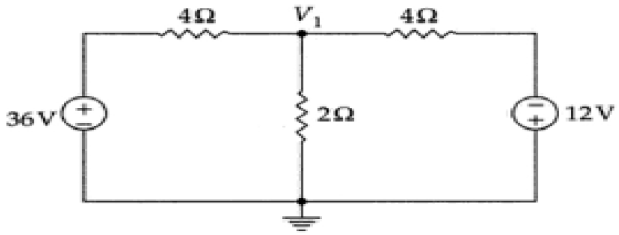
Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

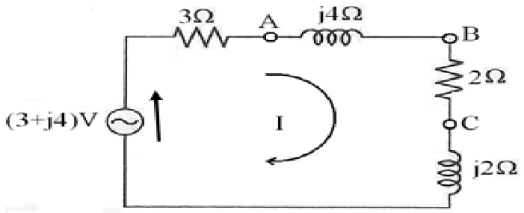
Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. A 16mA current source has an internal resistance of 10kΩ.How much current will flow in a 2.5kΩ load connected across its terminals?
2. State Kirchhoff's *current law*
3. Find the node voltage V_1 by applying KCL.



4. Determine V_{AB} in the figure shown below by mesh current analysis.



5. Write the advantages of maximum power transfer theorem.
6. State Thevenin's theorem
7. Write the Inverse Laplace Transforms of the given functions

$i)\ \frac{1}{s}$ $ii)\ \frac{1}{s-a}$ $iii)\ \frac{\omega}{s^2+\omega^2}$

8. Write the Laplace Transforms of the following functions:

   i) Unit Step (ii) Exponential (iii) Sine

9. What is an Attenuator?

10. **Define the following terms in relation with filter.**

i) Pass band ii) Stop band iii) Cut-Off frequency

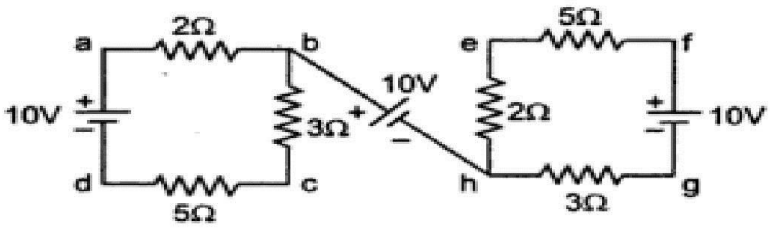
PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

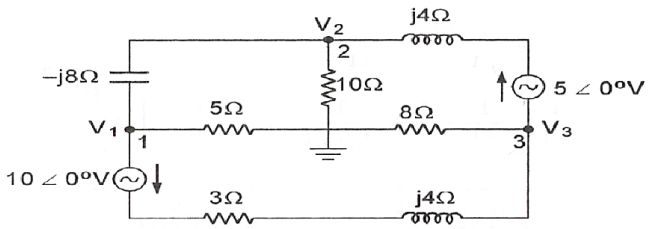
2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. **For the following circuit, determine the voltages**

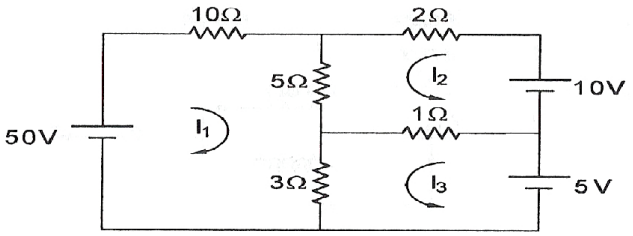
i) V_{df} and ii) V_{ag}



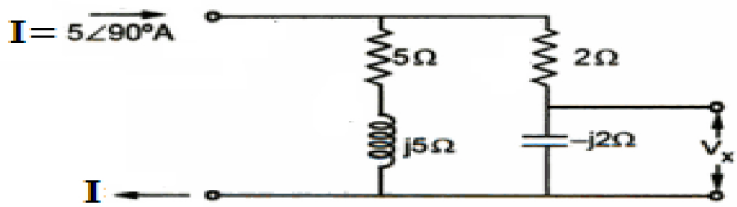
12. **Write the node voltage equations for the network shown below and express them in matrix form.**



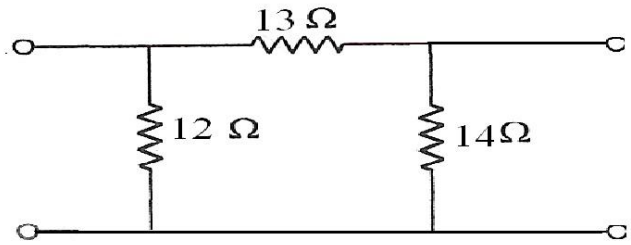
13. **Determine the power absorbed by 5Ω resistor in the circuit shown below by using mesh analysis.**



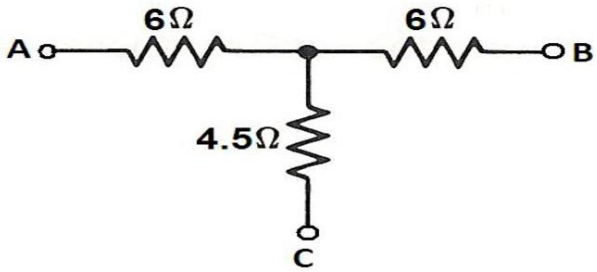
14. **Find the voltage V_x in the circuit shown below. Interchange the current source and the voltage V_x and Verify the reciprocity theorem.**



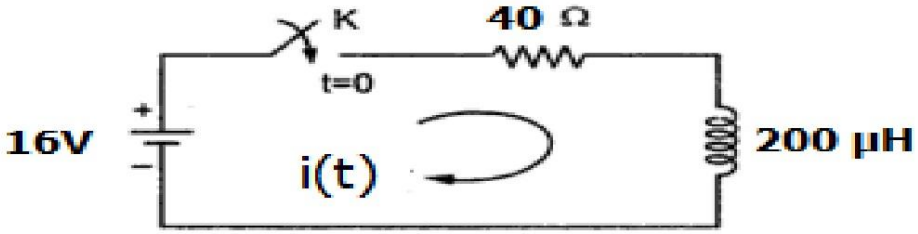
15. a)Obtain the star connected equivalent for the delta connected network shown in figure. (5)



b) Convert the following star network into delta network. (5)



16. The switch in the following figure is closed at t =0. Write the mathematical expressions for $V_L(t)$,i(t),$V_R(t)$ after the switch



17. a) Explain the following properties of Laplace transform

i) Linear property ii) Change of scale property

b)Explain initial value theorem.

18. Design a Low Pass ∏- section Filter with a Cut off Frequency of 2 kHz to operate with a load Resistance of 400Ω

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