6236
BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
NETWORK ANALYSIS
THIRD SEMESTER EXAMINATION

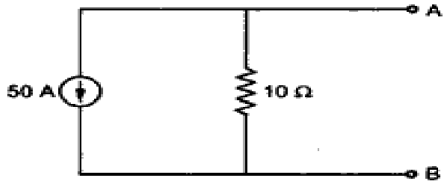
Time: 3 Hours **Total Marks: 80**

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

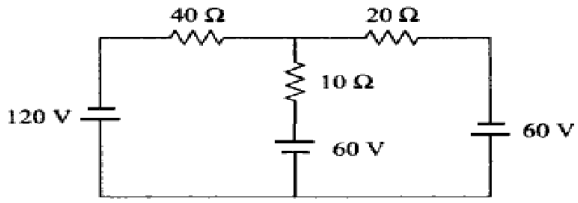
Note 1:Answer all questions and each question carries 3 marks

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

1. Convert the following current source into the equivalent voltage source.



2. What are the limitations of Ohm's law?
3. Name the dual of the following:
   a) Voltage source b)Open circuit c) Node
4. Write mesh current equations for the network shown below.



5. What are the advantages of Norton's theorem?
6. What are the limitations of Reciprocity theorem?
7. Find Laplace Transform of [u(t-a) cos (t-a)] using Second shifting property.
8. Write the Inverse Laplace Transforms of the given functions

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

9. Write the expressions for attenuation in Decibels in terms of Voltage, Current and Power

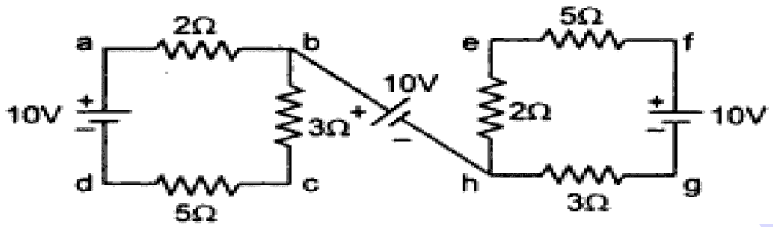
10. Draw Constant – K Low Pass T and π type Filters.

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

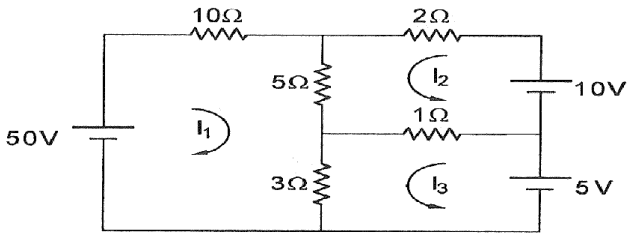
Note 1:Answer any five questions and each carries 10 marks

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}

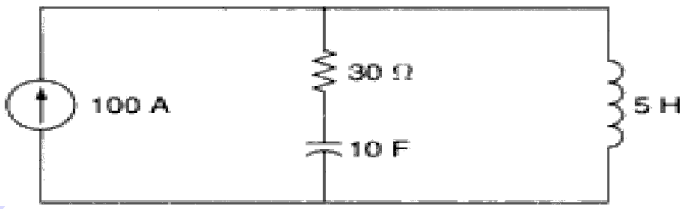


12. Determine the power absorbed by 5Ω resistor in the circuit shown below by using mesh analysis.

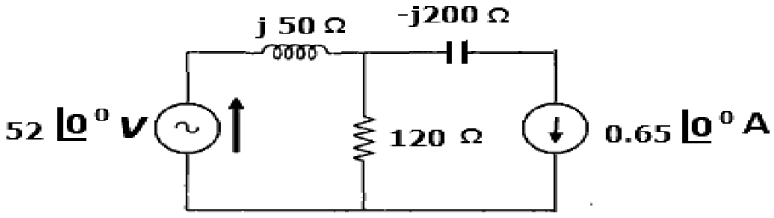


13. a) Explain duality of a network. (5)

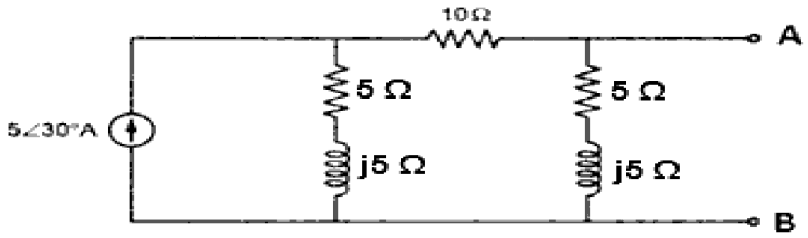
b) Draw the dual circuit of the following circuit . (5)



14. Using superposition theorem, find the current through the 120Ω resistor shown in figure.



15. Find the voltage across AB using Norton's theorem



16. A series RC Circuit with R= 5000Ω and C=20μF has a constant voltage V=100V applied at t= 0 and the capacitor has no initial charge. Find the equations for $V_R(t)$, i(t) and $V_C(t)$

17. a) Draw and Explain the S-Domain circuit model for a Resistor (5)

    b) Draw and Explain the S-Domain circuit model for an Inductor (5)

18. Define the following filters and draw their ideal characteristics.

    (i) Low Pass filter ii) High Pass filter iii) Band Pass filter iv) Band Stop Filter

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