C16-**EC-305**

6236

BOARD DIPLOMA EXAMINATIONS

SEPTEMBER/OCTOBER - 2020

DECE– THIRD SEMESTER

NETWORK ANALYSIS

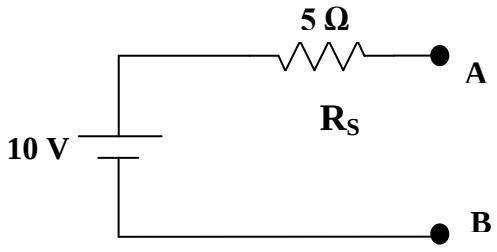
Time: 3 hours | Max. Marks: 80

PART – A **3 X 10 = 30**

Instructions: *1. Answer **all** questions.*
*2. Each question carries **Three** Marks.*
3. Answer should be brief and straight to the point and should not exceed five simple sentences.

1. State Kirchhoff's current law and Kirchhoff's Voltage law.

2. Convert the following voltage source into current source.



3. Mention the concept of Duality of a network.

4. Define the terms Branch, Junction and mesh in circuits.

5. State Norton's theorem.

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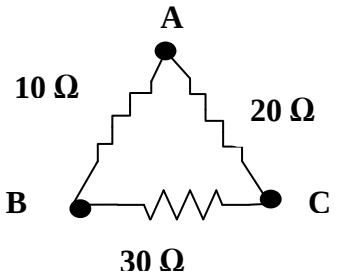
6. Convert the following Delta network into its equivalent Star network.



7. Define Laplace transform.

8. Write Inverse Laplace Transform corresponding to the Laplace transform of sine function and hyperbolic sine function.

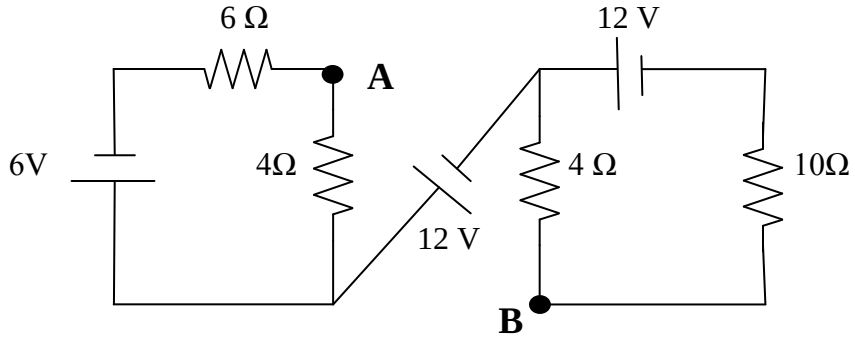
9. Define the LPF and HPF.

10. Mention the expression for cut off frequency of constant-k LPF and constant-k HPF.

PART – B **5 X 10 = 50**

Instructions: *1. Answer any **Five** questions*
*2. Each question carries **TEN** Marks.*
3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Find the voltage across A and B in the circuit shown below using Kirchhoff's Voltage law (KVL).



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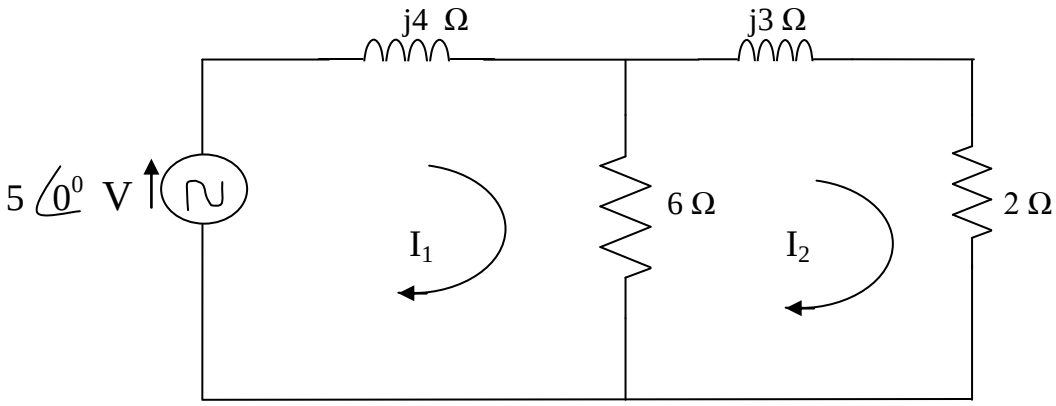
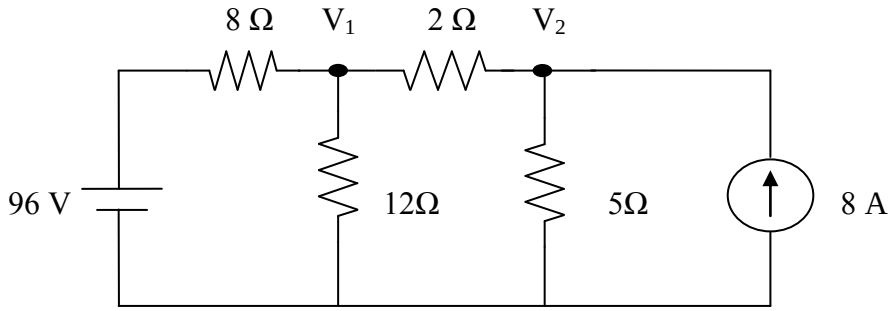
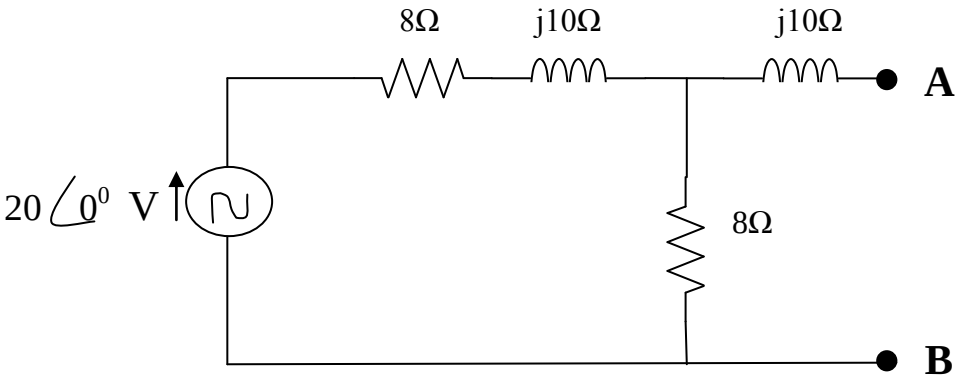
12. Determine the mesh currents I_1 and I_2 in the following circuit using mesh current analysis.



13. Determine the current in the 2 ohm resistor of the following circuit using node voltage analysis.



14. Obtain Thevenin's equivalent circuit between terminals A and B for the active network given below.



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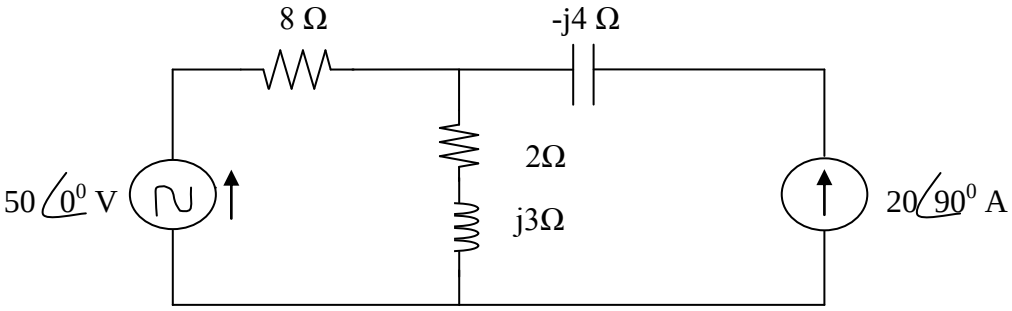
15. Determine the current (2+j3) ohm impedance of the following circuit using Super position Theorem.



16. Explain the DC response of an RLC circuit (series RLC circuit).

17. Explain Heaviside's expansion theorem with an example.

18. Explain T-type attenuator with circuit diagram (symmetrical type).