INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)

B.Tech III Semester End Examinations (Regular), February – 2021

Regulation: IARE–R18

NETWORK ANALYSIS

Time: 3 Hours   **(EEE)**   **Max Marks: 70**

Answer any Four Questions from Part A
Answer any Five Questions from Part B

PART – A

1. List the advantages of a poly phase systems over a single phase system. **[5M]**

2. What are transients and what are the causes for the occurrence of transients? **[5M]**

3. Obtain the transform impedance of an inductor and capacitor. **[5M]**

4. Express Z parameters in terms of ABCD parameters. **[5M]**

5. What are the various parameters used in the study of the behavior of filters? **[5M]**

6. List out the conditions for the location of poles and zeros for driving point functions. **[5M]**

7. A DC voltage of 20V is applied in a RL circuit where R = 5 and L = 10H.

   Find i) The time constant ii) The maximum value of stored energy. **[5M]**

8. What is the centre and radius of locus of current in a series a RC circuit when R is varied. **[5M]**

PART – B

9. Find the relationship between line and phase quantities in a 3-phase Star connected balanced system and draw the phasor diagram. **[10M]**

10. Two wattmeters are connected to measure power in a three-phase circuit. The reading of one the meters is 5KW when the load power factor is unity.If the power factor of the load is changed to 0.707 lagging, without changing the total input power, calculate the readings of the two wattmeter. **[10M]**

11. Determine the expressions for the transient current of RL series circuit when excited by DC voltage. **[10M]**

12. For the circuit shown in Figure 1,determine the current through the circuit, when the switch is moved from position 1 to position 2. Use Laplace transform method. **[10M]**
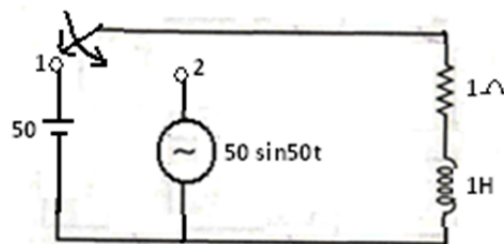

Figure 1

13. What is a locus diagram and show that the locus diagram of series RL circuit with variable R and fixed value of L is a semi-circle? **[10M]**

14. For the network shown in the Figure 2, find the voltage transfer function V_2/V_1. **[10M]**
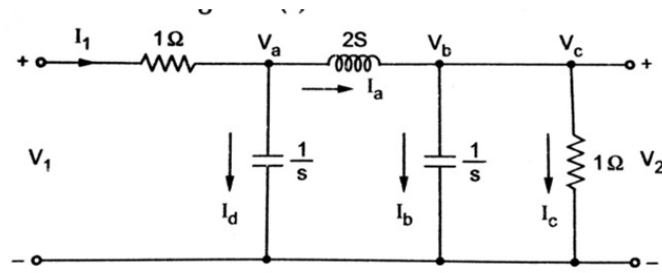

Figure 2

15. Obtain the expressions for Y parameters of when 2 two -port networks are connected in parallel. **[10M]**

16. Find the Z parameters of the circuit shown in Figure 3. **[10M]**
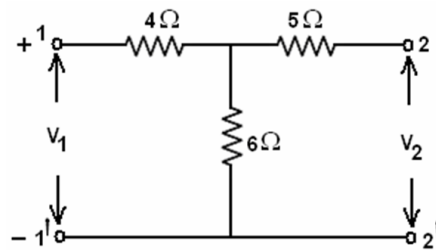

Figure 3

17. What is a network filter? Classify the network filters according to the frequency characteristics and relation between the series arm and shunt arm impedances. **[10M]**

18. Find the component value of a constant - K low pass filter having characteristic impedance $Z_0=500$ ohms, and cut off frequency of $f_c=500$Hz. **[10M]**

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