Question Paper Code: R18A21EE02 **R18**

ANURAG GROUP OF INSTITUTIONS

Autonomous

School of Engineering

II-B.Tech-I-Semester Regular & Supplementary Examinations, March/ April - 2021

Subject: Electrical Circuit Analysis

(Only for EEE)

Time: 3 Hours **Max Marks:75**

Section – A (Short Answer type questions)

- **Answer all questions** **(25Marks)**

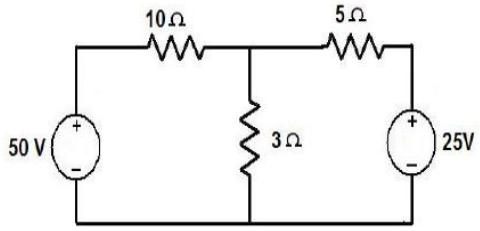
1. Define reciprocity theorem? 2M
2. List the limitation of superposition theorem. 3M
3. What is the difference between balanced and unbalanced circuits? 2M
4. List out properties of Trees. 3M
5. Write time constant for RL and RC Circuit. 2M
6. Differentiate steady state and transient state. 3M
7. Define poles and zeros and write significance of them? 2M
8. Define driving point function and transfer function. 3M
9. What do you mean by two port network? 2M
10. Write symmetry and reciprocity conditions for Z-parameters and Y- parameters. 3M

Section—B (Essay questions)

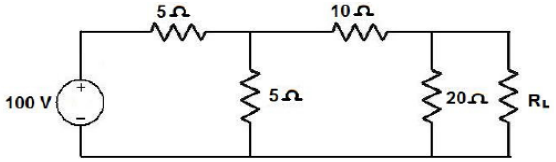
Answer all questions, each question carries 10 marks and may contain *two or more bits*.

(5 x 10 =50 Marks)

11. A) i) Use Thevenin's theorem to find current through 5 Ω resistor. 5M

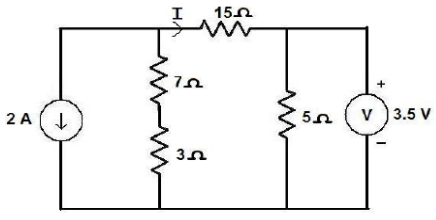


ii) Find the value of R_L so that maximum power is delivered to the load resistance shown in figure 5M



OR

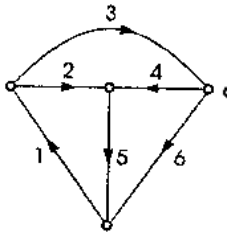
B) For the circuit shown, use superposition theorem, determine the value of current I0M



P.T.O

12. A) i) Define and state the properties of incidence matrix. 5M

ii) For the graph shown below find tie set matrix. 5M



OR

B) In a three phase balanced system, with a neat circuit and phasor diagram explain the two wattmeter method. 10M

13. A) What is transient response? And derive an expression for transient response of RLC series circuit using second order homogeneous differential equation. 10M

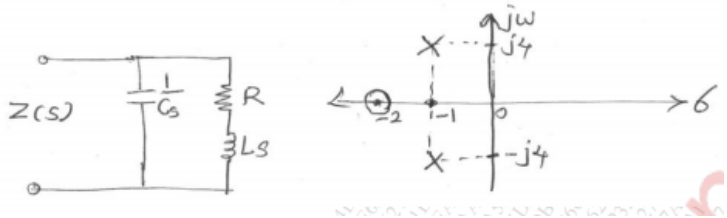
OR

B) A Series RLC circuits has R = 5 ohm, L = 1 H and C = 1 Farad. Constant voltage of 20 V is impressed upon the circuit at t=0. Find the expression for the transient current of second order circuit. 10M

14. A) Explain the properties and necessary conditions of driving point function and transfer functions. 10M

OR

B) The pole zero diagram of the driving point impedance function of the network is shown below. At dc, the input impedance is resistive and equal to 2 W. Determine the values of R, L and C. 10M



15. A) For a two-port network, the Z parameters are Z11=50Ω, Z22=30Ω, Z12=Z21=25 Ω. Invent the ABCD parameters. Hence, Write the network functions using these two types of parameters. 10M

OR

B) Determine the currents I_1 and I_2 in the circuit given in figure 10M