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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations December-2021

NETWORK ANALYSIS & SYNTHESIS
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

- 1 a Derive the relationship of voltage and current in star connected load. 8M
- b A balanced star connected load having an impedance $(15+j20) \Omega$ per phase is connected to a three phase 440 V, 50Hz supply. Find line currents 4M

OR

- 2 Three impedances $Z_1=20L^{30^\circ}$, $Z_2=40L^{60^\circ}$, $Z_3=10 L^{-90^\circ}$ are delta connected to a 400V, 3 ϕ System. Determine i) phase currents ii) line currents iii) total power consumed by the load. 12M

UNIT-II

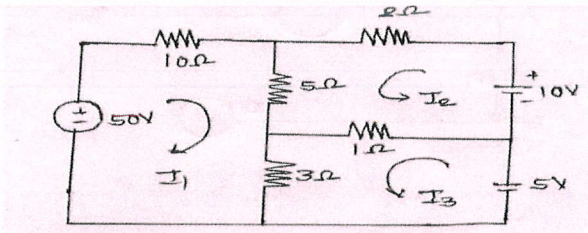
- 3 Derive the transient response of an RLC circuit with sinusoidal excitation. 12 M

OR

- 4 A series RC circuit consists of resistor of 10 and capacitor of 0.1F has a constant voltage of 20V is applied to the circuit at $t=0$. Obtain the current equation. Determine the voltage across the resistor and the capacitor. 12M

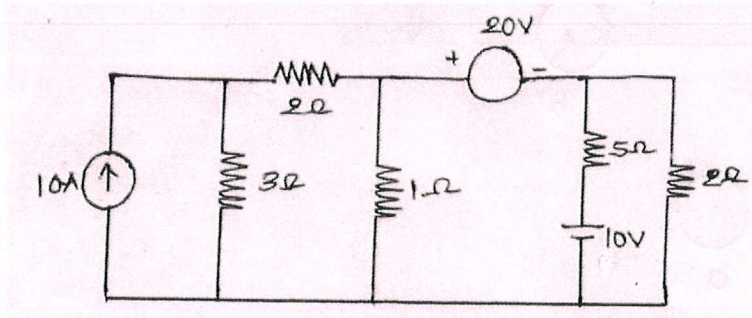
UNIT-III

- 5 Determine the mesh currents for the following network using network Topology. 12M



OR

- 6 Determine current in 5Ω resistor for the circuit shown in figure with network topology. 12M



UNIT-IV

- 7 Derive the expressions for Y-parameters in terms of ABCD parameters? **12M**
- OR**
- 8 Prove the g parameters can be obtained from the z parameters as **12M**

$$g_{11} = \frac{1}{z_{11}} \quad g_{12} = \frac{-z_{12}}{z_{11}} \quad g_{21} = \frac{z_{21}}{z_{11}} \quad g_{22} = \frac{\Delta_z}{z_{11}}$$

UNIT-V

- 9 Design a T- pad attenuator to give an attenuation of 60dB and to work in line of 500 ohms impedance. **12M**
- OR**
- 10 Design a symmetrical bridged T- attenuator with an attenuation of 30 dB and terminated into a load of 500 Ohms. **12M**

*** END ***