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

B.Tech II Year I Semester Supplementary Examinations July-2022

ELECTRICAL CIRCUITS-II

(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 between Phase and Line voltages, currents in delta connected load. L3 6M
- 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 and phase voltages. Assume RYB phase sequence and also calculate power drawn by the load. L3 6M

OR

- 2 a Derive the relationship between Phase and Line voltages, currents in star connected load. L3 6M
- b A balanced delta connected load of $(4+j3)\Omega$ per phase is connected to a balanced 3- ϕ 440v supply. Find i). Active power, ii). Reactive power, iii). Apparent power. L3 6M

UNIT-II

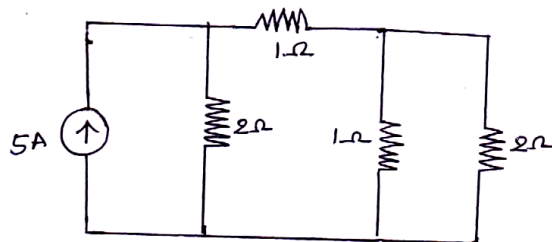
- 3 a Derive the transient response of an RC circuit with AC excitation. L4 6M
- b Derive the transient response of an RL circuit with DC excitation. L4 6M

OR

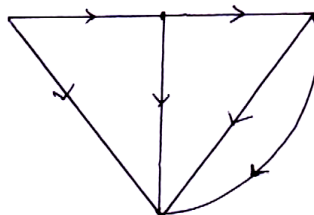
- 4 a A series RC circuit consists of resistor of 10Ω and capacitor of $0.1F$ has a constant voltage of $20v$ is applied to the circuit at $t=0$. Obtain the current equation. Determine the voltage across the resistor and the capacitor. L3 6M
- b A series RL circuit with $R=30\Omega$ and $L=15H$ has a constant voltage $V=60V$ applied at $t=0$. Determine the current I , the voltage across the resistor and across the inductor. L3 6M

UNIT-III

- 5 a Find the cut-set matrix for the following? L3 6M



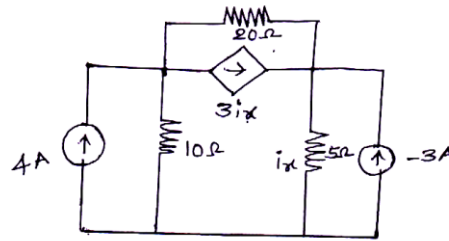
- b Find the tie-set matrix for the following? L3 6M



OR

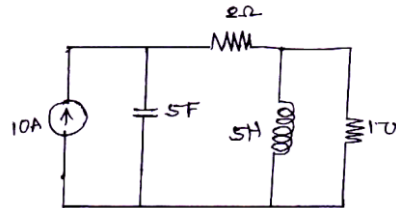
- 6 a Determine i_x for the following network.

L3 6M



- b Write the procedure to draw the dual network and find dual network for the following.

L3 6M

**UNIT-IV**

- 7 a Derive the expressions for Y-parameters in terms of ABCD parameters.
b Derive the expressions for Z-parameters in terms of hybrid parameters.

L3 6M

L3 6M

OR

- 8 a Derive the expressions for h-parameters of a two port network.
b Derive the expressions for y parameters of a two port network.

L3 6M

L3 6M

UNIT-V

- 9 a Derive Laplace transform of all standard signals.
b Find the signal $y(t)$, the Laplace transform of signal which is

L3 6M

L3 6M

$$Y(S) = \frac{S^3 + 7S^2 + 18S + 20}{S^2 + 5S + 6}$$

OR

- 10 a The unit impulse response of a circuit is

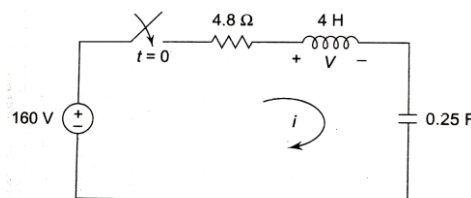
L3 6M

$$v_o(t) = 10,000e^{-70t} \cos(240t + \theta)u(t)V \text{ Where } \tan\theta = \frac{7}{24}$$

Find the transfer function of the circuit.

- b The energy stored in the circuit shown is zero at the time when the switch is closed. (i) find the s- domain expression for I . (ii) find the time domain expression for i when $t > 0$.

L3 6M



*** END ***