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

B.Tech II Year I Semester Regular & Supplementary Examinations November 2018

NETWORK ANALYSIS & SYNTHESIS

(EEE)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

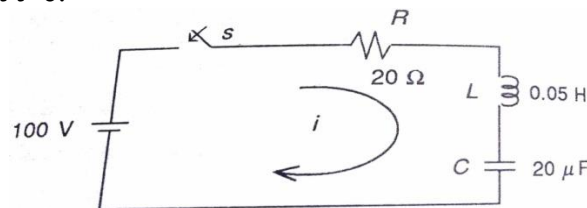
- 1 a Derive the relationship between line and phase quantities of voltage and current in star connected load. 6M
- b A three phase balanced delta connected load of $(4+j8) \Omega$ is connected across a 400 V, 3 ϕ balanced supply. Determine the phase currents and line currents. And also power drawn by the load. Assume RYB phase sequence. 6M

OR

- 2 a Derive the relationship between line and phase quantities of voltage and current in delta connected load. 6M
- b An unbalanced 4 wire star connected load has a balanced supply of 400 V. The load impedances are $Z_{AN}=(4+j8) \Omega$, $Z_{BN}=(3+j4) \Omega$, $Z_{CN}=(15+j10) \Omega$. Calculate the line currents, neutral current and total power consumed by the load. 6M

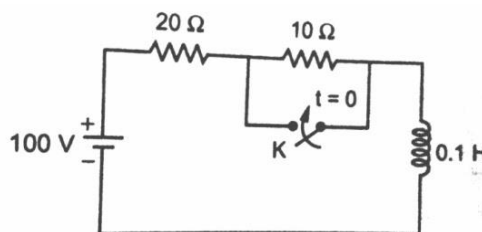
UNIT-II

- 3 a Derive the transient response of an RL circuit with sinusoidal excitation. 5M
- b Find the transient current of the circuit shown in Figure using differential equation method, when switch is closed at $t=0$. 7M



OR

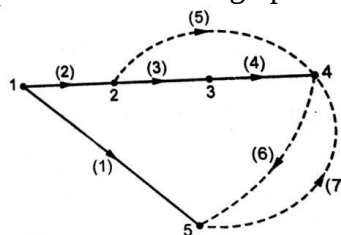
- 4 a Find current through 20Ω of the circuit shown in Figure using Laplace transformation, when switch is closed at $t=0$. 7M



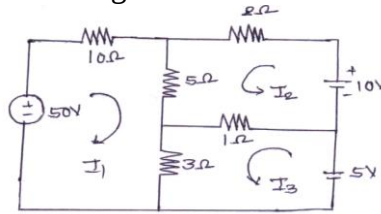
- b Derive the transient response of an RC circuit with DC excitation. 5M

UNIT-III

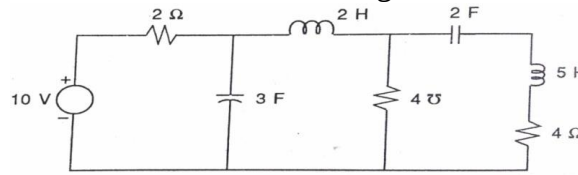
- 5 a Obtain the fundamental cut set matrix of the linear graph shown in Figure. 6M



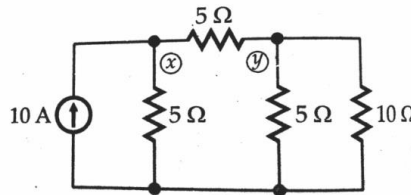
- b** Determine mesh currents for the following network shown in Figure using network topology. 6M

**OR**

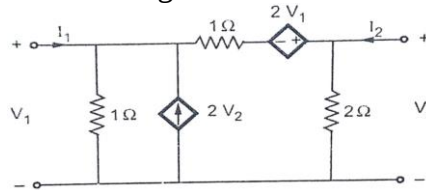
- 6 a** Construct the dual circuit of the network shown in Figure. 6M



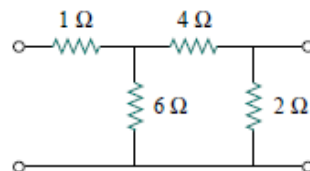
- b** Obtain the equilibrium equations in the network topological form and find voltages at x & y using nodal analysis of the network shown in figure. 6M

**UNIT-IV**

- 7 a** Express h -parameters in terms of transmission parameters for a two port network. 6M
b Evaluate the Y-parameters of the following network shown in Figure. 6M

**OR**

- 8 a** For the network shown in Figure determine the Z- parameters. 6M



- b** Express Y-parameters in terms of h -parameters for a two port network. 6M

UNIT-V

- 9 a** Design T type m-derived filter having cut-off frequency of 1 kHz, design impedance of 400 Ω and resonant frequency 1100 Hz. 6M
b Derive the expression for characteristic impedance of a prototype filter and investigate its nature in pass band and stop band with relevant equations. 6M

OR

- 10 a** Design a symmetrical bridged T- attenuator with an attenuation of 30 dB and terminated into a load of 500 Ω . 6M
b Design a π -type attenuator to give 10 dB attenuation and to have a characteristic impedance of 200 Ω . 6M

*** END ***