R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations December-2021
ELECTRICAL CIRCUITS-II
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Write the voltage and current relationship in star connected system.	L2	2M
	b	What is the transient response of RL series circuit with dc excitation?	L2	2M
	c	Define graph.	L2	2M
	d	Define Z- Parameters.	L2	2M
	e	Define Laplace transform of a function.	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Derive the relationship between Phase and Line voltages, currents in delta-connected load.	L2	5M
	b	A balanced star connected load of (4+j3) Ω per phase is connected to a balanced 3∮ 400v supply. Find a) active power b) reactive power c) Apparent power.	L3	5M

OR

|				
3	a	Explain reactive power measurement in balanced three phase load using single watt meter	L2	5M
	b	A balanced delta connected load of (4+j3) Ω per phase is connected to a balanced 3∮ 440v supply.. Find i) active power ii) reactive power iii) Apparent power	L3	5M

UNIT-II

4	a	Derive the transient response of an RL circuit with DC excitation.	L2	5M
	b	A series RL circuit with R=30Ω 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	5M

OR

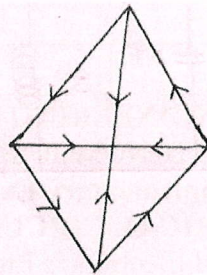|				
5	a	Derive the transient response of an RL circuit with AC excitation.	L2	5M
	b	Derive the transient response of an RLC circuit with DC excitation.	L3	5M

UNIT-III

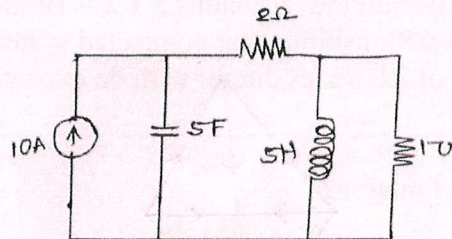|				
6	Determine mesh currents for the following network using network topology		L3	10M
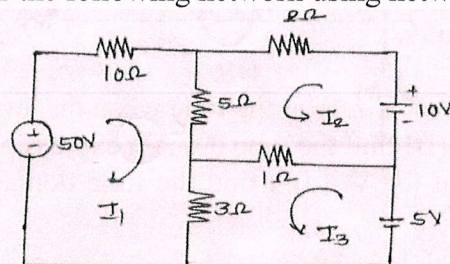
OR

7	a	Find the cutset matrix for the followings?		L3	6M

b   Write the procedure to draw the dual network and find dual network for the followings   L2   4M
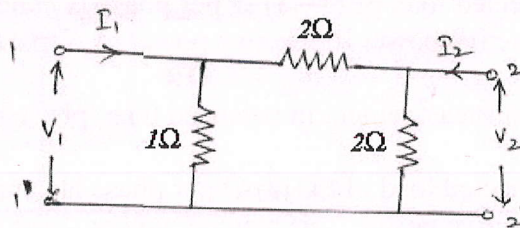

UNIT-IV

8   a   Derive the expressions for Z-parameters in terms of ABCD parameters.   L2   6M

b   Find the Z - parameters for the resistance network shown in figure   4M

L3

OR

9   a   Prove the g parameters can be obtained from the z parameters as   L2   5M

$$g_{11} = \frac{1}{Z_{11}} \qquad g_{12} = \frac{-Z_{12}}{Z_{11}} \qquad g_{21} = \frac{Z_{21}}{Z_{11}} \qquad g_{22} = \frac{\Delta_z}{Z_{11}}$$

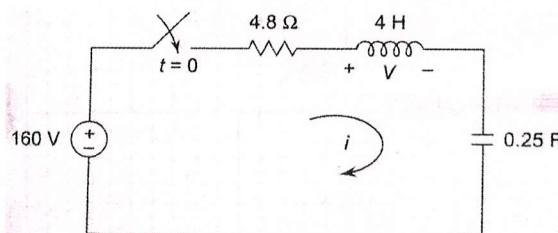b   Derive the expressions for h-parameters of a two port network?   L2   5M

UNIT-V

10 A 500Ω resister, a 16Mh inductor, and a 25 nF capacitor are connected in parallel which is placed in series with a 2000Ω resistor. Express the impedance of this series combination as a rational function of s.   L3   10M

OR

11 The energy stored in the circuit shown is zero at the time when the switch is closed. (A) find the s- domain expression for I (B) find the time domain expression for i when t > 0. (c)) find the s- domain expression for V. (d)) find the time domain expression for v when t > 0.   L3   10M

END