Reg. No: ☐☐☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November-2022
PRINCIPLES OF ELECTRICAL CIRCUITS
(Electronics and Communication Engineering)

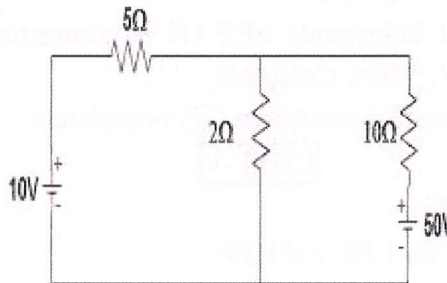Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 60

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

UNIT-I

1　a　Define active and passive elements with suitable examples.　　　　L2　6M
　　b　State and prove Kirchhoff's voltage law and current law with suitable examples.　L3　6M

OR

2　a　Write the Mesh Current equations in the circuit shown in figure below, and　L3　6M
　　　determine the currents.

　　b　Explain in detail about delta to star transformation of a resistive network.　L3　6M
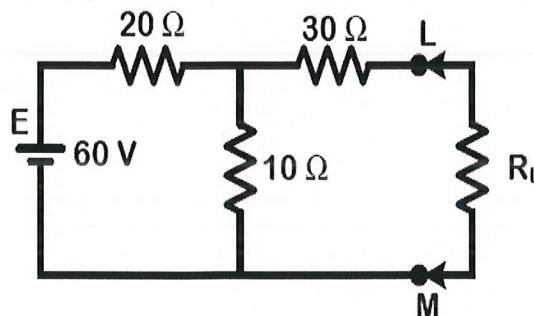
UNIT-II

3　a　State & explain Thevenin's theorem　　　　　　　　　　　　　L1　4M
　　b　By using superposition theorem find the current flowing through the 3Ω resistor.　L3　8M
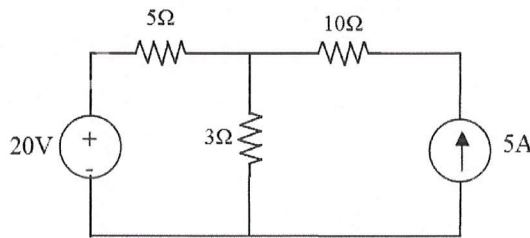
OR

4　a　State and explain Reciprocity theorem with suitable example.　　　L3　6M
　　b　Determine the maximum power delivered to the load resistance R_L.　L3　6M

UNIT-III

5	a	Derive the Transient Response of series RC-circuit with D.C excitation.	L2	6M
	b	A Series RL circuit with R=50Ω and L=10H has constant voltage V=100volts applied at t=0 by the closing the switch find the complete current.	L4	6M

OR

6	a	Derive the Laplace Transform of Series RL Circuit.	L2	6M
	b	A series RC circuit consists of a resistor of 10Ω and capacitor of 0.1 F with 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.	L4	6M

UNIT-IV

7	a	Derive an expression for RMS values of sine wave form.	L2	6M
	b	An alternating current is expressed as $I = 14.14 \sin 314t$. Determine (i) Maximum current (ii) RMS current (iii) Frequency (iv)Instantaneous current when t = 0.02msec	L2	6M

OR

8	a	Define power factor and apparent power.	L4	6M
	b	A coil of resistance 10Ω and inductance of 0.1H is connected in series with a 150μF capacitor across a 200V, 50Hz. Calculate (i) inductive reactance (ii) capacitive reactance (iii) impedance	L4	6M

UNIT-V

9	a	Explain about ABCD-parameters.	L2	6M
	b	Draw the characteristics curve for LPF and HPF.	L2	6M

OR

10	a	Explain about h-parameters in terms of y-parameters.	L2	6M
	b	Explain about Constant-K band -pass filter in detail.	L2	6M

*** END ***