

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

B.Tech I Year I Semester Regular Examinations July-2021

PRINCIPLES OF ELECTRICAL CIRCUITS

(Electronics and Communication Engineering)

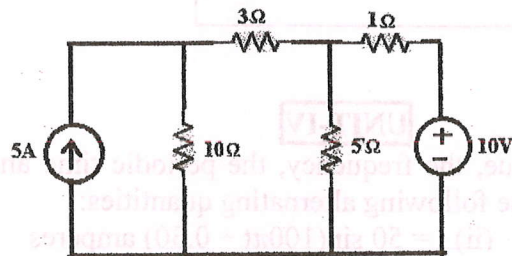
Time: 3 hours

Max. Marks: 60

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

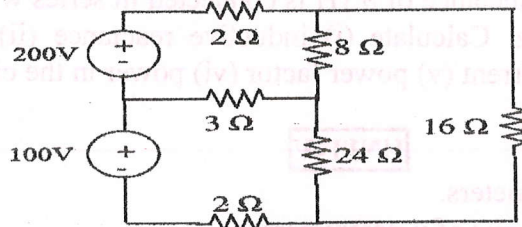
UNIT-I

- 1 a Determine the Equivalent capacitance when the capacitor is connected series and parallel? **L3 6M**
 b Determine the current in 10Ω resistor for the following network by using nodal analysis. **L3 6M**



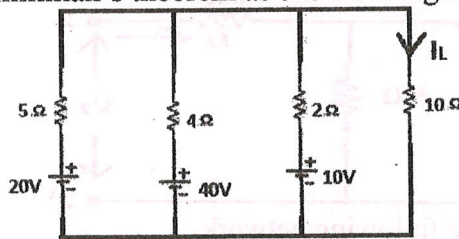
OR

- 2 a Explain in detail about passive elements? **L1 6M**
 b Determine the mesh currents for the circuit shown below. **L3 6M**



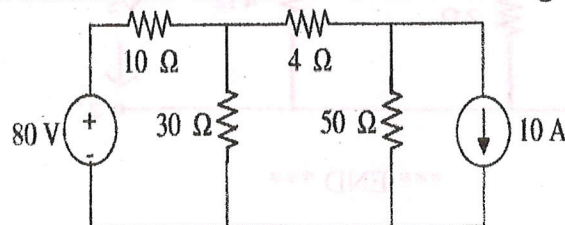
UNIT-II

- 3 a Explain Millman's theorem in detail **L1 6M**
 b Find the current I_L , use millman's theorem as shown in figure below. **L3 6M**



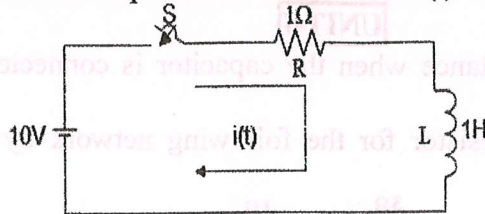
OR

- 4 a State Compensation theorem. **L2 2M**
 b Verify Superposition Theorem for 4Ω resistor for the following circuit. **L3 10M**



UNIT-III

- 5 a Derive the Laplace Transform of Series RL Circuit. **L2 6M**
 b What is the transient response of series RL and RC circuits with D.C excitation? **L3 6M**
- OR**
- 6 a A Series RL circuit with $R=50\Omega$ and $L=10H$ has constant voltage $V=100$ volts applied at $t=0$ by the closing the switch find the complete current. **L3 6M**
 b A series RL circuit Switch 'S' is Closed at time $t = 0$. There is no current through 'L' Prior to Switching obtain the particular solution for $i(t)$. **L3 6M**



UNIT-IV

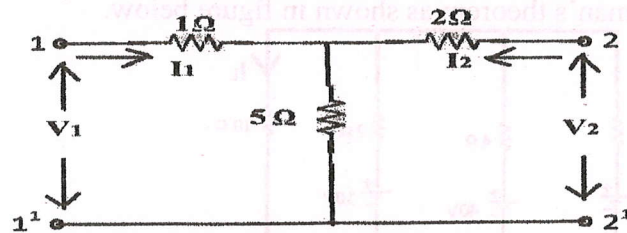
- 7 Find the peak value, the r.m.s. value, the frequency, the periodic time and the phase angle (in degrees and minutes) of the following alternating quantities: **L3 12M**
 (i) $v = 90 \sin 400\pi t$ volts (ii) $i = 50 \sin(100\pi t + 0.30)$ amperes
 (iii) $e = 200 \sin(628.4t - 0.41)$ volts

OR

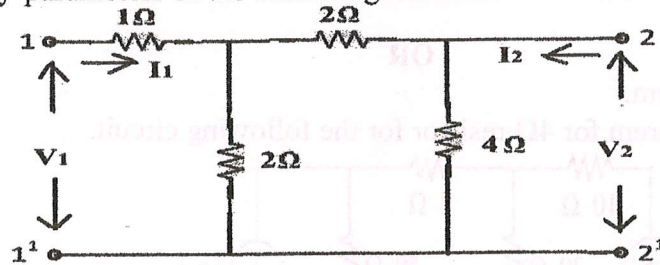
- 8 a Define Admittance and impedance. **L1 2M**
 b A coil of resistance 10Ω and inductance of $0.1H$ is connected in series with a $150\mu F$ capacitor across a $200V, 50Hz$. Calculate (i) inductive reactance (ii) capacitive reactance (iii) impedance (iv) current (v) power factor (vi) power in the circuit. **L3 10M**

UNIT-V

- 9 a Explain about short-circuit parameters. **L2 6M**
 b Explain about h-parameters in terms of y-parameters **L2 6M**
- OR**
- 10 a Find the transmission parameters for the circuit shown in figure. **L3 6M**



- b Determine the y-parameters of the following network. **L3 6M**



*** END ***