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

B.Tech I Year I Semester Supplementary Examinations November-2021
PRINCIPLES OF ELECTRICAL CIRCUITS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 60

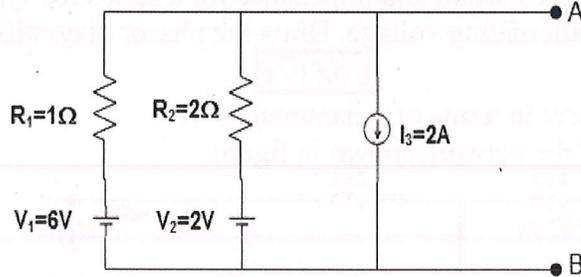
(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a State and prove Kirchhoff's laws with suitable examples. L2 6M
 b Three resistances of values 20, 30 and 50 are connected in series across 20 V DC supply. Calculate. L3 6M
 i) Equivalent resistance of the circuit.
 ii) Total current from the supply.
 iii) Voltage drop across each resistor.
 iv) Power dissipated in each resistor.

OR

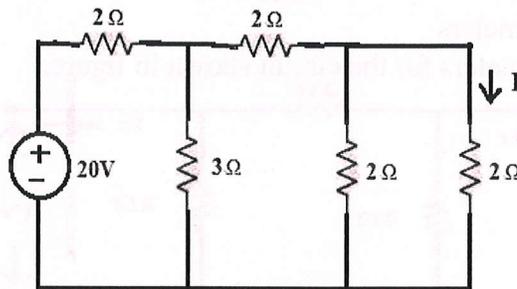
- 2 a Determine the equivalent current source between the terminals A-B. L3 6M



- b Explain about source transformation briefly. L2 6M

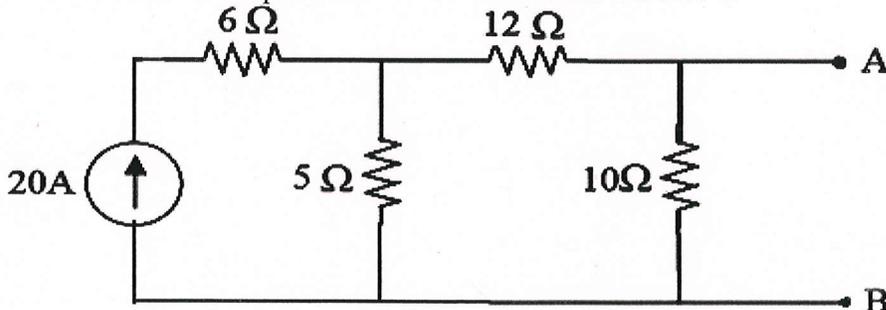
UNIT-II

- 3 a Explain the maximum power transfer theorem. L1 4M
 b Verify reciprocity theorem for the network shown in below figure. L3 8M



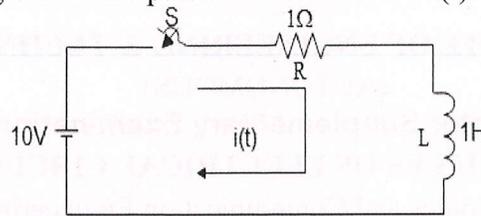
OR

- 4 a State Thevenin's theorem L1 2M
 b Find the Norton's equivalent for the circuit shown below. L3 10M



UNIT-III

- 5 a 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



- b What is the transient response of series RL and RC circuits with D.C excitation? L3 6M

OR

- 6 a Define transient response. L1 2M
 b The Circuit Consists Of Resistance=20 Ohm, Inductance = 0.05H, Capacitance = 20uF in Series With a 100V Constant at $t=0$. Find The Current Transient. L3 10M

UNIT-IV

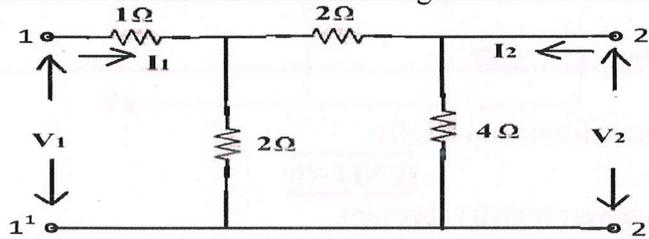
- 7 a Derive an expression for RMS values of sine wave form. L2 6M
 b An alternating current is expressed as $I = 14.14 \sin 314t$. Determine.
 (i) Maximum current (ii) RMS current (iii) Frequency L2 6M
 (iv) Instantaneous current when $t = 0.02\text{msec}$.

OR

- 8 a Define Admittance and impedance L1 2M
 b Derive an expression for the current and impedance for a series RC circuit Excited by a Sinusoidal alternating voltage. Draw the phasor diagrams. L2 10M

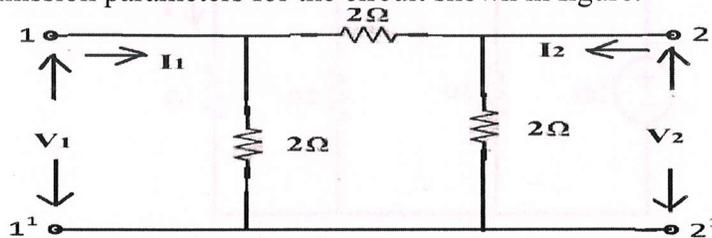
UNIT-V

- 9 a Explain about h-parameters in terms of y-parameters L1 6M
 b Find the h-parameters of the network shown in figure. L3 6M



OR

- 10 a Explain about ABCD-parameters L1 6M
 b Find the transmission parameters for the circuit shown in figure. L3 6M



*** END ***