



# VIT

Vellore Institute of Technology  
(Approved by the All India Council of Technical Education, New Delhi, 1978)

Vellore – 632014, Tamil Nadu, India  
SCHOOL OF ELECTRICAL ENGINEERING  
FALL SEMESTER 2023-2024

CAT-I

SLOT: E2+TE2

Programme Name & Branch: B. Tech. Computer Engineering

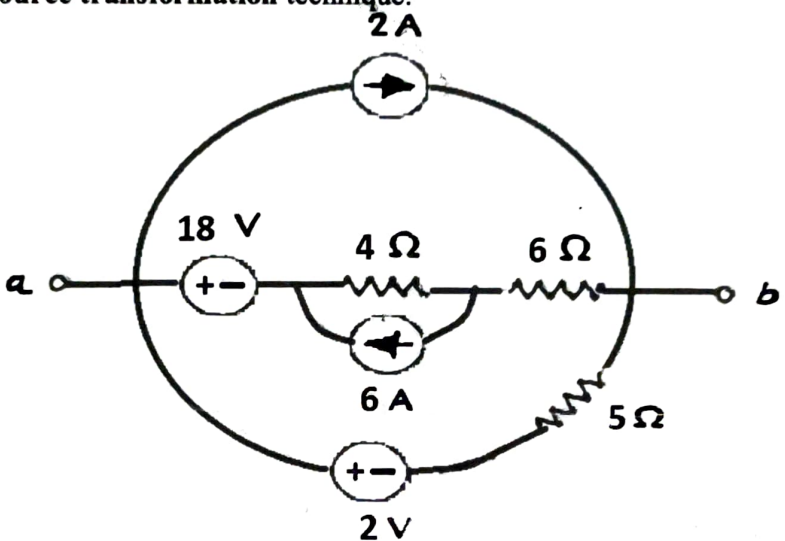
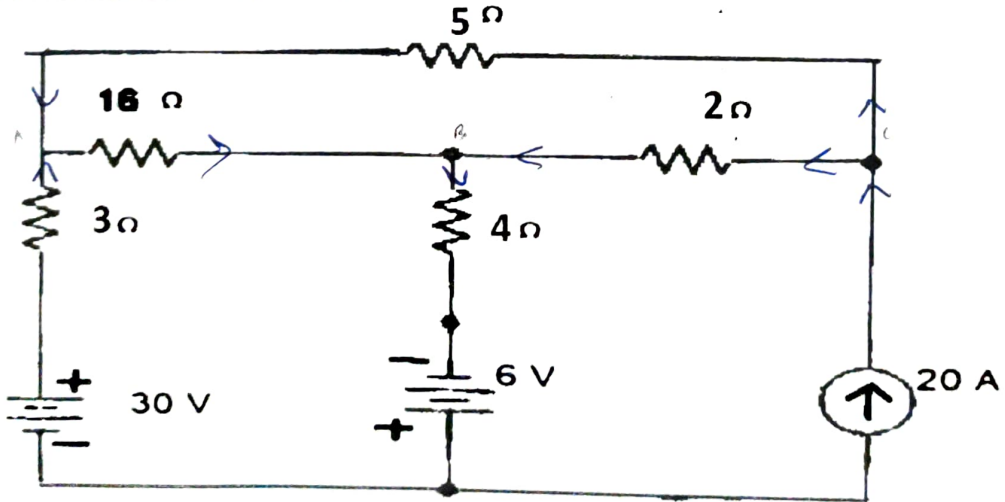
Course Code: BEEE102L

Course Name: Basic Electrical and Electronics Engineering

Faculty Members: Dr. Chilukuri Venkata Mahendra, Dr. Washima Tasnin, Dr. Anusuya B

Class Number(s): VL2023240107788, 7776, 7782

Duration : 90 minutes Max. Marks: 50

Q. No	Questions	Mark
1.	<p>Obtain single current source in parallel with resistor across terminals 'a' and 'b' for the circuit shown in Fig. 1 using source transformation technique.</p>  <p>Fig. 1</p>	10
2.	<p>Determine node voltages for the circuit shown in Fig. 2 using nodal analysis and find branch currents in the resistors 4 Ω and 16 Ω.</p>  <p>Fig. 2</p>	10

4. Obtain Thevenin's equivalent circuit across terminals 'A' and 'B' for the circuit shown in Fig. 3. Compute the current through 20Ω resistor using Thevenin's circuit. 10

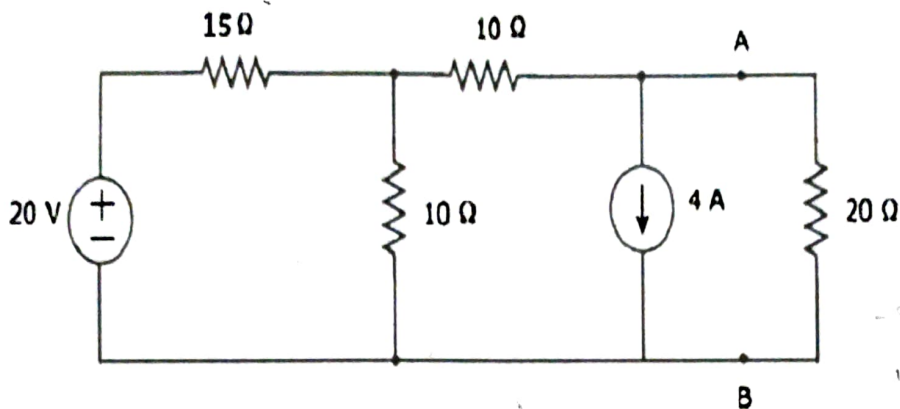
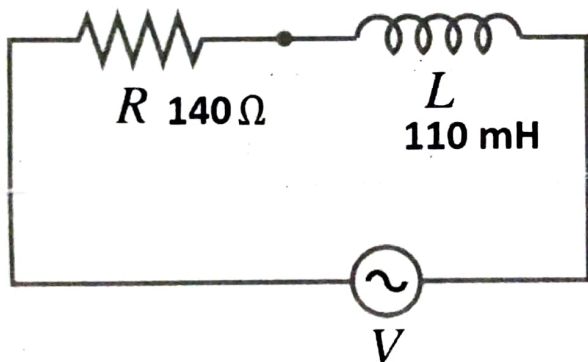


Fig. 3

-58V  
6A  
11.506A

4. Voltage  $V_1$  is given by 100V (rms), 50 Hz. Find the impedance, current (rms), power factor angle or phase angle and the voltage drop across  $R_1$  (140 ohms) and  $L_1$  (110 mH). Plot the source voltage and current waveform simultaneously on a common axis. 10



1414.2  
0.693  
13.811  
137.2  
22.188

Fig. 4

5. A sinusoidal voltage  $v_s(t) = 230\sin(100t)$  is applied to a RLC series circuit with  $L = 160\text{mH}$ ,  $C = 99.0\ \mu\text{F}$ , and  $R = 68\ \Omega$ . Determine (a) Impedance (b) Current (c) Active/real Power (d) Reactive Power (e) Power factor 10

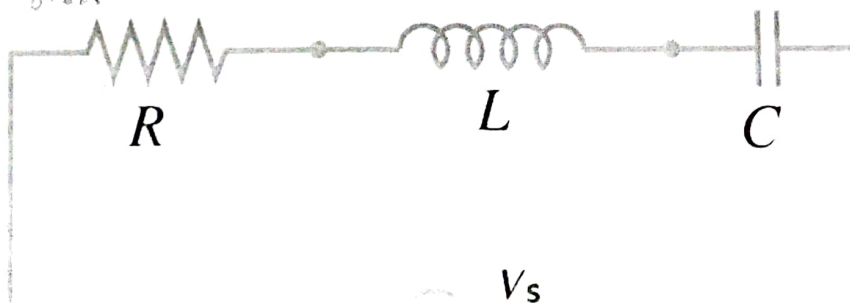


Fig. 5

0.673      108.861      2.113      303.6      379.5