Reg. No.:
Name:

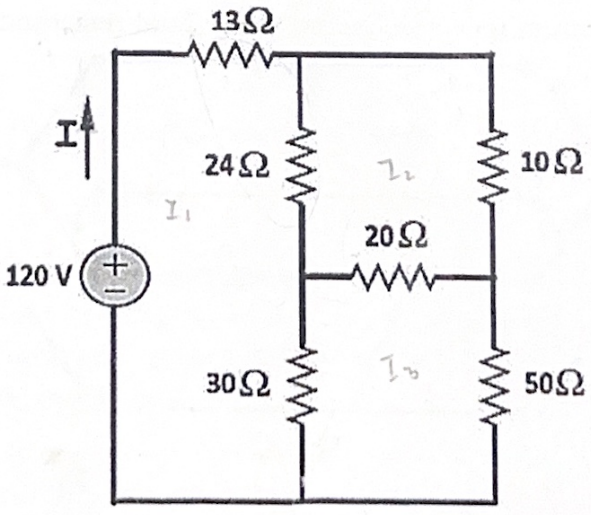
VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test - 1 (CAT 1) – November 2022

Programme	:	B.Tech.	Semester	:	FALL 2022 – '23
Course	:	Basic Electrical and Electronics Engineering	Code	:	BEEE102L
			Slot	:	B1
Faculty	:	Dr. P. Sri Ramalakshmi Dr. G. Kanimozhi Dr. K. Iyswarya Annaporani Dr. D. Subbulekshmi Dr. S. Kuruseelan Prof. V. Ananthakrishnan Prof. AN. Abhirami Dr. D. R. Binu Ben Jose Dr. Rupa Mishra	Class Number	:	CH2022231700080 CH2022231700082 CH2022231700068 CH2022231700074 CH2022231700076 CH2022231700084 CH2022231700070 CH2022231700078 CH2022231700072
Time	:	1 hour, 30 minutes	Max. Marks	:	50

(In the answer booklet, sudents may write the class number given against the name of the relevant subject teacher)

Answer all questions

Q. No.	Question Description	Marks
1.	Find the total resistance seen by the source of the circuit shown in Fig.1 using star-delta transformation and find the current flowing through 13 Ω resistor.  Fig. 1.	10
2.	Using mesh resistance matrix or mesh analysis, determine the current supplied by each battery in the circuit shown in Fig. 2.	10

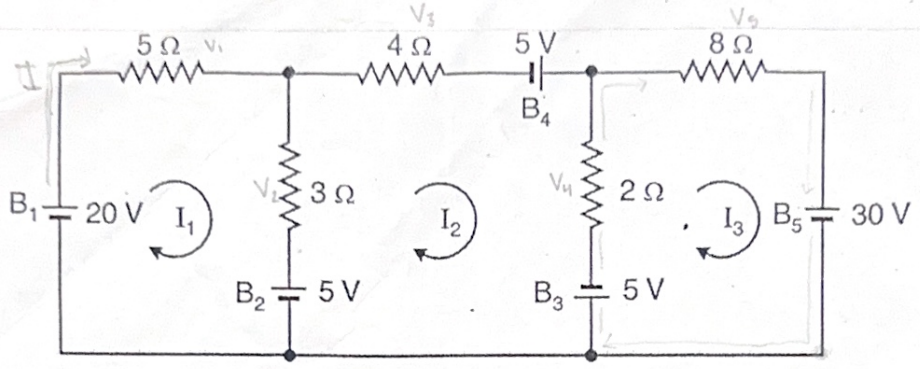


Fig. 2.

3. List three major differences between nodal and mesh analysis. For the circuit shown in Fig. 3, find the voltage at the points 1, 2 and 3 using nodal analysis.

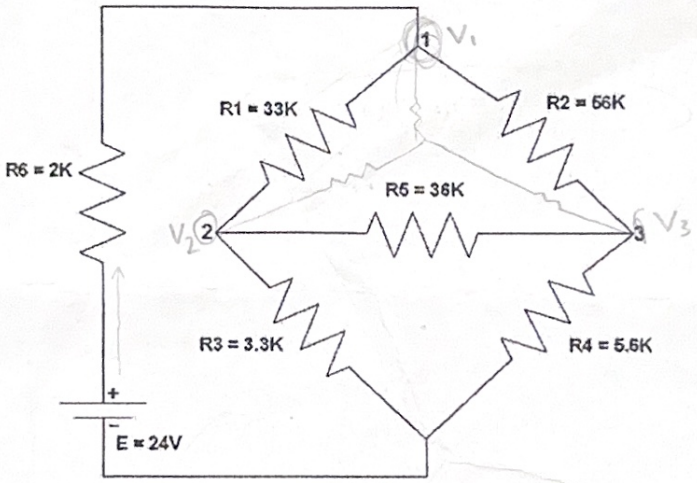


Fig. 3. 10

4. In the circuit shown in Fig. 4, if the Thevenin's voltage is V/2, estimate the value of X. Also find the maximum power delivered to the load resistance R_L.

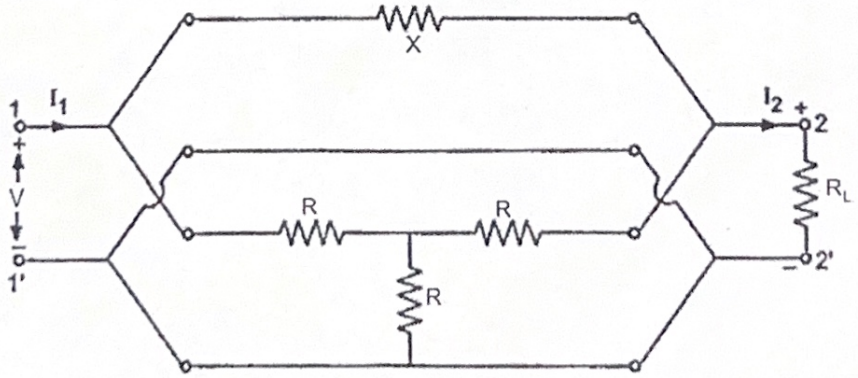


Fig. 4. 10

5. A voltage $v(t) = 141.4 \sin(314t + 10°)$ is applied to a circuit and the steady current given by $i(t) = 14.14 \sin(314t - 20°)$ is found to flow through it. Determine;

   i. Impedance, resistance, inductance and p.f. of the circuit.
   ii. The power delivered to the circuit.
   iii. Draw the phasor diagram. 10