

Reg. No.:

Name:



**VIT**  
Vellore Institute of Technology  
(Established as an Institute under section 3 of U.G. 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
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	Slot	B1
		Class Number	CH2022231700080 CH2022231700082 CH2022231700068 CH2022231700074 CH2022231700076 CH2022231700084 CH2022231700070 CH2022231700078 CH2022231700072
Time	1 hour, 30 minutes	Max. Marks	50

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

Answer all the 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 $13\ \Omega$ resistor.	10
	<p>Fig. 1.</p>	10
2.	Using mesh resistance matrix or mesh analysis, determine the current supplied by each battery in the circuit shown in Fig. 2.	10

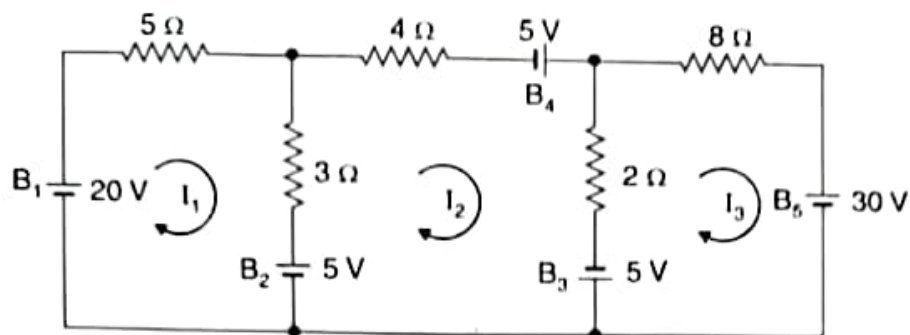


Fig. 2.

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.

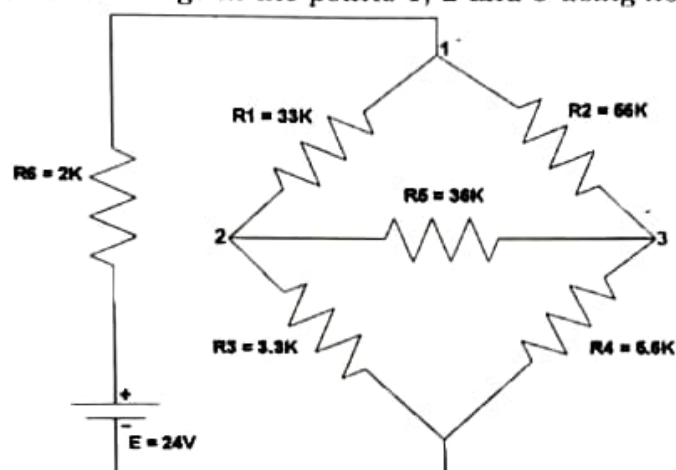


Fig. 3.

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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  $R_L$ .

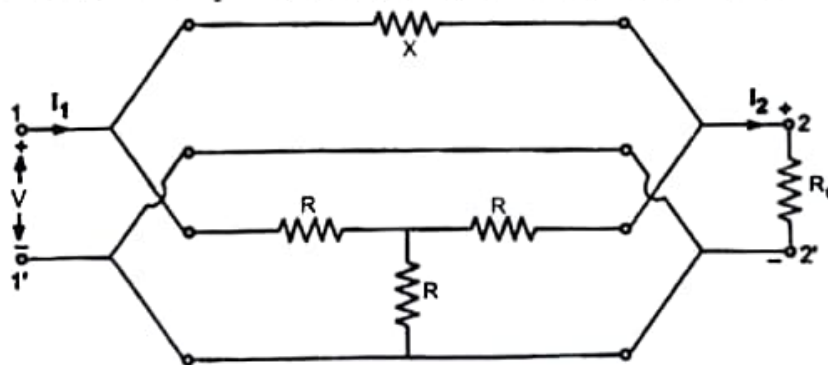


Fig. 4.

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5. A voltage  $v(t) = 141.4 \sin(314t + 10^\circ)$  is applied to a circuit and the steady current given by  $i(t) = 14.14 \sin(314t - 20^\circ)$  is found to flow through it. Determine;
- Impedance, resistance, inductance and p.f. of the circuit.
  - The power delivered to the circuit.
  - Draw the phasor diagram.

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