SLOT: D2+TD2

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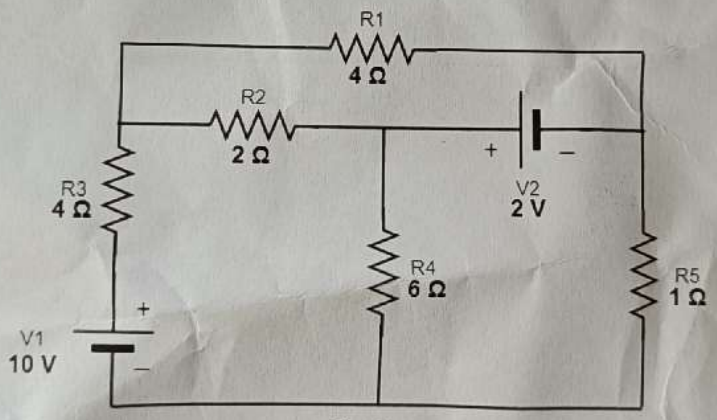
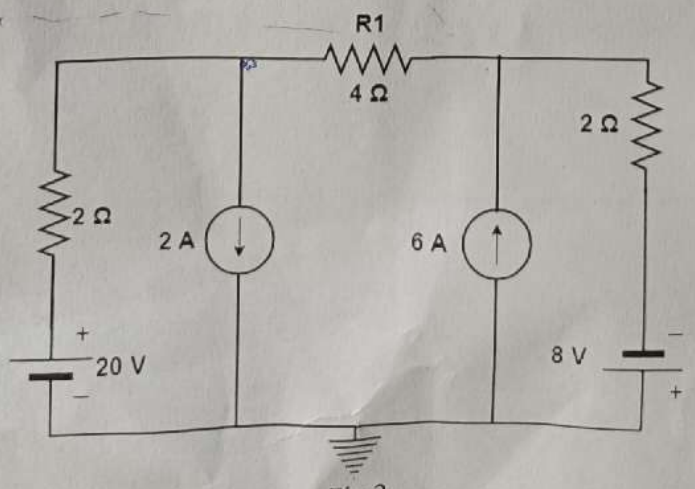
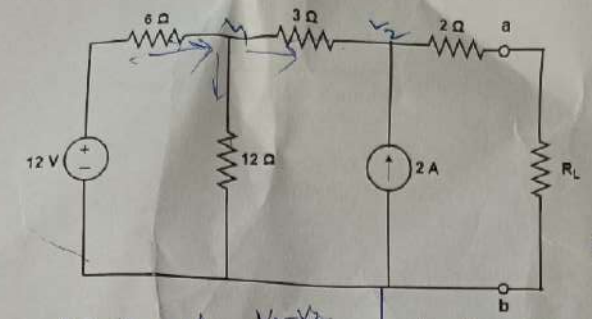
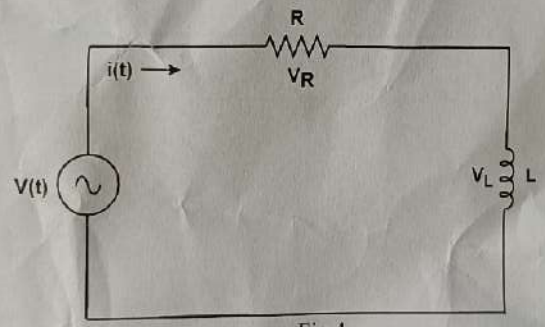
**SCHOOL OF ELECTRICAL ENGINEERING**
**CONTINUOUS ASSESSMENT TEST – I**
**WINTER SEMESTER 2022-2023 (Freshers)**

**Programme Name & Branch:** B.Tech. & FFCS **Course Code:** BEEE 102L
**Course Name:** Basic Electrical and Electronics Engineering
**Faculty Name(s):** Dr. Himadri Lala, Dr. Vijaya Priya P, Dr. Raju J, Dr. Subramanian K, Dr. Albert Alexander S, Dr. Chilukurivenkata Mahendra, Dr. Raghuram M, Dr. Thamilmaran A, Dr. Satyajit Das, Dr.Sonam Shrivastava, Dr. Anusuya Bhatacharyya, Dr. Thiruvenkadam S, Dr. Brisilla R M, Dr. Vanishree J

**Date: 29.03.2023** **Exam Duration: 90 minutes** **Maximum Marks: 50**

**Answer all the questions**

| Q. No | Questions (5X10 = 50 marks) | Marks |
|---|---|---|
| Q1 | Apply mesh analysis to find current through the resistors R1 and R5 as shown in Fig.1.   Fig.1 | [10] |
| Q2 | Apply nodal analysis for the circuit shown in Fig. 2 and find the node voltages and current through the resistor R1.   Fig.2 | [10] |

| | | |
|---|---|---|
| Q3 | Obtain Thevenin's equivalent for the circuit shown in Fig. 3.<br>  <br><br>Fig. 3 | [10] |
| Q4 | A voltage $V(t) = 100\sin(314t + 20^0)$ is applied to a series RL circuit having R=10 Ω, L=15 mH as shown in Fig.4. Calculate:<br>(i) Current i(t)<br>(ii) Voltage drop across the resistor<br>(iii) Power factor<br>(iv) Active power consumed by the circuit<br>(v) Reactive power delivered by the inductor<br>  <br><br>Fig.4 | [10] |
| Q5 | i) A voltage $V(t) = 100\sin 314t$ is applied to a series circuit consisting of a resistor and a capacitor. Calculate active power and reactive power in the circuit if the current through the circuit is i(t) =20 sin (314t +30).<br><br>ii) For a voltage signal $V(t) = 100\sin(364t + 20^0)$, evaluate the frequency, peak voltage, time period, rms value and average value of V(t). | [5+5] |