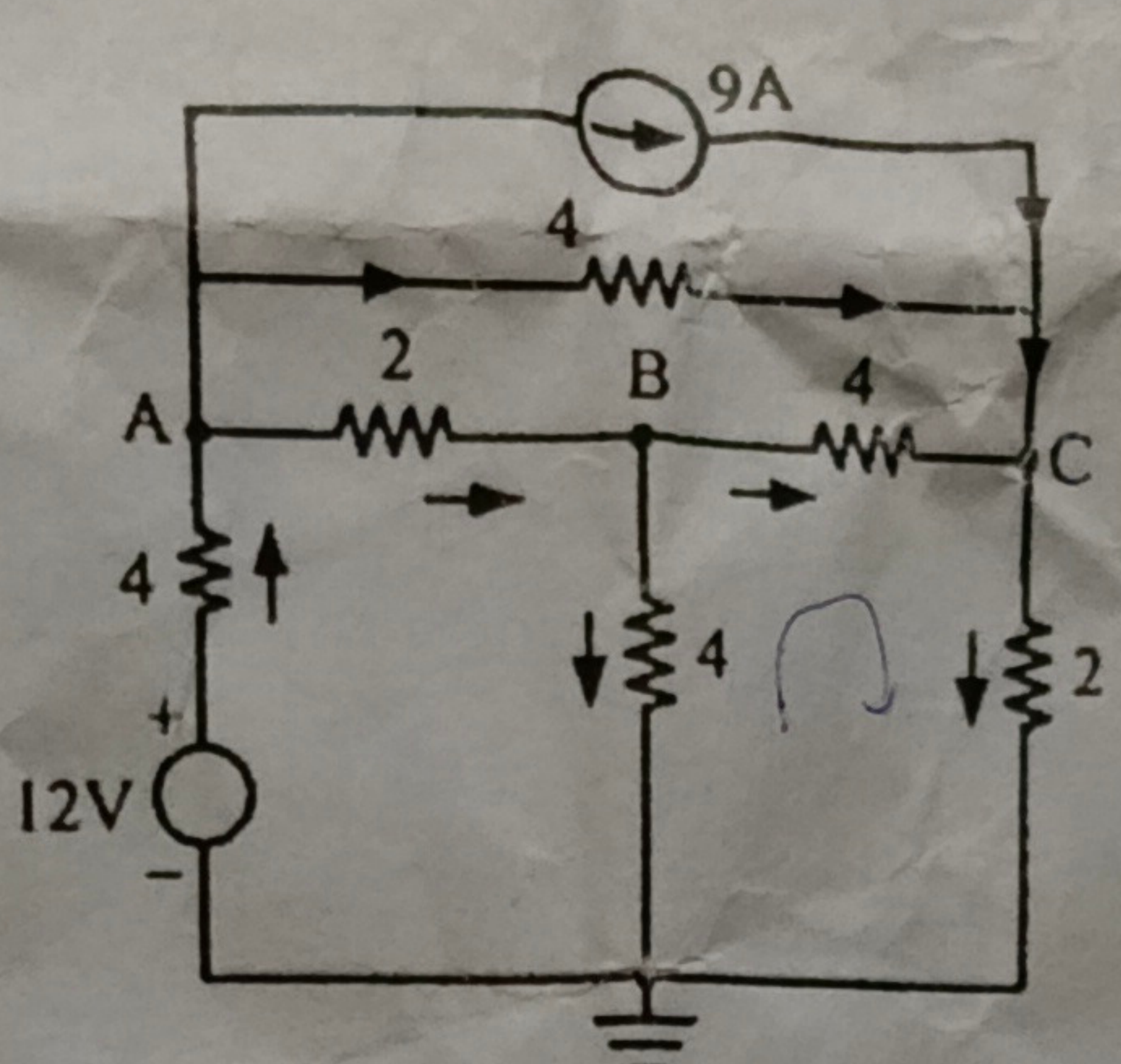
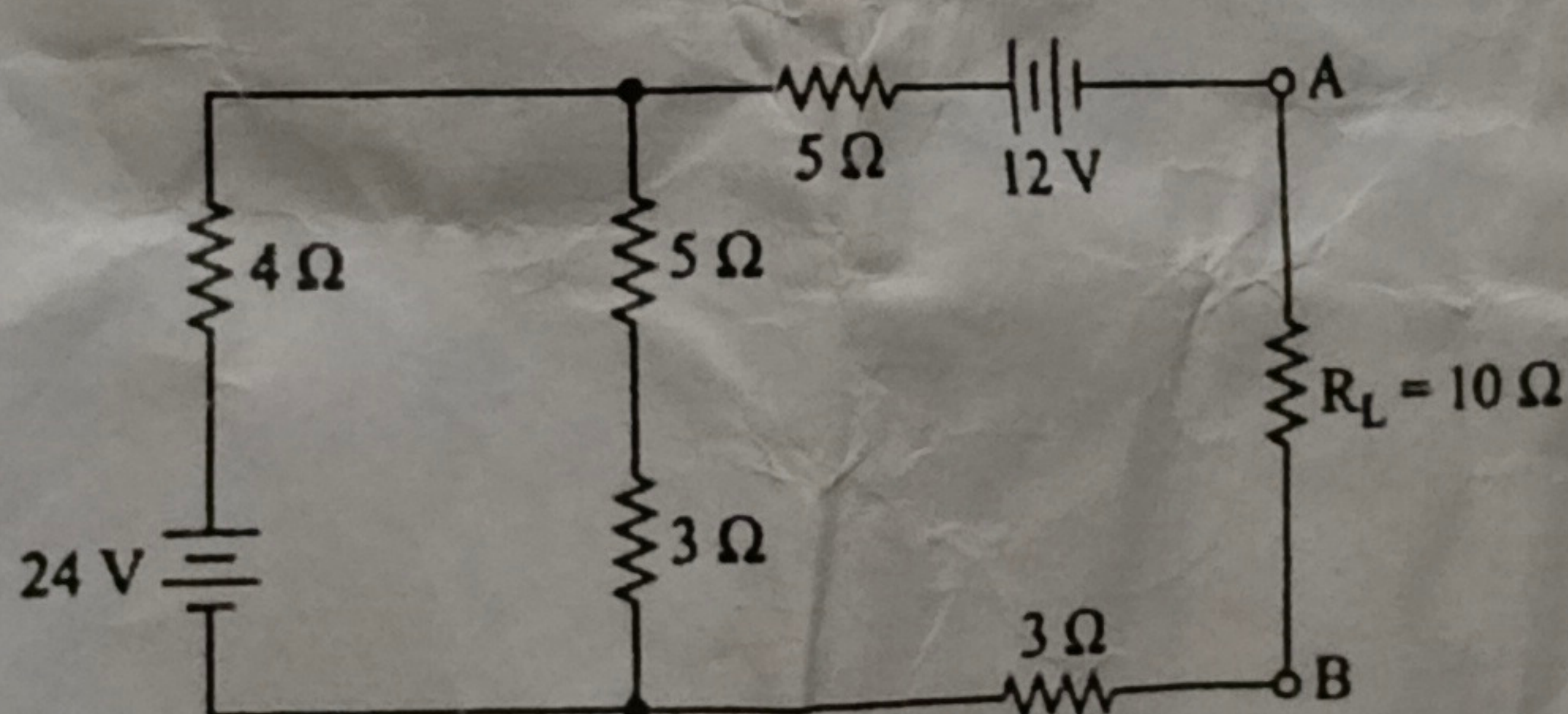


Continuous Assessment Test - II (CAT 2) - September 2026

Programme	: B. Tech	Semester	: Fall 2026 - 27
Course	: Basic Engineering	Code	: BAEEE101
Faculty	: Dr. Rupa Mishra	Slot	: C1+TC1, D2+TD2
Time	: 90 min	Class Nbr	: CH2026270104144, CH2026270104068
		Max. Marks	: 50

Course Outcomes:

CO1: Analyse the electrical circuits, electrical motors and the role of power electronics in industrial applications.
CO2: Acquire foundational knowledge of electronic devices and communication systems.

Q.No.	Sub. Sec.	Question Description	Marks	BT level	CO
1.		Use nodal analysis to determine the voltage across BC and the current in the 12 V source for the circuit given in Figure 1. All resistances are in ohms.  Figure 1	10	K3	CO1
2.		Using Thevenin's theorem, calculate the current flowing through the load resistance, R_L connected across the terminals A and B for the network shown in Figure 2. 	10	K3	CO1

10³
2nd

Figure 2

3.		A 230 V, 50 Hz, ac supply is applied to a coil of 0.06 H inductance and 2.5 Ω resistance connected in series with a 6.8 μ F capacitor. Calculate (i) impedance, (ii) current, (iii) phase angle between voltage and current, (iv) power factor and (v) power consumed.	10	K3	CO1
4.		With the help of a neat labelled diagram, explain the constructional details of a practical DC machine. Identify the major components and discuss their functions and significance in the operation of the machine.	10	K2	CO1
5.		Two diodes, A and B, are tested under reverse bias. Diode A is damaged when its reverse voltage exceeds a certain value, whereas diode B is deliberately operated in this region and maintains an approximately constant voltage across its terminals. Identify the likely type of each diode and explain the difference in their intended operation with the help of VI characteristics. Discuss reverse breakdown, current limitation and the characteristics that make one device suitable for voltage regulation.	10	K2	CO2

Blooms Taxonomy levels: K1- Remebering, K2-Understanding, K3-Applying, K4- Analysing, K5-Evaluating, K6- Creating

