

Assignments – Course Outcome matrix

Course Outcomes (COs):

CO-1 : Apply fundamental electrical laws and circuit theorems to electrical circuits.

CO-2 : Analyze single phase and three phase AC circuits.

CO-3 : Describe operating principle and applications of static and rotating electrical machines.

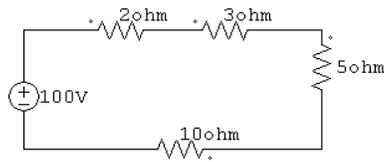
CO-4 : Understand the LT switchgear, earthing and safety of electrical appliances.

CO-5 : Comprehend illumination system, batteries, electrical consumption & billing and electrical measuring instruments.

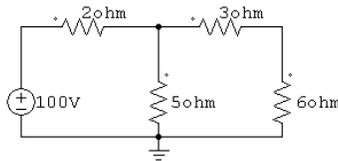
Sr. No	Assignment	CO1	CO2	CO3	CO4	CO5
1.	Assignment-1	√				
2.	Assignment-2		√			
3.	Assignment-3			√		
4.	Assignment-4				√	
5.	Assignment-5					√

Assignment : 1

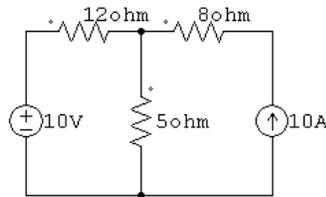
1. Write the V–I relationship for R, L, and C.
2. State Kirchhoff's Current Law (KCL).
3. Define time constant of: (a) RL circuit (b) RC circuit
4. Explain the procedure to analyze a DC circuit using Kirchhoff's laws.
5. State and explain Thevenin's Theorem.
6. Derive the formula for Star–Delta and Delta–Star transformations.
7. Derive the expression for voltage across capacitor in an RC circuit during charging.
8. A coil has resistance $10\ \Omega$ and inductance $2\ \text{H}$. If a DC voltage of $50\ \text{V}$ is applied, find the steady-state current.
9. Three resistors of $4\ \Omega$, $6\ \Omega$ and $12\ \Omega$ are connected in parallel across a $24\ \text{V}$ source. Find the total current drawn.
10. A $24\ \text{V}$ voltage source is connected in series with a $6\ \Omega$ resistor and a $12\ \Omega$ resistor. Calculate current and voltage across each resistor.
11. Evaluate (i) current from $5\ \text{ohm}$ resistor, (ii) voltage drop in $10\ \text{ohm}$ resistor, (iii) power dissipated in $2\ \text{ohm}$ resistor, (iv) total power dissipated in the circuit.



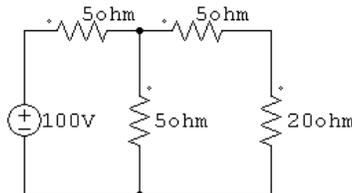
12. Evaluate (i) current from $6\ \text{ohm}$ resistor, (ii) voltage drop in $5\ \text{ohm}$ resistor, (iii) power dissipated in $2\ \text{ohm}$ resistor, (iv) total power dissipated in circuit.



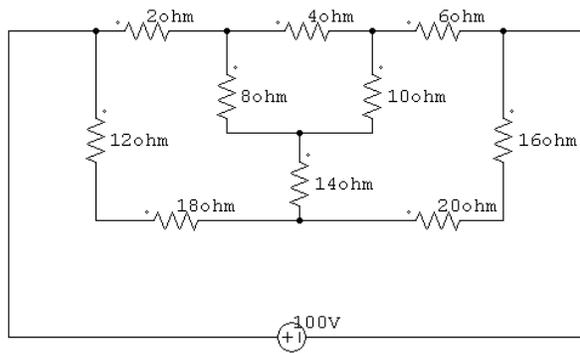
13. Evaluate voltage across $12\ \text{ohm}$ resistor and $8\ \text{ohm}$ resistor using Superposition Theorem



14. Evaluate voltage across $20\ \text{ohm}$ resistor using Norton's Theorem



15. Evaluate current from $1\ \text{ohm}$ resistor using delta-star transformation.



16. A capacitor of $100 \mu\text{F}$ is charged through a resistor of $2 \text{ k}\Omega$ from a 50 V DC supply. Find, (a) Time constant, (b) Voltage across capacitor at $t = 0.5 \text{ s}$

Rubric wise marks obtained:

Criteria	Level of Knowledge and Understanding	Analytical Ability	Quality & Correctness of Write-up, Ethical Practices and Submission	Total
Marks				