

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.

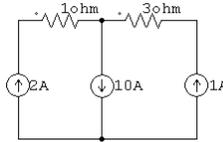
CO-4 : Understand the LT switchgear, earthing and safety of electrical appliances.

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

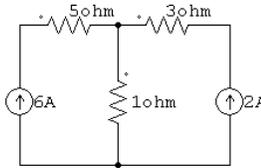
Sr. No	Assignment	CO1	CO2	CO3	CO4	CO5
1.	Assignment-1	√				
2.	Assignment-2		√			
3.	Assignment-3			√		
4.	Assignment-4				√	
5.	Assignment-5					√

Assignment : 1

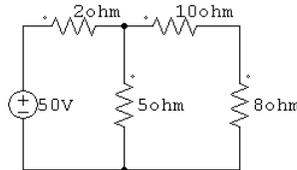
1. Define electrical circuit elements Resistor (R), Inductor (L), and Capacitor (C).
2. What is meant by an independent voltage source and an independent current source?
3. State Kirchhoff's Voltage Law (KVL).
4. Explain the behavior of inductor and capacitor under DC excitation.
5. State and explain the Superposition Theorem with necessary conditions.
6. Derive the expression for current growth in an RL circuit when a DC voltage is applied.
7. Compare Thevenin's and Norton's Theorems.
8. A resistor of $20\ \Omega$ is connected across a $200\ \text{V}$ DC supply. Calculate (a) Current flowing, (b) Power dissipated
9. A capacitor of $50\ \mu\text{F}$ is connected to a $100\ \text{V}$ DC source. Determine (a) Charge stored, (b) Energy stored in the capacitor
10. A $10\ \text{A}$ current source supplies a parallel combination of $5\ \Omega$ and $10\ \Omega$ resistors. Find the voltage across each resistor.
11. Convert a $20\ \text{V}$ voltage source in series with $5\ \Omega$ resistance into its equivalent current source.
12. Evaluate (i) current from $1\ \text{ohm}$ resistor, (ii) voltage drop in $3\ \text{ohm}$ resistor, (iii) total power dissipated in circuit.



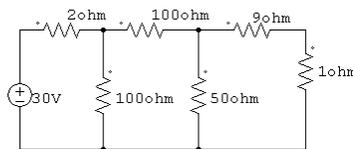
13. Evaluate (i) current from $1\ \text{ohm}$ resistor using Superposition Theorem



14. Evaluate voltage across $8\ \text{ohm}$ resistor using Thevenin's Theorem



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



16. A series RL circuit has $R = 10\ \Omega$ and $L = 2\ \text{H}$. A DC voltage of $20\ \text{V}$ is applied at $t = 0$. Determine, (a) Time constant, (b) Current at $t = 0.2\ \text{s}$
17. In an RC discharge circuit, $R = 5\ \text{k}\Omega$ and $C = 20\ \mu\text{F}$. If initial voltage is $100\ \text{V}$, find capacitor voltage after $0.2\ \text{s}$.

Rubric wise marks obtained:

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