

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Course Code & Name : **23EET103-Electrical Circuits and Electron Devices**
 Course Faculty : Ms.R.Saranya

Assignment - I

Register Number	Assignment Question	Company Asked	CO Mapping
713525AD001 - 713525AD023	<p>Ravi, a college student, has recently moved into a hostel. Every morning, he irons his uniform using a 1000 W, 230 V electric iron. His electricity bill is getting high, and he wants to understand how the iron affects his hostel's electricity consumption.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Define voltage, current, power, and energy in the context of Ravi's iron. 2. Calculate the current drawn by the iron. 3. Determine the resistance of the iron's heating element. 4. If Ravi uses the iron 30 minutes daily for 20 days, calculate the energy consumed in kWh. 5. Explain why the iron is a resistive load. 	TCS	C01
	<p>Priya is setting up lights in her new tuition center. She installs four identical 60 W, 230 V bulbs. She notices the lights are connected in parallel. She wants to know why and how much current the bulbs draw.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Explain why parallel connection is preferred in her classroom. 2. Calculate the current drawn by one bulb. 3. Find the total power consumed by all bulbs. 4. Calculate the total current drawn from the supply. 5. State two advantages of parallel circuits in classroom lighting. 	Infosys	C02
	<p>A campus installs emergency lights in parallel across 12 V supply. Each light has resistance 12 Ω. A technician wants to ensure all lights operate properly if one fails.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the current drawn by each light. 	ABB	C05

	<ol style="list-style-type: none"> Determine total current supplied. If one light fails (open circuit), calculate the new current through remaining lights. Verify Kirchhoff's Current Law. Explain why parallel connection ensures reliability in emergency lighting. 		
	<p>At home, a fan (50 Ω) and lamp (100 Ω) are connected in series and another lamp (150 Ω) is connected in parallel with this series combination across 230 V supply. The homeowner wants to know total current and power distribution.</p> <p>Questions:</p> <ol style="list-style-type: none"> Calculate the equivalent resistance of the series part. Determine the total resistance of the circuit. Calculate the total current drawn from supply. Find current through each appliance. Explain why mixed series-parallel circuits are common in households. 	GE Power	C05
713525AD024 - 713525AD048	<p>Aman is charging his smartphone using a charger that draws 2 A at 5 V. He wonders how much electricity the charger consumes if he charges daily.</p> <p>Questions:</p> <ol style="list-style-type: none"> Identify if the charger behaves as a resistive element. Calculate the resistance of the charger using Ohm's law. Determine the power consumed by the charger. If Aman charges for 3 hours daily, calculate the energy consumed. Explain Ohm's law with reference to the charger. 	Wipro	C01
	<p>Diya decorates her room with five 10 Ω resistors in series as a LED string for a party, connected across 50 V DC. She wants to ensure the voltage drop across each resistor is safe.</p> <p>Questions:</p> <ol style="list-style-type: none"> Calculate the total resistance of the LED string. Determine the current flowing through the circuit. Calculate the voltage drop across each resistor. Verify Kirchhoff's Voltage Law. State one drawback of series circuits in decorative lighting. 	Cognizant	C02
	<p>A campus installs emergency lights in parallel across 12 V supply. Each light has resistance 12 Ω. A technician wants</p>	ABB	C05

	<p>to ensure all lights operate properly if one fails.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the current drawn by each light. 2. Determine total current supplied. 3. If one light fails (open circuit), calculate the new current through remaining lights. 4. Verify Kirchoff's Current Law. 5. Explain why parallel connection ensures reliability in emergency lighting. 		
	<p>At home, a fan (50 Ω) and lamp (100 Ω) are connected in series and another lamp (150 Ω) is connected in parallel with this series combination across 230 V supply. The homeowner wants to know total current and power distribution.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the equivalent resistance of the series part. 2. Determine the total resistance of the circuit. 3. Calculate the total current drawn from supply. 4. Find current through each appliance. 5. Explain why mixed series-parallel circuits are common in households. 	GE Power	C05
713525AD049	<p>An engineer tests a DC source supplying 10 V to a 10 Ω load. The source has 2 Ω internal resistance. He wants to understand the difference between ideal and practical sources.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Define an ideal voltage source. 2. Calculate the current assuming the source is ideal. 3. Find the actual current with internal resistance. 4. Determine the terminal voltage of the source. 5. Compare ideal and practical sources. 	Bosch	C01
713525AD072	<p>While camping, Sara uses a torch powered by a 9 V battery, drawing 0.3 A. She wants to know how long it can run and how much energy it consumes.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the resistance of the bulb. 2. Determine the power consumed by the bulb. 3. Calculate the energy consumed if used for 5 hours. 4. Identify the type of source in the torch. 5. Explain why batteries are practical sources. 	Accenture	C02
	A campus installs emergency lights in parallel across 12 V	ABB	C05

	<p>supply. Each light has resistance $12\ \Omega$. A technician wants to ensure all lights operate properly if one fails.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the current drawn by each light. 2. Determine total current supplied. 3. If one light fails (open circuit), calculate the new current through remaining lights. 4. Verify Kirchhoff's Current Law. 5. Explain why parallel connection ensures reliability in emergency lighting. 			
	<p>At home, a fan ($50\ \Omega$) and lamp ($100\ \Omega$) are connected in series and another lamp ($150\ \Omega$) is connected in parallel with this series combination across $230\ \text{V}$ supply. The homeowner wants to know total current and power distribution.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the equivalent resistance of the series part. 2. Determine the total resistance of the circuit. 3. Calculate the total current drawn from supply. 4. Find current through each appliance. 5. Explain why mixed series-parallel circuits are common in households. 	GE Power	C05	
713525AD073 -	<p>A street light circuit contains a $20\ \text{V}$ battery powering two series resistors of $5\ \Omega$ and $15\ \Omega$. A trainee technician wants to check the circuit behavior using Kirchhoff's Voltage Law.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Draw the circuit diagram. 2. Calculate the total resistance. 3. Find the loop current. 4. Verify Kirchhoff's Voltage Law. 5. Mention one real-life application of Kirchhoff's law. 	Hyundai Engineering	C01	
713525AD095	<p>An office has three computers each powered by $240\ \text{V}$, $300\ \text{W}$ supply, connected in parallel. The IT manager wants to calculate the current drawn and verify safe operation.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the current drawn by each computer. 2. Determine the total current drawn from the supply. 3. Calculate the equivalent resistance of the parallel setup. 4. Verify Kirchhoff's Current Law at the junction. 	HCL	C02	

	<p>5. Explain why parallel connection is preferred in office networks.</p>		
	<p>A campus installs emergency lights in parallel across 12 V supply. Each light has resistance 12 Ω. A technician wants to ensure all lights operate properly if one fails.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the current drawn by each light. 2. Determine total current supplied. 3. If one light fails (open circuit), calculate the new current through remaining lights. 4. Verify Kirchhoff's Current Law. 5. Explain why parallel connection ensures reliability in emergency lighting. 	<p>ABB</p>	<p>C05</p>
	<p>At home, a fan (50 Ω) and lamp (100 Ω) are connected in series and another lamp (150 Ω) is connected in parallel with this series combination across 230 V supply. The homeowner wants to know total current and power distribution.</p> <p>Questions:</p> <ol style="list-style-type: none"> 1. Calculate the equivalent resistance of the series part. 2. Determine the total resistance of the circuit. 3. Calculate the total current drawn from supply. 4. Find current through each appliance. 5. Explain why mixed series-parallel circuits are common in households. 	<p>GE Power</p>	<p>C05</p>