



# PANIMALAR ENGINEERING COLLEGE

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Bangalore Trunk Road, Varadharajapuram, Poonamallee, Chennai- 600 123

## Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

### **SYLLABUS: UNIT I - BASIC ELECTRICAL CIRCUITS AND HOUSE WIRING**

Electrical Quantities – Ohms Law – Kirchhoff's Law – Series and Parallel Connections –Earthing and its Types- basic house wiring - tools and components, different types of wiring, safety measures at home and industry. Case Study -staircase Wiring and ceiling fan Wiring.

**CO1:** Acquire basic knowledge on Basic Electrical circuits and House Wiring

### **23ES1102- UNIT I – MCQ – SET A**

Year/Semester : I/II

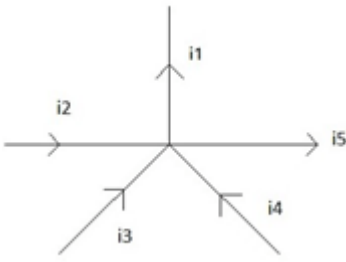
Max Time : 30 Mins

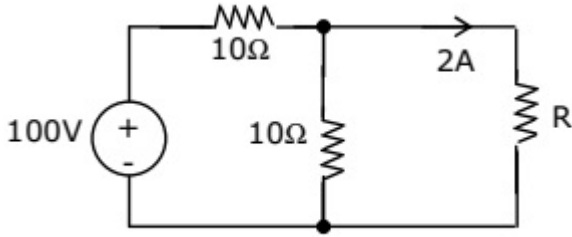
Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	A 10 $\Omega$ resistor is connected to a 12 V battery. Calculate the current through the resistor. A) 0.8 A B) 1.2 A C) 1.0 A D) 1.5 A <b>Answer:</b> B) 1.2 A	CO1
2.	Two resistors, 4 $\Omega$ and 6 $\Omega$ , are connected in parallel. What is the equivalent resistance? A) 2.4 $\Omega$ B) 10 $\Omega$ C) 5 $\Omega$ D) 6 $\Omega$ <b>Answer:</b> A) 2.4 $\Omega$	CO1
3.	A current of 5 A flows through a 15 $\Omega$ resistor. Determine the power dissipated. A) 50 W B) 75 W C) 225 W D) 375 W <b>Answer:</b> D) 375 W	CO1
4.	In a series circuit with a 12 V battery, two resistors of 4 $\Omega$ and 6 $\Omega$ are connected. Calculate the current. A) 1.2 A B) 0.8 A C) 2.0 A D) 1.0 A <b>Answer:</b> B) 0.8 A	CO1

5.	<p>In the circuit, three loops are connected with voltage sources of 10 V, 20 V, and 5 V. Using Kirchhoff's Voltage Law (KVL), determine the loop currents.</p> <p>A) 2 A, 3 A, 1 A  B) 1 A, 2 A, 3 A  C) Depends on the resistances  D) None of the above</p> <p><b>Answer: C) Depends on the resistances</b></p>	CO1
6.	<p><b>The following resistors (one each) are connected in a series circuit: 470 <math>\Omega</math>, 680 <math>\Omega</math>, 1 k<math>\Omega</math>, and 1.2 k<math>\Omega</math>. The voltage source is 20 V. Current through the 680 <math>\Omega</math> resistor is approximately</b></p> <p>a) 6A  b) 6nA  c) 6mA  d) 6<math>\mu</math>A</p> <p><b>Answer: c) 6mA</b></p>	CO1
7.	<p>Four resistors, 2 <math>\Omega</math>, 4 <math>\Omega</math>, 6 <math>\Omega</math>, and 8 <math>\Omega</math>, are connected in series. What is the total resistance?</p> <p>A) 20 <math>\Omega</math>  B) 15 <math>\Omega</math>  C) 25 <math>\Omega</math>  D) 10 <math>\Omega</math></p> <p><b>Answer: C) 20 <math>\Omega</math></b></p>	CO1
8.	<p>Determine the total resistance for the same resistors if connected in parallel.</p> <p>A) 1.09 <math>\Omega</math>  B) 2.5 <math>\Omega</math>  C) 4 <math>\Omega</math>  D) 10 <math>\Omega</math></p> <p><b>Answer: A) 1.09 <math>\Omega</math></b></p>	CO1
9.	<p><b>Which of the following statements is true for a parallel circuit?</b></p> <p>A) The total resistance is the sum of individual resistances.  B) The total current is the sum of individual currents.  C) The voltage across each resistor is different.  D) The current through each resistor is the same.</p> <p><b>Answer: B) The total current is the sum of individual currents.</b></p>	CO1
10.	<p>Identify the type of earthing where the earthing plate is buried deep into the ground.</p> <p>A) Rod earthing  B) Plate earthing  C) Strip earthing  D) None of the above</p> <p><b>Answer: B) Plate earthing</b></p>	CO1

11.	<p><b>Relation between currents according to KCL is</b></p>  <p> a) <math>i_1=i_2=i_3=i_4=i_5</math>  b) <math>i_1+i_4+i_3=i_5+i_2</math>  c) <math>i_1-i_5=i_2-i_3-i_4</math>  d) <math>i_1+i_5=i_2+i_3+i_4</math> </p> <p><b>Answer: d) <math>i_1+i_5=i_2+i_3+i_4</math></b></p>	CO1
12.	<p><b>Electrical appliances are not connected in series because</b></p> <p> a) Series circuit is complicated  b) Power loss is more  c) Appliances have different current ratings  d) None of the above. </p> <p><b>Answer: c) Appliances have different current ratings.</b></p>	CO1
13.	<p><b>Which tool is used to test the continuity of electrical wiring?</b></p> <p> A) Multimeter  B) Megger  C) Screwdriver  D) Hammer </p> <p><b>Answer: A) Multimeter</b></p>	CO1
14.	<p><b>An external resistance <math>R</math> is connected to a cell of internal resistance <math>r</math>. The maximum current flows in the external resistance when</b></p> <p> a) <math>R &lt; r</math>  b) <math>R &gt; r</math>  c) <math>R = r</math>.  d) any other value of <math>R</math>. </p> <p><b>Answer: c) <math>R = r</math>.</b></p>	CO1
15.	<p><b>Judge the safety level of a house with no RCCB installed.</b></p> <p> A) Safe  B) Risky  C) Normal  D) High-risk </p> <p><b>Answer: D) High-risk</b></p>	CO1
16.	<p><b>In staircase wiring, how many switches control a single lamp?</b></p> <p> A) One  B) Two  C) Three  D) Four </p> <p><b>Answer: B) Two</b></p>	CO1
17.	<p><b>For the circuit shown, the value of <math>R</math> is</b></p>	CO1

	 <p>a) 10 <math>\Omega</math> b) 20 <math>\Omega</math> c) 30 <math>\Omega</math> d) 40 <math>\Omega</math> <b>Answer: d) 20 <math>\Omega</math></b></p>	
18.	<p><b>A ceiling fan operates at 220 V and consumes 100 W. Calculate the current drawn by the fan.</b></p> <p>A) 0.45 A B) 0.6 A C) 0.9 A D) 1.0 A <b>Answer: B) 0.6 A</b></p>	CO1
19.	<p><b>Evaluate the use of copper over aluminum in house wiring.</b></p> <p>A) Copper has higher conductivity. B) Copper is less expensive. C) Aluminum is safer. D) Aluminum is more durable. <b>Answer: A) Copper has higher conductivity.</b></p>	CO1
20.	<p><b>In a series circuit with resistances of 4 <math>\Omega</math>, 5 <math>\Omega</math>, and 6 <math>\Omega</math> connected to a 15 V battery, calculate the total current.</b></p> <p>A) 0.5 A B) 1.0 A C) 2.0 A D) 1.5 A <b>Answer: A) 0.5 A</b></p>	CO1
21.	<p><b>Which type of earthing involves embedding a metal plate into the ground?</b></p> <p>A) Rod earthing B) Plate earthing C) Strip earthing D) Chemical earthing <b>Answer: B) Plate earthing</b></p>	CO1
22.	<p><b>Analyze the impact of using an RCCB in a household wiring system.</b></p> <p>A) Improves safety by detecting current imbalances. B) Increases power consumption. C) Reduces wiring costs. D) None of the above. <b>Answer: A) Improves safety by detecting current imbalances.</b></p>	CO1
23.	<p><b>A 12 V battery is connected across a resistor network with equivalent resistance of 8 <math>\Omega</math>. Calculate the power delivered by the battery.</b></p> <p>A) 12 W B) 18 W C) 24 W</p>	CO1

	D) 36 W <b>Answer: C) 24 W</b>	
24.	<b>Which tool is primarily used to measure the resistance of an earthing system?</b> A) Multimeter B) Megger C) Voltmeter D) Ammeter <b>Answer: B) Megger</b>	CO1
25.	<b>Two resistors, 10 <math>\Omega</math> and 20 <math>\Omega</math>, are connected in series to a 12 V battery. Calculate the voltage drop across the 10 <math>\Omega</math> resistor.</b> A) 4 V B) 6 V C) 8 V D) 12 V <b>Answer: B) 4 V</b>	CO1
26.	<b>The purpose of earthing is to:</b> a) Increase voltage b) Reduce voltage c) Provide a low-resistance path for fault currents d) Prevent short circuits <b>Answer: c) Provide a low-resistance path for fault currents</b>	CO1
27.	<b>A house has a 60 W bulb and a 100 W bulb connected in parallel to a 220 V supply. Calculate the total current drawn.</b> A) 0.5 A B) 0.75 A C) 0.8 A D) 1.0 A <b>Answer: B) 0.75 A</b>	CO1
28.	<b>In a mixed circuit, a 10 <math>\Omega</math> resistor is connected in parallel with a 20 <math>\Omega</math> resistor, and the combination is in series with a 5 <math>\Omega</math> resistor. Find the equivalent resistance.</b> A) 10 $\Omega$ B) 12 $\Omega$ C) 15 $\Omega$ D) 20 $\Omega$ <b>Answer: B) 12 <math>\Omega</math></b>	CO1
29.	<b>Which type of wiring is preferred for industrial applications due to its durability and safety?</b> A) Cleat wiring B) Conduit wiring C) Batten wiring D) Casing and capping wiring <b>Answer: B) Conduit wiring</b>	CO1
30.	<b>A 100 W LED operates for 5 hours a day. Calculate the total energy consumption over 30 days.</b> A) 15 kWh B) 12 kWh C) 10 kWh D) 5 kWh <b>Answer: A) 15 kWh</b>	CO1

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### 23ES1102- UNIT I – MCQ – SET B

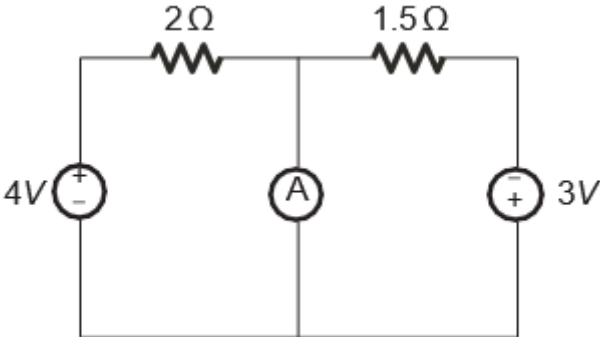
Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

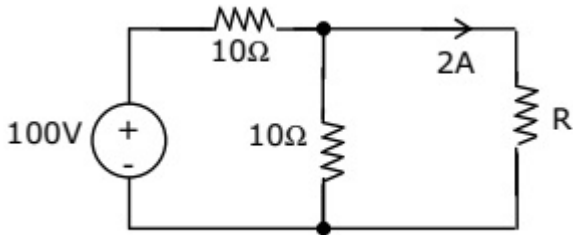
Max Marks : 30





SL.NO	QUESTIONS	CO'S
1.	A 12 V battery is connected to a resistor. The current flowing through the resistor is 4 A. Calculate the resistance. A) 2 $\Omega$ B) 3 $\Omega$ C) 4 $\Omega$ D) 6 $\Omega$ Answer: B) 3 $\Omega$	CO1
2.	Two resistors of 6 $\Omega$ and 12 $\Omega$ are connected in parallel. What is the equivalent resistance? A) 18 $\Omega$ B) 4 $\Omega$ C) 6 $\Omega$ D) 8 $\Omega$ Answer: D) 4 $\Omega$	CO1
3.	A 50 W bulb operates on a 100 V supply. Calculate the current drawn by the bulb. A) 0.5 A B) 1.0 A C) 2.0 A D) 1.5 A Answer: A) 0.5 A	CO1
4.	In a circuit, the sum of currents at a node is 10 A. If two branches carry 4 A and 3 A, find the current in the third branch. A) 3 A B) 4 A C) 6 A D) 7 A Answer: A) 3 A	CO1
5.	A resistor of 10 $\Omega$ and a capacitor are connected in series across a 12 V AC supply. If the current is 2 A, find the capacitive reactance. A) 4 $\Omega$ B) 5 $\Omega$ C) 6 $\Omega$ D) 8 $\Omega$ Answer: B) 5 $\Omega$	CO1
6.	In a staircase wiring system, two switches are connected to control a single bulb. What is the state of the bulb if one switch is ON and the other is OFF? A) ON	CO1

	B) OFF C) Flickering D) None of the above Answer: A) ON	
7.	A certain current source has the values $I_S = 4 \mu\text{A}$ and $R_S = 1.2 \text{ M}\Omega$ . The values for an equivalent voltage source are A) 4.8 $\mu\text{V}$ , $1.2 \text{ M}\Omega$ B) 1 V, $1.2 \text{ M}\Omega$ C) 4.8 V, $4.8 \text{ M}\Omega$ D) 4.8 V, $1.2 \text{ M}\Omega$ Answer: D) 4.8 V, $1.2 \text{ M}\Omega$	CO1
8.	In a series circuit with resistances of $4 \Omega$ , $5 \Omega$ , and $6 \Omega$ connected to a 15 V battery, calculate the total current. A) 0.5 A B) 1.0 A C) 2.0 A D) 1.5 A Answer: A) 0.5 A	CO1
9.	Which type of earthing involves embedding a metal plate into the ground? A) Rod earthing B) Plate earthing C) Strip earthing D) Chemical earthing Answer: B) Plate earthing	CO1
10.	The current through the ideal ammeter in the circuit shown is  A) 1 B) 1.5 C) 2 D) 4 Answer: D) 4	CO1
11.	A 100 V power supply is connected to two resistors of $10 \Omega$ and $20 \Omega$ in parallel. What is the total current supplied to the circuit? A) 15 A B) 10 A C) 5 A D) 3 A Answer: C) 5 A	CO1
12.	What is the total resistance in a parallel circuit with resistors of $10 \Omega$ , $20 \Omega$ , and $30 \Omega$ ?	CO1

	A) 5.45 $\Omega$ B) 10 $\Omega$ C) 8 $\Omega$ D) 15 $\Omega$ Answer: A) 5.45 $\Omega$	
13.	Which of the following wiring systems is best suited for outdoor installations? A) Conduit wiring B) Batten wiring C) Cleat wiring D) Surface wiring Answer: A) Conduit wiring	CO1
14.	Which type of earthing is used to protect equipment from electrical faults? A) System earthing B) Equipment earthing C) Earth leakage D) Neutral earthing Answer: B) Equipment earthing	CO1
15.	Two capacitors, 6 $\mu\text{F}$ and 12 $\mu\text{F}$ , are connected in series. Calculate the equivalent capacitance. A) 18 $\mu\text{F}$ B) 4 $\mu\text{F}$ C) 8 $\mu\text{F}$ D) 3 $\mu\text{F}$ Answer: B) 4 $\mu\text{F}$	CO1
16.	Determine the current through a 40 W bulb operating at 220 V. A) 0.18 A B) 0.22 A C) 0.25 A D) 0.36 A Answer: A) 0.18 A	CO1
17.	In a mixed circuit with 5 $\Omega$ , 10 $\Omega$ , and 20 $\Omega$ resistors, how would you configure them to achieve the lowest total resistance? A) All in series B) All in parallel C) 5 $\Omega$ and 10 $\Omega$ in series, parallel with 20 $\Omega$ D) 10 $\Omega$ and 20 $\Omega$ in parallel, series with 5 $\Omega$ Answer: B) All in parallel	CO1
18.	Which of the following devices is used to detect electric faults in an electrical system? A) Ammeter B) Multimeter C) RCD (Residual Current Device) D) Voltmeter Answer: C) RCD (Residual Current Device)	CO1
19.	Which of the following is a disadvantage of a series circuit? A) Uneven current distribution B) One component failure affects the entire circuit C) Reduced resistance D) Increased current flow Answer: B) One component failure affects the entire circuit	CO1



20.	<p>In a three-phase circuit, the total power consumed by the load is 6 kW. If the line voltage is 400 V, calculate the current per phase.</p> <p>A) 8.66 A B) 10 A C) 12 A D) 15 A</p> <p>Answer: A) 8.66 A</p>	CO1
21.	<p>A battery of 12 V is connected to a resistor of 4 <math>\Omega</math>. What is the power delivered by the battery?</p> <p>A) 3 W B) 6 W C) 9 W D) 12 W</p> <p>Answer: B) 6 W</p>	CO1
22.	<p>What is the effect of connecting resistors in parallel?</p> <p>A) Increases total resistance B) Decreases total resistance C) Does not change total resistance D) Increases current</p> <p>Answer: B) Decreases total resistance</p>	CO1
23.	<p>What is the primary function of earthing in an electrical circuit?</p> <p>A) To increase power supply B) To provide a path for excess current to flow safely to the ground C) To decrease the voltage D) To regulate current flow</p> <p>Answer: B) To provide a path for excess current to flow safely to the ground</p>	CO1
24.	<p>In a power transmission system, what is the purpose of using high voltage for transmission?</p> <p>A) To reduce energy loss B) To increase current flow C) To improve insulation D) To reduce power factor</p> <p>Answer: A) To reduce energy loss</p>	CO1
25.	<p>Which wire is typically used for the live connection in house wiring?</p> <p>A) Red B) Black C) Blue D) Green</p> <p>Answer: A) Red</p>	CO1
26.	<p>For the circuit shown, the value of R is</p>  <p>a) 10 <math>\Omega</math></p>	CO1

	b) 20  c) 30  d) 40  Answer: d) 20 	
27.	Which of the following is the correct unit of electrical charge? A) Ampere B) Coulomb C) Volt D) Watt Answer: B) Coulomb	CO1
28.	What is the purpose of earthing in electrical systems? A) To increase the voltage B) To provide a path for fault current C) To reduce the current D) To insulate the system Answer: B) To provide a path for fault current	CO1
29.	If there are 5 nodes then the no of nodal equations are a) 5 b) 0 c) 1 d) 4 Answer: 4	CO1
30.	Relation between power, voltage and conductance a) $V = P^2 \cdot G$ b) $V = P^2 / G$ c) $P = v^2 / G$ d) $P = V^2 \cdot G$ Answer: $P = V^2 \cdot G$	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – MCQ – SET C

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	A wire carries a current of 5 A for 10 seconds. How much charge passes through the wire? A) 50 C B) 10 C C) 5 C D) 25 C Answer: A) 50 C	CO1
2.	A resistor of 5 $\Omega$ and another of 10 $\Omega$ are connected in parallel. What is the equivalent resistance? A) 3.33 $\Omega$ B) 5 $\Omega$ C) 6.67 $\Omega$ D) 7.5 $\Omega$ Answer: A) 3.33 $\Omega$	CO1
3.	If a 12 V battery supplies 2 A to a circuit, calculate the power delivered by the battery. A) 12 W B) 24 W C) 6 W D) 48 W Answer: B) 24 W	CO1
4.	In a series circuit with three resistors (5 $\Omega$ , 10 $\Omega$ , 15 $\Omega$ ), what is the total resistance? A) 30 $\Omega$ B) 15 $\Omega$ C) 10 $\Omega$ D) 35 $\Omega$ Answer: A) 30 $\Omega$	CO1
5.	In a parallel circuit, one branch has 3 A and the other has 4 A. What is the total current entering the circuit? A) 5 A B) 6 A C) 7 A D) 12 A Answer: C) 7 A	CO1
6.	A circuit has three resistors in parallel: 6 $\Omega$ , 12 $\Omega$ , and 18 $\Omega$ . Find the equivalent resistance. A) 2 $\Omega$ B) 4 $\Omega$ C) 3 $\Omega$ D) 6 $\Omega$ Answer: B) 4 $\Omega$	CO1

7.	<p>A house wiring system includes a 100 W bulb and a 60 W bulb connected in parallel to a 240 V supply. Calculate the current drawn by the 100 W bulb.</p> <p>A) 0.42 A B) 0.5 A C) 0.6 A D) 1 A</p> <p>Answer: B) 0.5 A</p>	CO1
8.	<p>Two capacitors, 6 <math>\mu\text{F}</math> and 12 <math>\mu\text{F}</math>, are connected in series. Calculate the equivalent capacitance.</p> <p>A) 18 <math>\mu\text{F}</math> B) 4 <math>\mu\text{F}</math> C) 8 <math>\mu\text{F}</math> D) 3 <math>\mu\text{F}</math></p> <p>Answer: B) 4 <math>\mu\text{F}</math></p>	CO1
9.	<p>Determine the current through a 40 W bulb operating at 220 V.</p> <p>A) 0.18 A B) 0.22 A C) 0.25 A D) 0.36 A</p> <p>Answer: A) 0.18 A</p>	CO1
10.	<p>Which type of wiring is best suited for a multi-story building?</p> <p>A) Cleat wiring B) Conduit wiring C) Batten wiring D) Surface wiring</p> <p>Answer: B) Conduit wiring</p>	CO1
11.	<p>What is the purpose of an RCCB in electrical systems?</p> <p>A) Measures voltage B) Protects from overcurrent C) Detects leakage currents and prevents shocks D) Provides high resistance</p> <p>Answer: C) Detects leakage currents and prevents shocks</p>	CO1
12.	<p>In a three-phase system, how is neutral earthing beneficial?</p> <p>A) Balances the load B) Reduces voltage C) Prevents electric shocks D) Reduces short-circuits</p> <p>Answer: C) Prevents electric shocks</p>	CO1
13.	<p>A 12 <math>\Omega</math> resistor dissipates 36 W of power. What is the current through the resistor?</p> <p>A) 2 A B) 3 A C) 4 A D) 6 A</p> <p>Answer: A) 2 A</p>	CO1
14.	<p>A 10 <math>\Omega</math> and a 20 <math>\Omega</math> resistor are connected in series across a 30 V supply. Calculate the voltage drop across the 20 <math>\Omega</math> resistor.</p> <p>A) 10 V B) 20 V C) 15 V D) 5 V</p> <p>Answer: B) 20 V</p>	CO1

15.	In staircase wiring, how many two-way switches are required to control one light? A) 1 B) 2 C) 3 D) 4 Answer: B) 2	CO1
16.	What is the unit of electrical conductivity? A) Ohm B) Siemens C) Farad D) Coulomb Answer: B) Siemens	CO1
17.	Which type of earthing is best for rocky soil? A) Plate earthing B) Rod earthing C) Strip earthing D) Chemical earthing Answer: B) Rod earthing	CO1
18.	A 220 V supply powers a device with a resistance of 44 $\Omega$ . Calculate the current. A) 5 A B) 10 A C) 15 A D) 20 A Answer: A) 5 A	CO1
19.	Two resistors of 8 $\Omega$ and 16 $\Omega$ are connected in parallel and then in series with a 10 $\Omega$ resistor. Find the total resistance. A) 10 $\Omega$ B) 15 $\Omega$ C) 18 $\Omega$ D) 20 $\Omega$ Answer: B) 15 $\Omega$	CO1
20.	What safety device is used to protect an electrical system from overloading? A) RCCB B) Fuse C) Relay D) Transformer Answer: B) Fuse	CO1
21.	A wire's resistance is 10 $\Omega$ , and it carries a current of 2 A. Calculate the heat generated in 5 seconds. A) 100 J B) 200 J C) 400 J D) 500 J Answer: C) 400 J	CO1
22.	In a household, which type of wiring ensures long durability and safety? A) Batten wiring B) Cleat wiring C) Conduit wiring D) Surface wiring Answer: C) Conduit wiring	CO1

23.	<p>In a circuit, a <math>10\ \Omega</math> resistor is connected in series with a <math>5\ \Omega</math> resistor. If the total voltage is 30 V, calculate the current in the circuit.</p> <p>A) 2 A B) 3 A C) 4 A D) 5 A Answer: A) 2 A</p>	CO1
24.	<p>What is the main reason for using earthing in electrical systems?</p> <p>A) To improve power factor B) To prevent electric shocks C) To reduce current flow D) To increase resistance Answer: B) To prevent electric shocks</p>	CO1
25.	<p>A fan draws 2 A current from a 220 V supply. Calculate the power consumed.</p> <p>A) 110 W B) 220 W C) 440 W D) 880 W Answer: C) 440 W</p>	CO1
26.	<p>Which tool is commonly used to test the insulation of house wiring?</p> <p>A) Megger B) Multimeter C) Voltmeter D) Ammeter Answer: A) Megger</p>	CO1
27.	<p>A device operates at 100 W on a 240 V supply. Calculate its resistance.</p> <p>A) <math>576\ \Omega</math> B) <math>600\ \Omega</math> C) <math>480\ \Omega</math> D) <math>560\ \Omega</math> Answer: A) <math>576\ \Omega</math></p>	CO1
28.	<p>In a mixed circuit with <math>5\ \Omega</math>, <math>10\ \Omega</math>, and <math>20\ \Omega</math> resistors, how would you configure them to achieve the lowest total resistance?</p> <p>A) All in series B) All in parallel C) <math>5\ \Omega</math> and <math>10\ \Omega</math> in series, parallel with <math>20\ \Omega</math> D) <math>10\ \Omega</math> and <math>20\ \Omega</math> in parallel, series with <math>5\ \Omega</math> Answer: B) All in parallel</p>	CO1
29.	<p>A 100 W bulb operates on a 220 V supply. Calculate the resistance of the bulb.</p> <p>A) <math>484\ \Omega</math> B) <math>500\ \Omega</math> C) <math>440\ \Omega</math> D) <math>600\ \Omega</math> Answer: A) <math>484\ \Omega</math></p>	CO1
30.	<p>A ceiling fan draws 1.5 A from a 230 V supply. Calculate its power consumption.</p> <p>A) 345 W B) 300 W C) 230 W D) 400 W Answer: A) 345 W</p>	CO1

# Department of EEE

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## 23ES1102- UNIT I – MCQ – SET D

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

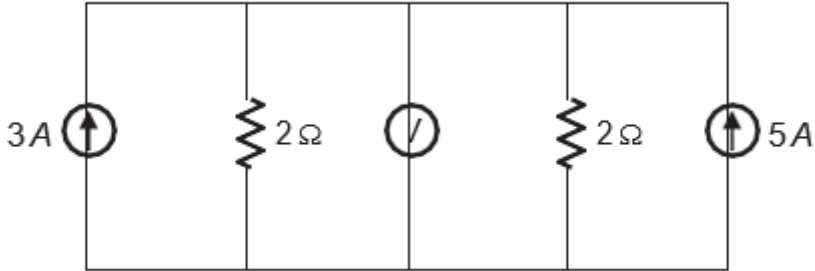
Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	What is the total resistance in a circuit containing a 4 $\Omega$ , 6 $\Omega$ , and 8 $\Omega$ resistor connected in series? A) 18 $\Omega$ B) 12 $\Omega$ C) 8 $\Omega$ D) 6 $\Omega$ Answer: B) 12 $\Omega$	CO1
2.	A current of 5 A flows through a conductor of resistance 2 $\Omega$ . What is the voltage across the conductor? A) 10 V B) 5 V C) 2 V D) 15 V Answer: A) 10 V	CO1
3.	A resistor of 20 $\Omega$ is connected in parallel with another resistor of 10 $\Omega$ . Find the total resistance. A) 6.67 $\Omega$ B) 30 $\Omega$ C) 15 $\Omega$ D) 8 $\Omega$ Answer: A) 6.67 $\Omega$	CO1
4.	What is the power dissipated by a resistor of 10 $\Omega$ when a current of 3 A flows through it? A) 30 W B) 90 W C) 45 W D) 60 W Answer: B) 90 W	CO1
5.	The resistance of a wire is 5 $\Omega$ and the current passing through it is 2 A. What is the power dissipated in the wire? A) 5 W B) 10 W C) 20 W D) 40 W Answer: B) 10 W	CO1
6.	How much energy is consumed by a 500 W electric bulb in 2 hours? A) 1000 J B) 10000 J C) 3600 J D) 3600000 J Answer: B) 10000 J	CO1
7.	In a parallel circuit, what is the equivalent resistance of two resistors, 4 $\Omega$ and 6 $\Omega$ ?	CO1

	A) $10\ \Omega$ B) $2.4\ \Omega$ C) $5\ \Omega$ D) $1.2\ \Omega$ Answer: B) $2.4\ \Omega$	
8.	If a $60\ \text{W}$ light bulb is connected to a $120\ \text{V}$ supply, how much current does it draw? A) $0.5\ \text{A}$ B) $0.25\ \text{A}$ C) $1\ \text{A}$ D) $2\ \text{A}$ Answer: A) $0.5\ \text{A}$	CO1
9.	A $100\ \Omega$ resistor is connected to a $10\ \text{V}$ battery. What is the current flowing through the resistor? A) $0.5\ \text{A}$ B) $1\ \text{A}$ C) $0.1\ \text{A}$ D) $10\ \text{A}$ Answer: C) $0.1\ \text{A}$	CO1
10.	Which of the following is the correct unit for electric power? A) Ohm B) Watt C) Volt D) Ampere Answer: B) Watt	CO1
11.	What is the purpose of an MCB (Miniature Circuit Breaker) in a household electrical system? A) Protects against overcurrent B) Provides isolation C) Measures resistance D) Limits power supply Answer: A) Protects against overcurrent	CO1
12.	The voltage drop across a $4\ \Omega$ resistor is $8\ \text{V}$ . What is the current through the resistor? A) $1\ \text{A}$ B) $2\ \text{A}$ C) $4\ \text{A}$ D) $8\ \text{A}$ Answer: B) $2\ \text{A}$	CO1
13.	In a household circuit, what is the function of a fuse? A) Regulates current B) Measures voltage C) Prevents overloading D) Increases power consumption Answer: C) Prevents overloading	CO1
14.	A $220\ \text{V}$ supply is used to power a $100\ \text{W}$ bulb. What current does the bulb draw? A) $0.5\ \text{A}$ B) $0.45\ \text{A}$ C) $1\ \text{A}$ D) $2\ \text{A}$ Answer: A) $0.5\ \text{A}$	CO1



15.	<p>What is the purpose of an earthing system in electrical circuits?</p> <p>A) Increases current B) Reduces resistance C) Prevents electrical shock D) Reduces power loss</p> <p>Answer: C) Prevents electrical shock</p>	CO1
16.	<p>Which of the following is a type of wiring used for overhead installations?</p> <p>A) Batten wiring B) Cleat wiring C) Conduit wiring D) Surface wiring</p> <p>Answer: B) Cleat wiring</p>	CO1
17.	<p>If three resistors, 5 <math>\Omega</math>, 10 <math>\Omega</math>, and 15 <math>\Omega</math>, are connected in parallel, what is the equivalent resistance?</p> <p>A) 2 <math>\Omega</math> B) 4 <math>\Omega</math> C) 3 <math>\Omega</math> D) 6 <math>\Omega</math></p> <p>Answer: A) 2 <math>\Omega</math></p>	CO1
18.	<p>In a three-phase system, which connection is most commonly used for residential applications?</p> <p>A) Delta connection B) Star connection C) Zigzag connection D) Open delta connection</p> <p>Answer: B) Star connection</p>	CO1
19.	<p>A circuit contains two resistors: 8 <math>\Omega</math> and 4 <math>\Omega</math>. If they are connected in series across a 12 V supply, what is the total current?</p> <p>A) 2 A B) 3 A C) 1 A D) 4 A</p> <p>Answer: A) 2 A</p>	CO1
20.	<p>In which of the following wiring systems are wires embedded in walls and covered with plaster?</p> <p>A) Batten wiring B) Conduit wiring C) Surface wiring D) Cleat wiring</p> <p>Answer: B) Conduit wiring</p>	CO1
21.	<p>A 220 V power supply operates a fan drawing 3 A current. What is the power consumed by the fan?</p> <p>A) 330 W B) 660 W C) 220 W D) 720 W</p> <p>Answer: B) 660 W</p>	CO1
22.	<p>What is the resistance of a conductor if the current through it is 3 A and the voltage across it is 15 V?</p> <p>A) 5 <math>\Omega</math> B) 3 <math>\Omega</math> C) 10 <math>\Omega</math></p>	CO1

	<p>D) <math>15\ \Omega</math>          Answer: A) <math>5\ \Omega</math></p>	
23.	<p>The voltage across the ideal voltmeter in the circuit shown is</p>  <p>A) <math>10\text{ V}</math>          B) <math>8\text{ V}</math>          C) <math>6\text{ V}</math>          D) <math>4\text{ V}</math>          Answer: B) <math>8\text{ V}</math></p>	CO1
24.	<p>In a two-source circuit, one source acting alone produces <math>12\text{ mA}</math> through a given branch. The other source acting alone produces <math>10\text{ mA}</math> in the opposite direction through the same branch. The actual current through the branch is</p> <p>A) <math>22\text{ mA}</math>          B) <math>12\text{ mA}</math>          C) <math>10\text{ mA}</math>          D) <math>2\text{ mA}</math>          Answer: A) <math>2\text{ mA}</math></p>	CO1
25.	<p>Which of the following is a characteristic of a series circuit?</p> <p>A) The current is the same across all components          B) The voltage is the same across all components          C) The total resistance is the sum of individual resistances          D) The total current is the sum of individual currents          Answer: C) The total resistance is the sum of individual resistances</p>	CO1
26.	<p>In a parallel circuit, how is the total current related to the individual currents?</p> <p>A) The total current is the sum of the individual currents          B) The total current is the average of the individual currents          C) The total current is the difference between the highest and lowest currents          D) The total current is equal to the current through the largest resistor          Answer: A) The total current is the sum of the individual currents</p>	CO1
27.	<p>What is the resistance of a conductor if the current is <math>3\text{ A}</math> and the voltage is <math>9\text{ V}</math>?</p> <p>A) <math>1\ \Omega</math>          B) <math>2\ \Omega</math>          C) <math>3\ \Omega</math>          D) <math>4\ \Omega</math>          Answer: B) <math>3\ \Omega</math></p>	CO1
28.	<p>In a household circuit, a <math>100\text{ W}</math> bulb and a <math>60\text{ W}</math> bulb are connected in parallel. If the total voltage supply is <math>220\text{ V}</math>, what is the total power consumed?</p> <p>A) <math>160\text{ W}</math>          B) <math>180\text{ W}</math>          C) <math>200\text{ W}</math></p>	CO1

	D) 220 W Answer: B) 180 W	
29.	What is the main purpose of using a circuit breaker in an electrical system? A) To provide electrical isolation B) To prevent electrical shocks C) To protect the circuit from overload D) To measure current flow Answer: C) To protect the circuit from overload	CO1
30.	A 200 $\Omega$ resistor dissipates 50 W of power. What is the current passing through the resistor? A) 0.5 A B) 1 A C) 2 A D) 0.3 A Answer: B) 1 A	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – MCQ – SET E

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	A 10 $\Omega$ resistor is connected to a 15 V battery. What is the current flowing through the resistor? A) 0.5 A B) 1.5 A C) 2 A D) 1 A Answer: B) 1.5 A	CO1
2.	In a series circuit, the total resistance of three resistors is 30 $\Omega$ . If two of the resistors have values of 10 $\Omega$ and 15 $\Omega$ , what is the value of the third resistor? A) 5 $\Omega$ B) 10 $\Omega$ C) 15 $\Omega$ D) 25 $\Omega$ Answer: A) 5 $\Omega$	CO1
3.	If a 10 $\Omega$ resistor dissipates 25 W of power, what is the current passing through the resistor? A) 2 A B) 1 A C) 0.5 A D) 5 A Answer: A) 2 A	CO1
4.	Two resistors, 8 $\Omega$ and 12 $\Omega$ , are connected in parallel. What is the total resistance? A) 4.8 $\Omega$ B) 10 $\Omega$ C) 20 $\Omega$ D) 6 $\Omega$ Answer: A) 4.8 $\Omega$	CO1
5.	The resistance of a wire is 8 $\Omega$ , and the current flowing through it is 4 A. What is the power dissipated by the wire? A) 32 W B) 64 W C) 16 W D) 128 W Answer: A) 32 W	CO1
6.	If the voltage across a resistor is 20 V and the resistance is 4 $\Omega$ , what is the power consumed by the resistor? A) 5 W B) 10 W C) 15 W D) 20 W Answer: B) 10 W	CO1

7.	<p>A 50 W, 220 V light bulb is connected in series with a <math>10\ \Omega</math> resistor. What is the current flowing through the circuit?</p> <p>A) 0.5 A B) 1 A C) 2 A D) 3 A</p> <p>Answer: B) 1 A</p>	CO1
8.	<p>A 120 V voltage source is connected to a <math>10\ \Omega</math> resistor. What is the current flowing through the resistor?</p> <p>A) 12 A B) 8 A C) 15 A D) 10 A</p> <p>Answer: B) 12 A</p>	CO1
9.	<p>In a parallel circuit, the current supplied is 10 A. If the resistances are <math>2\ \Omega</math> and <math>4\ \Omega</math>, what is the total current passing through the resistors?</p> <p>A) 12 A B) 5 A C) 10 A D) 8 A</p> <p>Answer: C) 10 A</p>	CO1
10.	<p>What is the total power consumed in a circuit containing three resistors of <math>4\ \Omega</math>, <math>6\ \Omega</math>, and <math>10\ \Omega</math> connected in series across a 24 V supply?</p> <p>A) 48 W B) 36 W C) 24 W D) 12 W</p> <p>Answer: B) 36 W</p>	CO1
11.	<p>A <math>100\ \Omega</math> resistor is connected to a 10 V battery. What is the power dissipated in the resistor?</p> <p>A) 1 W B) 2 W C) 10 W D) 100 W</p> <p>Answer: A) 1 W</p>	CO1
12.	<p>Which of the following is a characteristic of a series circuit?</p> <p>A) The current is the same across all components B) The voltage is the same across all components C) The total resistance is the sum of individual resistances D) The total current is the sum of individual currents</p> <p>Answer: C) The total resistance is the sum of individual resistances</p>	CO1
13.	<p>In a parallel circuit, how is the total current related to the individual currents?</p> <p>A) The total current is the sum of the individual currents B) The total current is the average of the individual currents C) The total current is the difference between the highest and lowest currents D) The total current is equal to the current through the largest resistor</p> <p>Answer: A) The total current is the sum of the individual currents</p>	CO1
14.	<p>What is the resistance of a conductor if the current is 3 A and the voltage is 9 V?</p> <p>A) <math>1\ \Omega</math> B) <math>2\ \Omega</math> C) <math>3\ \Omega</math></p>	CO1

	D) 4 $\Omega$ Answer: B) 3 $\Omega$	
15.	A 100 W light bulb is connected to a 200 V supply. What is the current flowing through the bulb? A) 0.5 A B) 1 A C) 0.25 A D) 2 A Answer: C) 0.5 A	CO1
16.	What is the purpose of earthing in an electrical installation? A) To protect against voltage surges B) To provide a path for excess current to flow into the ground C) To increase the power supply D) To increase the resistance in the circuit Answer: B) To provide a path for excess current to flow into the ground	CO1
17.	If a circuit has a total resistance of 20 $\Omega$ and the voltage supplied is 100 V, what is the current in the circuit? A) 5 A B) 10 A C) 15 A D) 20 A Answer: A) 5 A	CO1
18.	Which of the following is the unit of electrical energy? A) Ampere B) Volt C) Watt-hour D) Coulomb Answer: C) Watt-hour	CO1
19.	A 12 V battery is connected to two resistors of 2 $\Omega$ and 4 $\Omega$ in series. What is the total current flowing through the circuit? A) 1 A B) 2 A C) 3 A D) 4 A Answer: A) 1 A	CO1
20.	In a parallel circuit, if the resistance of one branch is 10 $\Omega$ and the total current is 5 A, what is the current through this branch? A) 0.5 A B) 1 A C) 2 A D) 5 A Answer: A) 0.5 A	CO1
21.	What is the total power consumed in a circuit with a 120 V supply and a 60 $\Omega$ resistor? A) 240 W B) 120 W C) 60 W D) 30 W Answer: B) 120 W	CO1
22.	Which method of analysis involves assigning currents to different loops in a circuit? a) Mesh current analysis	CO1

	b) Node voltage analysis c) Thévenin's theorem d) Superposition analysis Answer: a) Mesh current analysis	
23.	What is the formula for calculating total resistance in a series circuit? a) $R_{\text{total}} = R_1 + R_2 + R_3 + \dots$ b) $R_{\text{total}} = 1 / (1/R_1 + 1/R_2 + 1/R_3 + \dots)$ c) $R_{\text{total}} = R_1 * R_2 * R_3 * \dots$ . d) $R_{\text{total}} = V / I$ Answer: a) $R_{\text{total}} = R_1 + R_2 + R_3 + \dots$	CO1
24.	In an electric circuit, an energy of $9.25 \mu\text{J}$ is required to transport $0.5 \mu\text{C}$ from point a to point b. What electric potential difference exists between the two points?  a) $19.5 \text{ V}$ b) $18.5 \text{ V}$ c) $18.7 \text{ V}$ d) $19 \text{ V}$ Answer: b) $18.5 \text{ V}$	CO1
25.	If two resistors of $6 \Omega$ and $3 \Omega$ are connected in parallel, what is the total resistance? A) $1 \Omega$ B) $2 \Omega$ C) $3 \Omega$ D) $4 \Omega$ Answer: B) $2 \Omega$	CO1
26.	Which of the following wiring systems is most commonly used in modern electrical installations? A) Cleat wiring B) Batten wiring C) Conduit wiring D) Lead-covered wiring Answer: C) Conduit wiring	CO1
27.	In a household circuit, if the voltage is $230 \text{ V}$ and the power is $460 \text{ W}$ , what is the current drawn by the appliance? A) $1.5 \text{ A}$ B) $2 \text{ A}$ C) $3 \text{ A}$ D) $5 \text{ A}$ Answer: B) $2 \text{ A}$	CO1
28.	Which of the following components is used to measure the current in a circuit? A) Voltmeter B) Ammeter C) Ohmmeter D) Wattmeter Answer: B) Ammeter	CO1
29.	What is the minimum distance between electrical outlets in a residential building? A) 3 meters B) 4 meters C) 5 meters D) 6 meters Answer: C) 5 meters	CO1

30.	What is the voltage across a 20 $\Omega$ resistor when a current of 3 A flows through it? A) 60 V B) 20 V C) 10 V D) 30 V Answer: A) 60 V	CO1
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# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – FB – SET A

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	The unit of electrical current is _____. <b>Answer:</b> Ampere	CO1
2.	Ohm's Law states that the current passing through a conductor is directly proportional to the _____ and inversely proportional to the _____. <b>Answer:</b> Voltage, Resistance	CO1
3.	In a series circuit, the total resistance is the _____ of the individual resistances. <b>Answer:</b> Sum	CO1
4.	According to Kirchhoff's Voltage Law, the algebraic sum of the voltages around any closed loop or circuit is always _____. <b>Answer:</b> Zero	CO1
5.	The total current flowing through a parallel circuit is the _____ of the currents through each parallel branch. <b>Answer:</b> Sum	CO1
6.	The electrical resistance of a conductor increases with _____ in temperature. <b>Answer:</b> Increase	CO1
7.	The unit of electrical power is _____. <b>Answer:</b> Watt	CO1
8.	In a parallel circuit, the total voltage across each component is _____. <b>Answer:</b> The same	CO1
9.	The _____ is a protective device that is used to detect and prevent overcurrent in a circuit. <b>Answer:</b> Fuse	CO1
10.	The resistance of a wire is proportional to its _____ and inversely proportional to its _____. <b>Answer:</b> Length, Cross-sectional area	CO1
11.	The current flowing through a conductor is _____ to the voltage and _____ to the resistance, according to Ohm's Law. <b>Answer:</b> Proportional, Inversely proportional	CO1
12.	A _____ wire is used to connect the metallic parts of electrical appliances to the ground for safety purposes. <b>Answer:</b> Earth	CO1
13.	The two main types of earthing systems used in domestic and industrial installations are _____ earthing and _____ earthing. <b>Answer:</b> Plate, Rod	CO1
14.	The current flowing through a resistor is affected by the _____ applied and the _____ of the resistor. <b>Answer:</b> Voltage, Resistance	CO1
15.	A _____ switch is used for controlling the lighting of staircases from two different locations. <b>Answer:</b> Staircase	CO1

16.	In a full-wave rectifier, the number of diodes typically used is _____. <b>Answer:</b> Four	CO1
17.	In a simple house wiring system, the _____ is the wire used to carry current, while the _____ wire is used for safety and earthing. <b>Answer:</b> Live, Earth	CO1
18.	The power dissipated in a resistor can be calculated using the formula _____, where I is the current and R is the resistance. <b>Answer:</b> $P = I^2R$	CO1
19.	In a DC circuit, the potential difference across a resistor is _____ to the current flowing through it. <b>Answer:</b> Directly proportional	CO1
20.	A _____ is a device used to control the flow of current by opening or closing a circuit. <b>Answer:</b> Switch	CO1
21.	The _____ is the rate at which electrical energy is transferred by an electric circuit. <b>Answer:</b> Power	CO1
22.	The principle of _____ states that the sum of currents entering a junction equals the sum of currents leaving the junction in any electrical circuit. <b>Answer:</b> Kirchhoff's Current Law	CO1
23.	In a typical house wiring system, the _____ wire is used for carrying current, while the _____ wire is used as a return path for the current. <b>Answer:</b> Live, Neutral	CO1
24.	A _____ is used in house wiring to protect circuits from overloads and short circuits. <b>Answer:</b> Circuit breaker	CO1
25.	In a parallel circuit, the total resistance is always _____ than the resistance of the smallest resistor. <b>Answer:</b> Less	CO1
26.	A _____ is a three-wire connection used to wire a ceiling fan with a light, where the fan and light can be operated separately. <b>Answer:</b> Double-pole switch	CO1
27.	In a step-down transformer, the number of turns in the secondary coil is _____ than the number of turns in the primary coil. <b>Answer:</b> Less	CO1
28.	_____ is the process of transferring electrical energy to the ground through a conductive path to prevent electrical shock hazards. <b>Answer:</b> Earthing	CO1
29.	In a series circuit, the total voltage across all resistors is equal to the sum of the individual _____ drops. <b>Answer:</b> Voltage	CO1
30.	The current in a parallel circuit is divided among the branches in proportion to their _____. <b>Answer:</b> Conductance	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – FB – SET B

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	The unit of electrical charge is _____. <b>Answer:</b> Coulomb	CO1
2.	In Ohm's Law, the formula for calculating current is _____. <b>Answer:</b> $I = V / R$	CO1
3.	The current in a series circuit is _____ throughout all components. <b>Answer:</b> The same	CO1
4.	According to Kirchhoff's Current Law, the sum of currents entering a junction is equal to the sum of currents _____ the junction. <b>Answer:</b> Leaving	CO1
5.	The _____ is a measure of a material's ability to resist the flow of electric current. <b>Answer:</b> Resistance	CO1
6.	The total resistance in a parallel circuit is always _____ than the smallest resistance in the circuit. <b>Answer:</b> Less	CO1
7.	In a house wiring system, the _____ wire is typically used to carry electrical current to the appliances. <b>Answer:</b> Live	CO1
8.	The _____ wire is used to safely return the current to the power source and provides a path for the return current. <b>Answer:</b> Neutral	CO1
9.	A _____ switch allows control of a light or fan from two different locations, typically seen in staircases. <b>Answer:</b> Two-way	CO1
10.	In a series circuit, the voltage drop across each resistor is _____ to its resistance. <b>Answer:</b> Proportional	CO1
11.	The process of using a wire or rod to transfer excess charge safely to the earth is called _____. <b>Answer:</b> Earthing	CO1
12.	The _____ is a device used in electrical circuits to protect the circuit from damage caused by excess current flow. <b>Answer:</b> Fuse	CO1
13.	In a full-wave rectifier, the current flows in the same direction during _____ half-cycles. <b>Answer:</b> Both	CO1
14.	The energy dissipated in a resistor is given by the formula _____. <b>Answer:</b> $E = I^2 R t$	CO1
15.	A _____ wire is used for grounding electrical appliances to prevent electric shocks. <b>Answer:</b> Earth	CO1

16.	In a step-up transformer, the voltage in the secondary coil is _____ than the voltage in the primary coil. <b>Answer:</b> Higher	CO1
17.	The power dissipated by a resistor is calculated using the formula _____. <b>Answer:</b> $P = V^2 / R$	CO1
18.	In a parallel circuit, the total current is the _____ of the currents through each branch. <b>Answer:</b> Sum	CO1
19.	The _____ is used to measure the electrical potential difference between two points in a circuit. <b>Answer:</b> Voltmeter	CO1
20.	The rate at which electrical energy is consumed or generated in a circuit is called _____. <b>Answer:</b> Power	CO1
21.	In a series circuit, the total resistance is equal to the _____ of the individual resistances. <b>Answer:</b> Sum	CO1
22.	In a DC motor, the current is supplied to the rotor through a _____. <b>Answer:</b> Commutator	CO1
23.	The _____ is a safety measure used to disconnect the power supply if there is an electrical fault in the circuit. <b>Answer:</b> Circuit breaker	CO1
24.	A _____ rectifier uses only one half of the input signal to produce a unidirectional current. <b>Answer:</b> Half-wave	CO1
25.	A _____ is used to measure the electrical current flowing through a circuit. <b>Answer:</b> Ammeter	CO1
26.	In an electrical circuit, the total voltage across resistors in series is _____ to the sum of individual voltage drops. <b>Answer:</b> Equal	CO1
27.	The current in a parallel circuit is inversely proportional to the _____ of the resistances in the branches. <b>Answer:</b> Resistance	CO1
28.	The _____ is a device used in house wiring to prevent overloading and short-circuiting by breaking the circuit. <b>Answer:</b> MCB (Miniature Circuit Breaker)	CO1
29.	In a house wiring system, the _____ wire is often insulated with a blue color. <b>Answer:</b> Neutral	CO1
30.	The primary purpose of earthing in electrical systems is to ensure that any leakage current is safely discharged to the _____. <b>Answer:</b> Ground	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – FB – SET C

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	The unit of electrical potential difference is _____. <b>Answer:</b> Volt	CO
2.	Ohm's Law states that the current flowing through a conductor is directly proportional to the _____ and inversely proportional to the _____. <b>Answer:</b> Voltage, Resistance	CO1
3.	The total resistance in a parallel circuit is _____ than the smallest resistance in the circuit. <b>Answer:</b> Less	CO1
4.	In a series circuit, the current flowing through all components is _____. <b>Answer:</b> The same	CO1
5.	The total voltage across all components in a series circuit is equal to the sum of the individual _____ drops. <b>Answer:</b> Voltage	CO1
6.	Kirchhoff's Voltage Law states that the sum of the voltage drops in any closed loop in a circuit is always _____. <b>Answer:</b> Zero	CO1
7.	The total current in a parallel circuit is the _____ of the currents through the individual branches. <b>Answer:</b> Sum	CO1
8.	In a house wiring system, the _____ wire is used for safety and earthing. <b>Answer:</b> Earth	CO1
9.	The _____ is used to disconnect a circuit automatically in case of overcurrent. <b>Answer:</b> Fuse	CO1
10.	The current flowing through a resistor is directly proportional to the _____ across it. <b>Answer:</b> Voltage	CO1
11.	The _____ switch is commonly used to control the light or fan from two different locations in a staircase. <b>Answer:</b> Two-way	CO1
12.	In a full-wave rectifier, the current flows in the same direction during _____ half-cycles of the input AC signal. <b>Answer:</b> Both	CO1
13.	The _____ wire is typically connected to the neutral terminal in house wiring and returns current to the source. <b>Answer:</b> Neutral	CO1
14.	The _____ is a safety device used to protect an electrical circuit from damage due to excess current. <b>Answer:</b> Circuit breaker	CO1
15.	The resistance of a conductor depends on its _____, _____, and _____. <b>Answer:</b> Length, Cross-sectional area, Material	CO1

16.	In a DC motor, the rotation of the rotor is controlled by the _____. <b>Answer:</b> Commutator	CO1
17.	A _____ is a type of diode used for voltage regulation. <b>Answer:</b> Zener diode	CO1
18.	A _____ is used to measure the potential difference between two points in a circuit. <b>Answer:</b> Voltmeter	CO1
19.	The _____ is used to measure the amount of current flowing in a circuit. <b>Answer:</b> Ammeter	CO1
20.	A _____ wire is often used to connect an appliance to the ground for safety purposes. <b>Answer:</b> Ground	CO1
21.	The total resistance in a series circuit is the _____ of all individual resistances. <b>Answer:</b> Sum	CO1
22.	The current in a parallel circuit is divided between the branches in proportion to the _____ of each branch. <b>Answer:</b> Conductance	CO1
23.	The primary function of a _____ is to protect electrical circuits from overloading or short circuits. <b>Answer:</b> MCB (Miniature Circuit Breaker)	CO1
24.	In a step-up transformer, the voltage in the secondary coil is _____ than the voltage in the primary coil. <b>Answer:</b> Higher	CO1
25.	The _____ wire in a typical house wiring system is connected to the live terminal and carries current to appliances. <b>Answer:</b> Live	CO1
26.	The total voltage across the resistors in a parallel circuit is _____ for all the branches. <b>Answer:</b> The same	CO1
27.	The power dissipated in a resistor is given by the formula _____. <b>Answer:</b> $P = V^2 / R$	CO1
28.	In an electrical circuit, the total current is the _____ of the individual currents in each branch of the circuit. <b>Answer:</b> Sum	CO1
29.	The _____ is used to measure the amount of electrical power consumed by an electrical device. <b>Answer:</b> Wattmeter	CO1
30.	A _____ is a device used to convert AC to DC current. <b>Answer:</b> Rectifier	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – FB – SET D

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	The unit of electrical power is _____. <b>Answer:</b> Watt	CO1
2.	The principle that states that the total power entering a circuit is equal to the total power leaving the circuit is known as _____. <b>Answer:</b> The Law of Conservation of Energy	CO1
3.	The unit of electrical resistance is _____. <b>Answer:</b> Ohm	CO1
4.	In a step-down transformer, the voltage in the secondary coil is _____ than the voltage in the primary coil. <b>Answer:</b> Lower	CO1
5.	The current flowing through a resistor can be calculated by using the formula _____. <b>Answer:</b> $I = V / R$	CO1
6.	The total current in a series circuit is the same through all components, as there is only _____ path for the current to flow. <b>Answer:</b> One	CO1
7.	In a parallel circuit, the _____ remains the same across all branches. <b>Answer:</b> Voltage	CO1
8.	In house wiring, the color code for the live wire is usually _____. <b>Answer:</b> Red or Brown	CO1
9.	The color of the neutral wire in a typical household circuit is _____. <b>Answer:</b> Blue	CO1
10.	The _____ is a device that automatically disconnects a circuit when the current exceeds a safe value. <b>Answer:</b> Fuse	CO1
11.	The total resistance in a parallel circuit can be calculated by taking the reciprocal of the sum of the reciprocals of the individual resistances, i.e., _____. <b>Answer:</b> $1/R_{\text{total}} = 1/R_1 + 1/R_2 + \dots + 1/R_n$	CO1
12.	The _____ law is used to determine the total voltage drop around a closed loop in a circuit. <b>Answer:</b> Kirchhoff's Voltage Law	CO1
13.	In a DC circuit, the voltage drop across a resistor is directly proportional to the _____ passing through it. <b>Answer:</b> Current	CO1
14.	The _____ wire is connected to the metal casing of appliances to provide a safe path to ground in case of faults. <b>Answer:</b> Earth	CO1
15.	In a series circuit, the _____ remains constant for all components. <b>Answer:</b> Current	CO1
16.	A _____ is used to store electrical energy in the form of an electric field. <b>Answer:</b> Capacitor	CO1

17.	The _____ of a conductor is inversely proportional to its cross-sectional area. <b>Answer:</b> Resistance	CO1
18.	A _____ transformer is used to increase or decrease AC voltage in a circuit. <b>Answer:</b> Transformer	CO1
19.	The primary purpose of a _____ is to break the circuit if an overcurrent is detected. <b>Answer:</b> Circuit breaker	CO1
20.	The unit of electrical energy is _____. <b>Answer:</b> Joule	CO1
21.	The main function of a _____ in house wiring is to limit the amount of current that can flow through the circuit. <b>Answer:</b> Fuse	CO1
22.	In an electrical circuit, the _____ is used to open or close the circuit to control the flow of current. <b>Answer:</b> Switch	CO1
23.	The resistance of a wire is proportional to its _____ and inversely proportional to its _____. <b>Answer:</b> Length, Cross-sectional area	CO1
24.	In a transformer, the voltage ratio is equal to the ratio of the _____. <b>Answer:</b> Number of turns in the primary coil to the number of turns in the secondary coil	CO1
25.	The _____ is a device used to convert alternating current (AC) to direct current (DC). <b>Answer:</b> Rectifier	CO1
26.	In a series circuit, the total power consumed is equal to the sum of the _____ consumed by each resistor. <b>Answer:</b> Power	CO1
27.	The _____ is the rate at which electrical energy is converted into another form of energy, such as heat or light. <b>Answer:</b> Power	CO1
28.	The unit of electrical power is _____. <b>Answer:</b> Watt	CO1
29.	The principle that states that the total power entering a circuit is equal to the total power leaving the circuit is known as _____. <b>Answer:</b> The Law of Conservation of Energy	CO1
30.	The unit of electrical resistance is _____. <b>Answer:</b> Ohm	CO1



# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – FB – SET E

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	The resistance of a conductor is _____ to its length and _____ to its cross-sectional area. <b>Answer:</b> Proportional, Inversely proportional	CO1
2.	In a parallel circuit, the voltage across each resistor is _____. <b>Answer:</b> The same	CO1
3.	The _____ is the point in an electrical circuit where the current splits into two or more branches. <b>Answer:</b> Junction	CO1
4.	The current in a series circuit is _____ to the total resistance. <b>Answer:</b> Inversely proportional	CO1
5.	The _____ is used to protect the circuit by automatically switching off when an overload occurs. <b>Answer:</b> Overload relay	CO1
6.	In a simple DC motor, the mechanical power output is directly related to the _____ and _____. <b>Answer:</b> Current, Voltage	CO1
7.	A _____ circuit is one where all components are connected end to end, forming a single path for current to flow. <b>Answer:</b> Series	CO1
8.	In a step-down transformer, the number of turns in the primary coil is _____ than in the secondary coil. <b>Answer:</b> Greater	CO1
9.	The primary function of an electrical fuse is to _____ the circuit in case of excessive current. <b>Answer:</b> Break	CO1
10.	The current in a parallel circuit is _____ by the inverse of the resistances in each branch. <b>Answer:</b> Divided	CO1
11.	In a series circuit, the total resistance is always _____ than the resistance of the smallest resistor. <b>Answer:</b> Greater	CO1
12.	In a transformer, the voltage in the secondary coil is determined by the _____ of turns in the primary and secondary coils. <b>Answer:</b> Ratio	CO1
13.	The _____ is a device used to control the flow of current and protect against overloads. <b>Answer:</b> Circuit breaker	CO1
14.	The primary coil of a transformer is connected to the _____ supply. <b>Answer:</b> Input	CO1
15.	In house wiring, the _____ wire is used for connecting the metal parts of appliances to the ground. <b>Answer:</b> Earth	CO1

16.	The _____ principle is used in a transformer to change voltage levels in AC circuits. <b>Answer:</b> Electromagnetic induction	CO1
17.	The power factor of a resistive load is _____. <b>Answer:</b> One	CO1
18.	In a household circuit, a _____ switch controls the flow of electricity from the main power supply to appliances. <b>Answer:</b> Main	CO1
19.	A _____ is a type of switch used to control a light or appliance from multiple locations. <b>Answer:</b> Three-way switch	CO1
20.	The _____ motor is commonly used for high torque applications like elevators and conveyor belts. <b>Answer:</b> Servo motor	CO1
21.	A _____ is used in circuits to protect against excess current by disconnecting the circuit. <b>Answer:</b> Fuse	CO1
22.	The _____ rectifier is used to convert AC into DC, using both halves of the AC waveform. <b>Answer:</b> Full-wave	CO1
23.	In a DC motor, the direction of rotation is determined by the _____. <b>Answer:</b> Direction of current supplied to the field windings.	CO1
24.	The _____ relay is used to protect an electrical motor from damage due to overload conditions. <b>Answer:</b> Thermal overload	CO1
25.	A _____ is used in circuits to measure the electrical resistance. <b>Answer:</b> Ohmmeter	CO1
26.	The _____ is the part of the circuit that provides the electrical energy to power the load. <b>Answer:</b> Source	CO1
27.	The resistance of a conductor is _____ to its length and _____ to its cross-sectional area. <b>Answer:</b> Proportional, Inversely proportional	CO1
28.	In a parallel circuit, the voltage across each resistor is _____. <b>Answer:</b> The same	CO1
29.	The _____ is the point in an electrical circuit where the current splits into two or more branches. <b>Answer:</b> Junction	CO1
30.	The current in a series circuit is _____ to the total resistance. <b>Answer:</b> Inversely proportional	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – T or F / MATCH – SET A

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Ohm's Law states that the current flowing through a conductor is directly proportional to the voltage and inversely proportional to the resistance. Answer: True	CO1
2.	In a series circuit, the total current is the sum of the currents through each component. Answer: False	CO1
3.	Kirchhoff's Voltage Law states that the sum of the voltages in a closed loop is equal to zero. Answer: True	CO1
4.	In a parallel circuit, the total resistance is the sum of the individual resistances. Answer: False	CO1
5.	A fuse protects the circuit by allowing excess current to pass through safely. Answer: False	CO1
6.	In a parallel connection, the voltage across each resistor is the same. Answer: True	CO1
7.	The neutral wire in a house wiring system carries the same current as the live wire but with opposite polarity. Answer: True	CO1
8.	An earth wire is used to protect electrical equipment from high voltage surges. Answer: True	CO1
9.	The power consumed by a resistor in a series circuit is directly proportional to the total resistance. Answer: False	CO1
10.	In a star connection, the neutral point is formed by connecting the ends of all phase windings together. Answer: True	CO1
11.	The current in a series circuit is inversely proportional to the total resistance. Answer: True	CO1
12.	The primary function of the live wire is to return current to the source in a house wiring system. Answer: False	CO1
13.	In staircase wiring, a two-way switch allows control of the light from two locations. Answer: True	CO1
14.	The earth leakage circuit breaker (ELCB) works by detecting a voltage imbalance between live and neutral wires. Answer: True	CO1
15.	A capacitor in a ceiling fan circuit is used to reduce the speed of the fan. Answer: False	CO1
16.	In a parallel circuit, the total current is the sum of the currents flowing through each branch. Answer: True	CO1

17.	In a series connection, the voltage across each component is the same. Answer: False	CO1
18.	A diode in a rectifier circuit allows current to flow in both directions. Answer: False	CO1
19.	The earth wire provides a safe path for the current to flow into the ground in case of a fault. Answer: True	CO1
20.	In an electrical system, earthing provides protection against electric shock and short circuits. Answer: True	CO1
	MATCH THE FOLLOWING	CO1
21.	Electrical Quantities Column A                      Column B A. Ohm's Law              1. Relationship between current and voltage B. Kirchhoff's Law      2. Sum of voltages around a loop C. Series Circuit        3. Current is the same D. Parallel Circuit      4. Voltage is the same Options: 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 3, C - 4, D - 1 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 Answer: Option 1	CO1
22.	Types of Wiring Column A                      Column B A. Conduit Wiring        1. Encloses electrical wiring B. Casing and Capping    2. Uses wooden strips C. Batten Wiring         3. Uses wooden battens D. Cleat Wiring            4. Uses porcelain cleats Options: 1. A - 2, B - 1, C - 4, D - 3 2. A - 1, B - 2, C - 3, D - 4 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 3, C - 2, D - 1 Answer: Option 2	CO1
23.	Electrical Tools Column A                      Column B A. Multimeter        1. Measures voltage, current, and resistance B. Screwdriver      2. Tightens or loosens screws C. Pliers                3. Holds or bends wires D. Wire Stripper      4. Removes insulation from wires Options: 1. A - 1, B - 3, C - 4, D - 2 2. A - 2, B - 1, C - 3, D - 4 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 2, C - 3, D - 1 Answer: Option 1	CO1

24.	<p>Safety Measures</p> <table><tr><th>Column A</th><th>Column B</th></tr><tr><td>A. Insulated Tools</td><td>1. Reduce risk of electric shock</td></tr><tr><td>B. Circuit Breaker</td><td>2. Cuts off power during overload</td></tr><tr><td>C. Ground Fault Circuit Interrupter</td><td>3. Trips when current leaks to ground</td></tr><tr><td>D. Surge Protector</td><td>4. Protects against electrical surges</td></tr></table> <p>Options:</p> <ol style="list-style-type: none"><li>1. A - 1, B - 2, C - 3, D - 4</li><li>2. A - 2, B - 3, C - 4, D - 1</li><li>3. A - 3, B - 4, C - 1, D - 2</li><li>4. A - 4, B - 2, C - 1, D - 3</li></ol> <p>Answer: Option 1</p>	Column A	Column B	A. Insulated Tools	1. Reduce risk of electric shock	B. Circuit Breaker	2. Cuts off power during overload	C. Ground Fault Circuit Interrupter	3. Trips when current leaks to ground	D. Surge Protector	4. Protects against electrical surges	CO1
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25.	<p>Types of Circuits</p> <table><tr><th>Column A</th><th>Column B</th></tr><tr><td>A. Series Circuit</td><td>1. Current is the same</td></tr><tr><td>B. Parallel Circuit</td><td>2. Voltage is the same</td></tr><tr><td>C. Combination Circuit</td><td>3. Mix of series and parallel</td></tr><tr><td>D. Short Circuit</td><td>4. Low resistance path</td></tr></table> <p>Options:</p> <ol style="list-style-type: none"><li>1. A - 1, B - 2, C - 3, D - 4</li><li>2. A - 2, B - 3, C - 4, D - 1</li><li>3. A - 3, B - 4, C - 1, D - 2</li><li>4. A - 4, B - 1, C - 2, D - 3</li></ol> <p>Answer: Option 1</p>	Column A	Column B	A. Series Circuit	1. Current is the same	B. Parallel Circuit	2. Voltage is the same	C. Combination Circuit	3. Mix of series and parallel	D. Short Circuit	4. Low resistance path	CO1
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26.	<p>Types of Fuses</p> <table><tr><th>Column A</th><th>Column B</th></tr><tr><td>A. Cartridge Fuse</td><td>1. Sealed in a cartridge</td></tr><tr><td>B. Rewirable Fuse</td><td>2. Wire can be replaced</td></tr><tr><td>C. Drop-out Fuse</td><td>3. High voltage applications</td></tr><tr><td>D. Resettable Fuse</td><td>4. Can be reset after tripping</td></tr></table> <p>Options:</p> <ol style="list-style-type: none"><li>1. A - 4, B - 2, C - 3, D - 1</li><li>2. A - 1, B - 2, C - 3, D - 4</li><li>3. A - 2, B - 3, C - 1, D - 4</li><li>4. A - 3, B - 4, C - 1, D - 2</li></ol> <p>Answer: Option 2</p>	Column A	Column B	A. Cartridge Fuse	1. Sealed in a cartridge	B. Rewirable Fuse	2. Wire can be replaced	C. Drop-out Fuse	3. High voltage applications	D. Resettable Fuse	4. Can be reset after tripping	CO1
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27.	<p>Electrical Components</p> <table><tr><th>Column A</th><th>Column B</th></tr><tr><td>A. Resistor</td><td>1. Limits current</td></tr><tr><td>B. Capacitor</td><td>2. Stores electrical energy</td></tr><tr><td>C. Inductor</td><td>3. Stores magnetic energy</td></tr><tr><td>D. Diode</td><td>4. Allows current in one direction</td></tr></table> <p>Options:</p> <ol style="list-style-type: none"><li>1. A - 1, B - 2, C - 3, D - 4</li></ol>	Column A	Column B	A. Resistor	1. Limits current	B. Capacitor	2. Stores electrical energy	C. Inductor	3. Stores magnetic energy	D. Diode	4. Allows current in one direction	CO1
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A. Resistor	1. Limits current											
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D. Diode	4. Allows current in one direction											

	<p>2. A - 2, B - 3, C - 4, D - 1</p> <p>3. A - 3, B - 4, C - 1, D - 2</p> <p>4. A - 4, B - 1, C - 2, D - 3</p> <p>Answer: Option 1</p>	
28.	<p>Electrical Power</p> <p>Column A    Column B</p> <p>A. Power    1. Measured in watts</p> <p>B. Energy    2. Measured in joules</p> <p>C. Voltage    3. Potential difference</p> <p>D. Current    4. Flow of electric charge</p> <p>Options:</p> <p>1. A - 1, B - 2, C - 3, D - 4</p> <p>2. A - 2, B - 3, C - 4, D - 1</p> <p>3. A - 3, B - 4, C - 1, D - 2</p> <p>4. A - 4, B - 1, C - 2, D - 3</p> <p>Answer: Option 1</p>	CO1
29.	<p>Basic Components</p> <p>Column A    Column B</p> <p>A. Switch    1. Controls the flow of electricity</p> <p>B. Socket    2. Provides connection for appliances</p> <p>C. Fuse    3. Protects circuit from overload</p> <p>D. Conduit    4. Encloses electrical wiring</p> <p>Options:</p> <p>1. A - 1, B - 2, C - 3, D - 4</p> <p>2. A - 2, B - 1, C - 4, D - 3</p> <p>3. A - 3, B - 4, C - 1, D - 2</p> <p>4. A - 4, B - 1, C - 2, D - 3</p> <p>Answer: Option 1</p>	CO1
30.	<p>Types of Transformers</p> <p>Column A                      Column B</p> <p>A. Step-up Transformer    1. Increases voltage</p> <p>B. Step-down Transformer    2. Decreases voltage</p> <p>C. Isolation Transformer    3. Provides electrical isolation</p> <p>D. Autotransformer    4. Variable voltage output</p> <p>Options:</p> <p>1. A - 2, B - 1, C - 3, D - 4</p> <p>2. A - 1, B - 2, C - 4, D - 3</p> <p>3. A - 1, B - 2, C - 3, D - 4</p> <p>4. A - 4, B - 3, C - 2, D - 1</p> <p>Answer: Option 3</p>	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – T or F / MATCH – SET B

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Ohm's Law applies only to resistive components in a circuit. Answer: True	CO1
2.	In a series circuit, the total voltage is the sum of the individual voltages across each component. Answer: True	CO1
3.	Kirchhoff's Current Law (KCL) states that the sum of the voltages at a junction is equal to zero. Answer: False (KCL applies to currents, not voltages.)	CO1
4.	The total resistance in a parallel circuit is higher than the resistance of the largest resistor. Answer: False (In a parallel circuit, the total resistance is always less than the smallest resistor.)	CO1
5.	In an electrical circuit, the neutral wire is used for both carrying current and providing a return path. Answer: True	CO1
6.	A fuse is used to protect electrical devices by limiting the current flow. If the current exceeds the rated value, the fuse blows. Answer: True	CO1
7.	In a series circuit, if one component fails, the entire circuit will stop working. Answer: True	CO1
8.	In a parallel circuit, if one branch is disconnected, the rest of the circuit will continue to function normally. Answer: True	CO1
9.	The main function of the earth wire in a house is to carry the electrical current back to the power source. Answer: False (The earth wire provides a safe path for fault current to the ground.)	CO1
10.	In a three-phase system, the total voltage is the sum of the voltages of the three phases. Answer: False (The total voltage is calculated based on phase voltage and phase difference, not simply a sum.)	CO1
11.	The power factor of a purely resistive circuit is 1. Answer: True	CO1
12.	The voltage drop across resistors in a series circuit is proportional to their resistance. Answer: True	CO1
13.	A circuit breaker is a safety device that disconnects the circuit in case of a short circuit or overload to prevent damage. Answer: True	CO1
14.	The total resistance in a series circuit is less than the resistance of the smallest resistor. Answer: False (The total resistance in a series circuit is the sum of all resistances.)	CO1

15.	A capacitor in a fan circuit improves the fan's efficiency and reduces electrical noise. Answer: True	CO1
16.	In a house wiring system, the live wire is color-coded blue and the neutral wire is color-coded brown. Answer: False (The live wire is typically brown, and the neutral wire is blue.)	CO1
17.	The voltage across the terminals of a battery remains constant, regardless of the current drawn by the load. Answer: False (The voltage may vary depending on the battery's charge and load.)	CO1
18.	In a star connection of a three-phase motor, the line voltage is equal to the phase voltage. Answer: False (In a star connection, line voltage is $\sqrt{3}$ times the phase voltage.)	CO1
19.	In an electrical circuit, a short circuit happens when the current bypasses the intended path and flows through a low-resistance path. Answer: True	CO1
20.	In a step-down transformer, the number of turns in the primary coil is greater than the number of turns in the secondary coil. Answer: True	CO1
	MATCH THE FOLLOWING	CO1
21.	Electrical Components Column A    Column B A. Resistor    1. Limits current B. Capacitor    2. Stores electrical energy C. Inductor    3. Stores magnetic energy D. Diode    4. Allows current in one direction Options: 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 3, C - 4, D - 1 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 Answer: Option 1	CO1
22.	Basic Components Column A    Column B A. Switch    1. Controls the flow of electricity B. Socket    2. Provides connection for appliances C. Fuse    3. Protects circuit from overload D. Conduit    4. Encloses electrical wiring Options: 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 1, C - 4, D - 3 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 Answer: Option 1	CO1
23.	Types of Transformers Column A                      Column B A. Step-up Transformer    1. Increases voltage B. Step-down Transformer    2. Decreases voltage	CO1



	<p>C. Isolation Transformer    3. Provides electrical isolation</p> <p>D. Autotransformer        4. Variable voltage output</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 2, B - 1, C - 3, D - 4</li> <li>2. A - 1, B - 2, C - 4, D - 3</li> <li>3. A - 1, B - 2, C - 3, D - 4</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p>Answer: Option 3</p>	
24.	<p>Electrical Power</p> <p>Column A    Column B</p> <p>A. Power    1. Measured in watts</p> <p>B. Energy    2. Measured in joules</p> <p>C. Voltage    3. Potential difference</p> <p>D. Current    4. Flow of electric charge</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 3, C - 4, D - 1</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 1, C - 2, D - 3</li> </ol> <p>Answer: Option 1</p>	CO1
25.	<p>Match the following for Ohm's Law:</p> <p>Column A    Column B</p> <p>A. Voltage    1. <math>V = IR</math></p> <p>B. Current    2. <math>I = V/R</math></p> <p>C. Resistance    3. <math>R = V/I</math></p> <p>D. Power    4. <math>P = VI</math></p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 1, C - 4, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p>Answer: Option 1</p>	CO1
26.	<p>Match the following for Kirchhoff's Laws:</p> <p>Column A                      Column B</p> <p>A. Kirchhoff's Voltage Law    1. Sum of voltages in a loop</p> <p>B. Kirchhoff's Current Law    2. Sum of currents at a junction</p> <p>C. Series Circuit                      3. Current is the same</p> <p>D. Parallel Circuit                      4. Voltage is the same</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 1, C - 4, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p>Answer: Option 1</p>	CO1
27.	<p>Match the following for Earthing and its Types:</p> <p>Column A                      Column B</p> <p>A. Safety Earthing                      1. Prevents electric shock</p>	CO1

	<p>B. Equipment Earthing 2. Connects equipment to ground  C. Functional Earthing 3. Maintains system stability  D. System Earthing 4. Maintains voltage at reference level</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 2, B - 1, C - 4, D - 3</li> <li>2. A - 1, B - 2, C - 3, D - 4</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p>Answer: Option 2</p>	
28.	<p>Match the following for Basic House Wiring:</p> <p>Column A      Column B</p> <p>A. Switch    1. Controls flow of electricity  B. Socket    2. Connection for appliances  C. Conduit   3. Protects electrical wiring  D. Fuse      4. Prevents overloading</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 3, B - 4, C - 1, D - 2</li> <li>2. A - 1, B - 2, C - 3, D - 4</li> <li>3. A - 4, B - 1, C - 2, D - 3</li> <li>4. A - 2, B - 3, C - 4, D - 1</li> </ol> <p>Answer: Option 2</p>	CO1
29.	<p>Match the following for Tools and Components:</p> <p>Column A      Column B</p> <p>A. Multimeter    1. Measures voltage and current  B. Screwdriver    2. Tightens or loosens screws  C. Pliers            3. Holds or bends wires  D. Wire Stripper   4. Removes insulation from wires</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 2, B - 3, C - 4, D - 1</li> <li>2. A - 4, B - 1, C - 3, D - 2</li> <li>3. A - 1, B - 2, C - 3, D - 4</li> <li>4. A - 3, B - 4, C - 1, D - 2</li> </ol> <p>Answer: Option 3</p>	CO1
30.	<p>Match the following for Different Types of Wiring:</p> <p>Column A                      Column B</p> <p>A. Conduit Wiring                      1. Conductors in tubes  B. Casing and Capping Wiring       2. Conductors in wooden strips  C. Batten Wiring                        3. Conductors on battens  D. Cleat Wiring                          4. Conductors on cleats</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. A - 2, B - 1, C - 4, D - 3</li> <li>2. A - 3, B - 4, C - 1, D - 2</li> <li>3. A - 1, B - 2, C - 3, D - 4</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p>Answer: Option 3</p>	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – T or F / MATCH – SET C

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Ohm's Law states that the current is inversely proportional to the voltage and directly proportional to the resistance. Answer: False	CO1
2.	In a series circuit, the total current is the same across all components. Answer: True	CO1
3.	Kirchhoff's Voltage Law is based on the conservation of charge in a circuit. Answer: False	CO1
4.	The total resistance in a parallel circuit is always greater than the individual resistances. Answer: False	CO1
5.	The power consumed by a resistor in a parallel circuit is the same as in a series circuit. Answer: False	CO1
6.	In a series circuit, the total voltage is divided among the components based on their resistance. Answer: True	CO1
7.	Earthing provides protection by offering a low-resistance path for the electric current to flow into the earth in case of a fault. Answer: True	CO1
8.	In a staircase circuit, the switches used are two-way switches that allow control of the light from two different locations. Answer: True	CO1
9.	The earth wire in a home wiring system is typically insulated with green or yellow stripes. Answer: True	CO1
10.	In a parallel circuit, the total current is the sum of the currents in each branch. Answer: True	CO1
11.	The live wire in a household wiring system is color-coded black. Answer: False	CO1
12.	In a star connection, the line current is the same as the phase current. Answer: True	CO1
13.	The voltage across each resistor in a series circuit is proportional to the resistance of that resistor. Answer: True	CO1
14.	A capacitor is used in a ceiling fan to improve the efficiency of the motor by creating a phase shift in the current. Answer: True	CO1
15.	A circuit breaker is typically used in place of a fuse to protect the circuit from overloads. Answer: True	CO1

16.	In a series circuit, the total resistance increases as more resistors are added. Answer: True	CO1
17.	The earth wire in a domestic electrical system ensures that any stray current due to insulation failure flows directly to the ground. Answer: True	CO1
18.	A switch in a house wiring system allows the live wire to be either connected or disconnected, thereby controlling the current flow. Answer: True	CO1
19.	In a series circuit, if one component fails, the current through the entire circuit will stop. Answer: True	CO1
20.	In a short circuit, the current bypasses the normal load path and flows through a path with lower resistance. Answer: True	CO1
	<b>MATCH THE FOLLOWING</b>	CO1
21.	<b>Electrical Quantities and Ohm's Law</b> <b>Column A                      Column B</b> A. Voltage Drop    1. Decrease in voltage across a component B. Current Flow    2. Direction of electron movement C. Power Factor    3. Ratio of real power to apparent power D. Resistance Unit 4. Ohms <b>Options:</b> 1. A - 2, B - 1, C - 3, D - 4 2. A - 1, B - 2, C - 3, D - 4 3. A - 4, B - 3, C - 1, D - 2 4. A - 3, B - 4, C - 2, D - 1 <b>Answer: Option 2</b>	CO1
22.	Match the following for Kirchhoff's Laws: <b>Column A                      Column B</b> A. Kirchhoff's Voltage Law 1. Sum of voltages in a loop B. Kirchhoff's Current Law 2. Sum of currents at a junction C. Series Circuit                      3. Current is the same D. Parallel Circuit                      4. Voltage is the same <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 1, C - 4, D - 3 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 <b>Answer: Option 1</b>	CO1
23.	Match the following for Series and Parallel Connections: <b>Column A                      Column B</b> A. Series Circuit                      1. Current is the same B. Parallel Circuit                      2. Voltage is the same C. Resistors in Series    3. Sum of resistances D. Resistors in Parallel 4. Reciprocal sum of resistances <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4	CO1

	<p>2. A - 2, B - 3, C - 4, D - 1</p> <p>3. A - 3, B - 4, C - 1, D - 2</p> <p>4. A - 4, B - 1, C - 2, D - 3</p> <p>Answer: Option 1</p>	
24.	<p>Match the following for Earthing and its Types:</p> <p>Column A                      Column B</p> <p>A. Safety Earthing      1. Prevents electric shock</p> <p>B. Equipment Earthing 2. Connects equipment to ground</p> <p>C. Functional Earthing 3. Maintains system stability</p> <p>D. System Earthing    4. Maintains voltage at reference level</p> <p>Options:</p> <p>1. A - 2, B - 1, C - 4, D - 3</p> <p>2. A - 1, B - 2, C - 3, D - 4</p> <p>3. A - 3, B - 4, C - 1, D - 2</p> <p>4. A - 4, B - 3, C - 2, D - 1</p> <p>Answer: Option 2</p>	CO1
25.	<p>Match the following for Basic House Wiring:</p> <p>Column A   Column B</p> <p>A. Switch   1. Controls flow of electricity</p> <p>B. Socket   2. Connection for appliances</p> <p>C. Conduit 3. Protects electrical wiring</p> <p>D. Fuse    4. Prevents overloading</p> <p>Options:</p> <p>1. A - 3, B - 4, C - 1, D - 2</p> <p>2. A - 1, B - 2, C - 3, D - 4</p> <p>3. A - 4, B - 1, C - 2, D - 3</p> <p>4. A - 2, B - 3, C - 4, D - 1</p> <p>Answer: Option 2</p>	CO1
26.	<p>Match the following for Tools and Components:</p> <p>Column A                      Column B</p> <p>A. Multimeter    1. Measures voltage and current</p> <p>B. Screwdriver   2. Tightens or loosens screws</p> <p>C. Pliers                3. Holds or bends wires</p> <p>D. Wire Stripper 4. Removes insulation from wires</p> <p>Options:</p> <p>1. A - 2, B - 3, C - 4, D - 1</p> <p>2. A - 4, B - 1, C - 3, D - 2</p> <p>3. A - 1, B - 2, C - 3, D - 4</p> <p>4. A - 3, B - 4, C - 1, D - 2</p> <p>Answer: Option 3</p>	CO1
27.	<p>Match the following for Types of Circuits:</p> <p>Column A                      Column B</p> <p>A. Series Circuit        1. Current is the same</p> <p>B. Parallel Circuit      2. Voltage is the same</p> <p>C. Combination Circuit 3. Series and parallel mix</p>	CO1

	D. Short Circuit Options: 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 3, C - 4, D - 1 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 Answer: Option 1	4. Unintended low resistance path	
28.	Match the following for Safety Measures at Home: Column A A. Insulated Tools B. Circuit Breaker C. Ground Fault Circuit Interrupter (GFCI) D. Surge Protector Options: 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 3, C - 4, D - 1 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 Answer: Option 1	Column B 1. Prevents electric shock 2. Cuts off power during faults 3. Trips when current leaks to ground 4. Protects against voltage spikes	CO1
29.	Match the following for Staircase Wiring: Column A A. Two-way Switch B. Intermediate Switch C. Conduit (CO1) D. Lamp Holder Options: 1. A - 2, B - 1, C - 4, D - 3 2. A - 3, B - 4, C - 1, D - 2 3. A - 1, B - 2, C - 3, D - 4 4. A - 4, B - 3, C - 2, D - 1 Answer: Option 3	Column B 1. Controls from two locations 2. Controls from three or more locations 3. Encloses and protects wiring 4. Holds the light bulb	CO1
30.	Match the following for Ceiling Fan Wiring: Column A A. Single-phase Motor B. Capacitor C. Switch D. Regulator Options: 1. A - 3, B - 2, C - 4, D - 1 2. A - 1, B - 2, C - 3, D - 4 3. A - 4, B - 1, C - 2, D - 3 4. A - 2, B - 4, C - 1, D - 3 Answer: Option 2	Column B 1. Powers the fan 2. Starts the motor 3. Turns fan on and off 4. Controls fan speed	CO1

## Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

### 23ES1102- UNIT I – T or F / MATCH – SET D

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Ohm's Law applies only to resistive components and does not hold for reactive components like inductors and capacitors. Answer: <b>True</b>	CO1
2.	In a parallel circuit, the total voltage across each component is different and depends on the resistance of each. Answer: <b>False</b>	CO1
3.	Kirchhoff's Current Law states that the sum of all currents entering a junction is equal to the sum of all currents leaving the junction. Answer: <b>True</b>	CO1
4.	The total resistance in a series circuit is always less than the sum of individual resistances. Answer: <b>False</b>	CO1
5.	The neutral wire in a house wiring system carries the same current as the live wire but with opposite polarity. Answer: <b>True</b>	CO1
6.	Earthing in a house wiring system is used to protect electrical appliances from high voltage surges. Answer: <b>True</b>	CO1
7.	The current in a series circuit remains constant across all components, regardless of their resistance. Answer: <b>True</b>	CO1
8.	In a step-down transformer, the voltage on the secondary side is higher than on the primary side. Answer: <b>False</b>	CO1
9.	The earth wire is used to provide a return path for the current in case of a fault. Answer: <b>True</b>	CO1
10.	In a series circuit, if one component fails, the remaining components will continue to function as normal. Answer: <b>False</b>	CO1
11.	In a parallel circuit, the total current is the sum of the individual branch currents. Answer: <b>True</b>	CO1
12.	The total resistance in a parallel circuit decreases as more resistors are added to the circuit. Answer: <b>True</b>	CO1
13.	A fuse is used to prevent excessive current from flowing through the circuit by melting when the current exceeds a safe level. Answer: <b>True</b>	CO1
14.	In a house wiring system, the live wire is the one that is connected to the earth ground. Answer: <b>False</b>	CO1

15.	The current flowing through a resistor is inversely proportional to the total resistance in a series circuit. Answer: <b>True</b>	CO1
16.	In a star connection of a three-phase system, the line voltage is equal to the phase voltage. Answer: <b>False</b>	CO1
17.	A capacitor in a ceiling fan helps to start the motor by creating a phase difference between the current and voltage. Answer: <b>True</b>	CO1
18.	The voltage drop across resistors in a series circuit is directly proportional to the value of the resistance. Answer: <b>True</b>	CO1
19.	In a household wiring system, the live wire is used to carry the electrical current from the power source to the appliances. Answer: <b>True</b>	CO1
20.	In a short circuit, the current bypasses the normal load path and flows through a path with much higher resistance. Answer: <b>False</b>	CO1
	<b>MATCH THE FOLLOWING</b>	CO1
21.	Match the following for Kirchhoff's Laws: <b>Column A</b> <b>Column B</b> A. Kirchhoff's Voltage Law 1. Sum of voltages in a loop B. Kirchhoff's Current Law 2. Sum of currents at a junction C. Series Circuit                      3. Current is the same D. Parallel Circuit                      4. Voltage is the same <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 1, C - 4, D - 3 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 <b>Answer:</b> Option 1	CO1
22.	Match the following for Series and Parallel Connections: <b>Column A</b> <b>Column B</b> A. Series Circuit                      1. Current is the same B. Parallel Circuit                      2. Voltage is the same C. Resistors in Series                      3. Sum of resistances D. Resistors in Parallel 4. Reciprocal sum of resistances <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 3, C - 4, D - 1 3. A - 3, B - 4, C - 1, D - 2 4. A - 4, B - 1, C - 2, D - 3 <b>Answer:</b> Option 1	CO1
23.	Match the following for Earthing and its Types: <b>Column A</b> <b>Column B</b> A. Safety Earthing                      1. Prevents electric shock B. Equipment Earthing 2. Connects equipment to ground C. Functional Earthing 3. Maintains system stability	CO1



	<p>D. System Earthing      4. Maintains voltage at reference level</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 2, B - 1, C - 4, D - 3</li> <li>2. A - 1, B - 2, C - 3, D - 4</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 2</p>	
24.	<p>Match the following for Basic House Wiring:</p> <p><b>Column A      Column B</b></p> <p>A. Switch    1. Controls flow of electricity</p> <p>B. Socket    2. Connection for appliances</p> <p>C. Conduit   3. Protects electrical wiring</p> <p>D. Fuse      4. Prevents overloading</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 3, B - 4, C - 1, D - 2</li> <li>2. A - 1, B - 2, C - 3, D - 4</li> <li>3. A - 4, B - 1, C - 2, D - 3</li> <li>4. A - 2, B - 3, C - 4, D - 1</li> </ol> <p><b>Answer:</b> Option 2</p>	CO1
25.	<p>Match the following for Ohm's Law:</p> <p><b>Column A              Column B</b></p> <p>A. Voltage              1. <math>V = IR</math></p> <p>B. Current              2. <math>I = V/R</math></p> <p>C. Resistance (CO1)   3. <math>R = V/I</math></p> <p>D. Power              4. <math>P = VI</math></p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 1, C - 4, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1
26.	<p>Match the following for Tools and Components:</p> <p><b>Column A              Column B</b></p> <p>A. Multimeter    1. Measures voltage and current</p> <p>B. Screwdriver   2. Tightens or loosens screws</p> <p>C. Pliers           3. Holds or bends wires</p> <p>D. Wire Stripper   4. Removes insulation from wires</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 2, B - 3, C - 4, D - 1</li> <li>2. A - 4, B - 1, C - 3, D - 2</li> <li>3. A - 1, B - 2, C - 3, D - 4</li> <li>4. A - 3, B - 4, C - 1, D - 2</li> </ol> <p><b>Answer:</b> Option 3</p>	CO1
27.	<p>Match the following for Different Types of Wiring:</p> <p><b>Column A              Column B</b></p> <p>A. Conduit Wiring              1. Conductors in tubes</p> <p>B. Casing and Capping Wiring   2. Conductors in wooden strips</p>	CO1



# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – T or F / MATCH – SET E

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Ohm's Law states that current is inversely proportional to voltage and directly proportional to resistance. Answer: <b>False</b>	CO1
2.	In a series circuit, the total voltage across all components is equal to the sum of the voltages across each individual component. Answer: <b>True</b>	CO1
3.	Kirchhoff's Voltage Law (KVL) states that the sum of all voltages around a closed loop must equal zero. Answer: <b>True</b>	CO1
4.	In a parallel circuit, the total resistance is greater than the resistance of the smallest resistor. Answer: <b>False</b>	CO1
5.	In a three-phase system, the line current is equal to the phase current in a star connection. Answer: <b>False</b>	CO1
6.	Earthing in a house wiring system is important for protecting electrical appliances from voltage surges and providing a safe path for fault currents. Answer: <b>True</b>	CO1
7.	In a series circuit, if one component fails, the entire circuit stops functioning. Answer: <b>True</b>	CO1
8.	In a parallel circuit, if one branch is disconnected, the remaining branches will still operate normally. Answer: <b>True</b>	CO1
9.	The neutral wire carries the return current back to the source, completing the circuit. Answer: <b>True</b>	CO1
10.	A circuit breaker is a device used to protect a circuit from damage caused by overcurrent or short circuit by automatically disconnecting the circuit when a fault is detected. Answer: <b>True</b>	CO1
11.	A fuse and a circuit breaker serve the same purpose, but a fuse can be reused after it blows. Answer: <b>False</b>	CO1
12.	In a series circuit, the total resistance increases as more resistors are added. Answer: <b>True</b>	CO1
13.	In a star connection of a three-phase system, the line voltage is greater than the phase voltage. Answer: <b>True</b>	CO1
14.	A ceiling fan capacitor is used to improve the efficiency of the motor by providing a phase shift to the current. Answer: <b>True</b>	CO1

15.	In a household wiring system, the live wire is the wire that is directly connected to the power supply. Answer: <b>True</b>	CO1
16.	The power consumed by an electrical appliance is directly proportional to the current flowing through it and the voltage applied across it. Answer: <b>True</b>	CO1
17.	In a short circuit, current flows through a path with very low resistance, potentially damaging the components of the circuit. Answer: <b>True</b>	CO1
18.	In a staircase circuit, two-way switches are used to control the same load from two different locations. Answer: <b>True</b>	CO1
19.	The earth wire in a domestic electrical system is primarily used for carrying current in normal operation. Answer: <b>False (The earth wire is used for safety, to carry fault current to the ground.)</b>	CO1
20.	In a three-phase system, the line voltage is always equal to the phase voltage. Answer: <b>False</b>	CO1
	<b>MATCH THE FOLLOWING</b>	CO1
21.	<b>Electrical Quantities and Ohm's Law</b> <b>Column A      Column B</b> A. Voltage      1. Measure of potential difference B. Current      2. Flow of electric charge C. Resistance      3. Opposition to current flow D. Power      4. Rate of energy transfer <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4 2. A - 3, B - 4, C - 2, D - 1 3. A - 1, B - 4, C - 3, D - 2 4. A - 4, B - 3, C - 1, D - 2 <b>Answer: Option 1</b>	CO1
22.	<b>Kirchhoff's Laws</b> <b>Column A                      Column B</b> A. Kirchhoff's Current Law      1. Current entering a junction equals leaving current B. Kirchhoff's Voltage Law      2. Sum of voltage in a closed loop is zero C. Node Analysis      3. Based on KCL D. Loop Analysis      4. Based on KVL <b>Options:</b> 1. A - 1, B - 2, C - 3, D - 4 2. A - 2, B - 1, C - 4, D - 3 3. A - 3, B - 4, C - 2, D - 1 4. A - 4, B - 3, C - 1, D - 2 <b>Answer: Option 1</b>	CO1
23.	<b>Series and Parallel Circuits</b> <b>Column A                      Column B</b> A. Series Circuit      1. Current is the same B. Parallel Circuit      2. Voltage is the same	CO1

	<p>C. Total Resistance (Series) 3. Sum of individual resistances  D. Total Resistance (Parallel) 4. Reciprocal of sum of reciprocals</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 3, B - 4, C - 1, D - 2</li> <li>3. A - 2, B - 1, C - 4, D - 3</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	
24.	<p><b>Earthing and its Types</b></p> <p><b>Column A          Column B</b></p> <p>A. Pipe Earthing 1. GI pipe buried in the ground  B. Plate Earthing 2. Metal plate in moist soil  C. Strip Earthing 3. Metal strips for large installations  D. Rod Earthing 4. Copper rod driven into the ground</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 4, C - 1, D - 3</li> <li>3. A - 3, B - 1, C - 4, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1
25.	<p><b>Basic House Wiring Components</b></p> <p><b>Column A    Column B</b></p> <p>A. Fuse 1. Overcurrent protection  B. Switch 2. Circuit control  C. Socket 3. Power outlet  D. Conduit 4. Protective tubing</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 3, C - 4, D - 1</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 1, C - 2, D - 3</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1
26.	<p><b>Types of Wiring</b></p> <p><b>Column A          Column B</b></p> <p>A. Conduit Wiring 1. Encloses electrical wiring  B. Casing and Capping 2. Uses wooden strips  C. Batten Wiring 3. Uses wooden battens  D. Cleat Wiring 4. Uses porcelain cleats</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 2, B - 1, C - 4, D - 3</li> <li>2. A - 1, B - 2, C - 3, D - 4</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 2</p>	CO1
27.	<p><b>Safety Measures</b></p> <p><b>Column A                                  Column B</b></p> <p>A. Fuse 1. Prevents overcurrent damage</p>	CO1

	<p>B. Circuit Breaker 2. Automatically stops overcurrent  C. Insulation 3. Prevents electric shocks  D. Earth Leakage Circuit Breaker (ELCB) 4. Detects ground faults</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 4, B - 1, C - 2, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 2, B - 3, C - 4, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	
28.	<p><b>Tools Used in Wiring</b></p> <p><b>Column A          Column B</b></p> <p>A. Wire Stripper 1. Removes insulation  B. Screwdriver 2. Tightens screws  C. Multimeter 3. Measures electrical quantities  D. Pliers 4. Cuts and holds wires</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 1, C - 4, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1
29.	<p><b>Staircase Wiring</b></p> <p><b>Column A          Column B</b></p> <p>A. Two-way Switch 1. Controls light from two locations  B. Single-way Switch 2. Controls light from one location  C. Phase Wire 3. Carries live current  D. Neutral Wire 4. Completes the circuit</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 2, B - 1, C - 4, D - 3</li> <li>3. A - 3, B - 4, C - 1, D - 2</li> <li>4. A - 4, B - 3, C - 2, D - 1</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1
30.	<p><b>Ceiling Fan Wiring</b></p> <p><b>Column A          Column B</b></p> <p>A. Regulator 1. Controls speed  B. Capacitor 2. Starts the fan motor  C. Phase Wire 3. Carries live current  D. Neutral Wire 4. Completes the circuit</p> <p><b>Options:</b></p> <ol style="list-style-type: none"> <li>1. A - 1, B - 2, C - 3, D - 4</li> <li>2. A - 4, B - 3, C - 2, D - 1</li> <li>3. A - 2, B - 1, C - 4, D - 3</li> <li>4. A - 3, B - 4, C - 1, D - 2</li> </ol> <p><b>Answer:</b> Option 1</p>	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – SHORT QUESTIONS – SET A

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	Define Ohm's Law and derive its expression in terms of resistance, voltage, and current. <b>Answer:</b> Ohm's Law states that the current through a conductor is directly proportional to the voltage across it, provided the temperature remains constant. Its expression is $V=IR$ , where V is voltage, I is current, and R is resistance.	CO1
2.	A resistor of $5\ \Omega$ is connected to a 10 V power supply. Calculate the power dissipated in the resistor. <b>Answer:</b> Power (P) = $V^2/R$ . Substituting values: $P=10^2/5=20\text{ W}$ .	CO1
3.	State and explain Kirchhoff's Current Law (KCL) with an example. <b>Answer:</b> KCL states that the sum of currents entering a junction equals the sum of currents leaving the junction. Example: If currents of 3 A, 2 A and 5 A enter a junction, the outgoing current must be $3+2+5=10$	CO1
4.	Using Kirchhoff's Voltage Law (KVL), calculate the unknown voltage $V_x$ in a circuit with a 12 V battery, resistances $4\ \Omega$ and $2\ \Omega$ and a current of 2 A. <b>Answer:</b> KVL states $12=2(4)+V_x$ . Solving: $V_x=12-8=4\text{ V}$ .	CO1
5.	Two resistors, $R_1=10\ \Omega$ and $R_2=15\ \Omega$ are connected in parallel. Determine the equivalent resistance and explain why the value is less than the smallest resistor. <b>Answer:</b> $R_{eq} = \frac{R_1 R_2}{R_1 + R_2} = \frac{10 \cdot 15}{10 + 15} = 6\ \Omega$ . The equivalent resistance is less because parallel connections provide multiple paths for current flow.	CO1
6.	A $10\ \Omega$ resistor is added in parallel to a $20\ \Omega$ resistor, and this combination is in series with a $5\ \Omega$ resistor. Calculate the total resistance. <b>Answer:</b> For parallel: $R_p = \frac{10 \cdot 20}{10 + 20} = 6.67\ \Omega$ . Total resistance: $R_t=6.67+5=11.67\ \Omega$ .	CO1
7.	If a metal casing of an appliance is not earthed, explain what could happen during a fault condition and propose a solution. <b>Answer:</b> Without earthing, leakage current can pass through a person touching the appliance, causing electric shock. The solution is to provide proper earthing to direct the leakage current safely to the ground.	CO1
8.	Compare pipe earthing and plate earthing in terms of cost, maintenance, and efficiency. Which is better for industrial installations? <b>Answer:</b> Pipe earthing is cheaper and easier to maintain, while plate earthing is more efficient and durable. Plate earthing is better for industrial installations due to its reliability and higher current-carrying capacity.	CO1
9.	Why is the neutral wire in a household circuit at a potential of 0 V? What would happen if it is disconnected? <b>Answer:</b> The neutral wire is grounded, maintaining 0 V potential. If disconnected, appliances may malfunction or become hazardous due to floating voltage levels.	CO1

10.	<p>Devise a wiring layout for a single room containing a ceiling fan, a light bulb, and a power socket, ensuring minimal wiring costs.</p> <p><b>Answer:</b> Connect the light and fan in parallel with separate switches for control. Place the socket on the same circuit but with an additional fuse for overload protection.</p>	CO1
11.	<p>A technician uses a multimeter to measure resistance but notices fluctuations. Suggest possible causes and remedies.</p> <p><b>Answer:</b> Causes: Loose connections, unstable probe contact, or a faulty multimeter. Remedies: Secure connections, ensure stable contact, and check or replace the multimeter's battery.</p>	CO1
12.	<p>Evaluate the safety and efficiency of using wire strippers versus using a knife to strip insulation.</p> <p><b>Answer:</b> Wire strippers are safer and more precise, reducing the risk of wire damage or injury. Knives are less safe and can easily damage wires or cause accidents.</p>	CO1
13.	<p>Analyze the advantages and disadvantages of concealed wiring compared to surface wiring in a home.</p> <p><b>Answer:</b> Concealed wiring is safer and aesthetically pleasing but expensive and harder to repair. Surface wiring is cheaper and easier to maintain but less attractive and more prone to damage.</p>	CO1
14.	<p>Design a cost-effective wiring system for a three-story building, considering safety and future scalability.</p> <p><b>Answer:</b> Use conduit wiring with centralized distribution boards. Install separate circuits for each floor to ensure safety and allow future scalability.</p>	CO1
15.	<p>A staircase lighting circuit has a problem where the light remains on regardless of the switch positions. Identify the fault and suggest a correction.</p> <p><b>Answer:</b> Fault: Misconnection of the two-way switch wiring. Correction: Reconnect the common and traveler wires as per the correct two-way switch configuration.</p>	CO1



# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

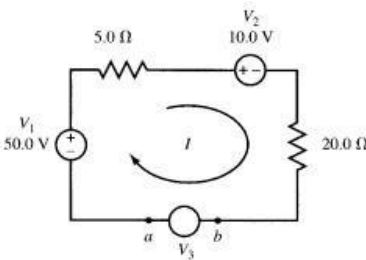
## 23ES1102- UNIT I – SHORT QUESTIONS – SET B

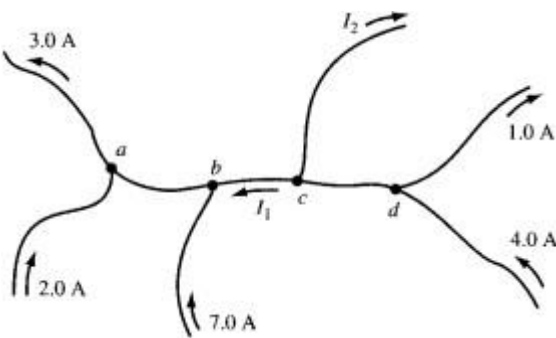
Year/Semester : I/II

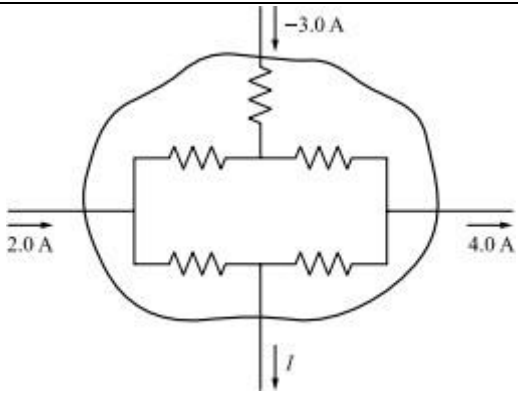
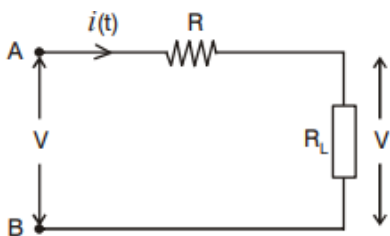
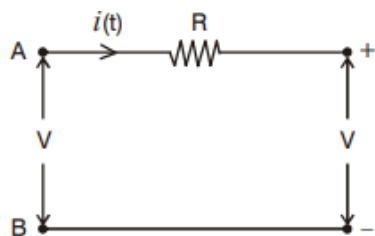
Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	<b>Define Ohm's Law and state its mathematical expression.</b> <b>Answer:</b> Ohm's Law states that the current flowing through a conductor between two points is directly proportional to the voltage across the two points. Mathematically, it can be expressed as $V=I \times R$ .	CO1
2.	<b>What is meant by linear and non linear networks?</b>  <b>Linear Network:</b> If circuit parameters are always constant irrespective of change in time, voltage and temperature is called Linear network.  <b>Non Linear Network:</b> A circuit whose parameters changes their values with change in time, voltage and temperature is called Non Linear Network.	CO1
3.	<b>Find <math>V_3</math> and its polarity if the current <math>I</math> for the circuit shown is 0.40A.</b>   <p style="text-align: center;"><b>Fig. 3-7</b></p> <p>Assume that <math>V_3</math> has the same polarity as <math>V_1</math>. Applying KVL and starting from the lower left corner,</p> $V_1 - I(5.0) - V_2 - I(20.0) + V_3 = 0$ $50.0 - 2.0 - 10.0 - 8.0 + V_3 = 0$ $V_3 = -30.0 \text{ V}$ <p>Terminal <math>b</math> is positive with respect to terminal <math>a</math>.</p>	CO1
4.	<b>Why Kirchhoff's laws are important in circuit analysis?</b>  <b>Answer:.</b> These laws are important because they provide a systematic method for analyzing complex electrical circuits.	CO1
5.	<b>Explain the concept of mesh current analysis.</b>  <b>Answer:</b> Mesh current analysis is a method used to analyze electrical circuits by assigning currents to different loops (meshes) in the circuit.	CO1
6.	<b>How does node voltage analysis differ from mesh current analysis?</b> <b>Answer:</b> Node voltage analysis involves analyzing a circuit by considering the voltages at various nodes (points where two or more elements connect). It applies Kirchhoff's Current Law at each node to set up equations for the unknown node voltages.	CO1

7.	<p><b>Obtain the currents <math>I_1</math> and <math>I_2</math> for the network shown below.</b></p>  <p><math>a</math> and <math>b</math> comprise one node. Applying KCL,</p> $2.0 + 7.0 + I_1 = 3.0 \quad \text{or} \quad I_1 = -6.0 \text{ A}$ <p>Also, <math>c</math> and <math>d</math> comprise a single node. Thus,</p> $4.0 + 6.0 = I_2 + 1.0 \quad \text{or} \quad I_2 = 9.0 \text{ A}$	CO1
8.	<p><b>What is meant by active and passive networks?</b></p> <p><b>Active Network :</b> A circuit which contains a source of energy is called Active Network.</p> <p><b>Example :</b> Voltage and Current sources</p> <p><b>Passive Network :</b> A circuit which has no energy source is called Passive Network</p> <p><b>Example :</b> Resistor (R), Inductor (L), Capacitors (C)</p>	CO1
9.	<p><b>Discuss the significance of Kirchhoff's Current Law in circuit analysis.</b></p> <p><b>Answer:</b> Kirchhoff's Current Law (KCL) is significant because it ensures that the conservation of charge is maintained in electrical circuits. It states that the algebraic sum of currents entering and leaving a node in a circuit is zero, which allows us to set up equations and solve for unknown currents in complex circuits.</p>	CO1
10.	<p><b>Explain the concept of a node in electrical circuits.</b></p> <p><b>Answer:</b> A node in an electrical circuit is a point where two or more circuit elements are connected. It is a reference point for analyzing circuit voltages and currents.</p>	CO1
11.	<p><b>How does the total resistance change when resistors are added in parallel?</b></p> <p><b>Answer:</b> When resistors are added in parallel, the total resistance decreases. This is because adding more parallel paths for the current to flow reduces the overall resistance to the flow of current.</p>	CO1
12.	<p><b>How does Kirchhoff's Voltage Law help in analyzing electrical circuits?</b></p> <p><b>Answer:</b> Kirchhoff's Voltage Law (KVL) helps in analyzing electrical circuits by providing a systematic method for understanding and solving circuit problems. By applying KVL to different loops in a circuit, one can set up equations and solve for unknown voltages, currents, or other circuit parameters.</p>	CO1
13.	<p><b>Find the current <math>I</math> for the circuit shown below.</b></p>	CO1

	 <p>The branch currents within the enclosed area cannot be calculated since no values of the resistors are given. However, KCL applies to the network taken as a single node. Thus,</p> $2.0 - 3.0 - 4.0 - I = 0 \quad \text{or} \quad I = -5.0 \text{ A}$	
14.	<p><b>What are the classifications of circuit elements?</b></p> <p>The classification of circuit elements are</p> <ul style="list-style-type: none"> <li>➤ Active Elements</li> <li>➤ Passive elements</li> <li>➤ Lumped and distributed elements</li> <li>➤ Bilateral and unilateral elements</li> <li>➤ Linear and nonlinear elements</li> </ul>	CO1
15.	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Two terminal circuit element</p> </div> <div style="text-align: center;">  <p>An Open Circuit</p> </div> </div> <p>The current in an Open Circuit is always Zero, regardless of the voltage across it. Mathematically, <math>i(t) = 0</math>, <math>V(t) \neq 0</math></p>	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

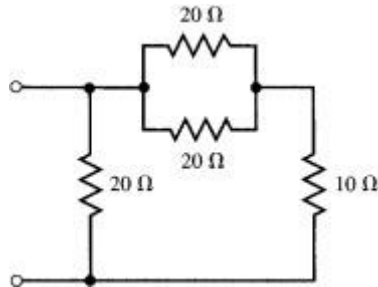
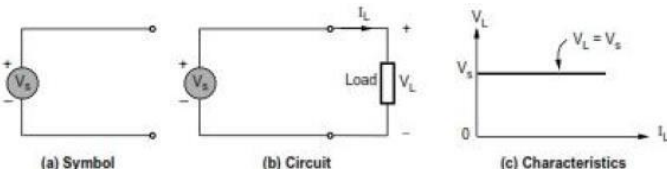
## 23ES1102- UNIT I – SHORT QUESTIONS – SET C

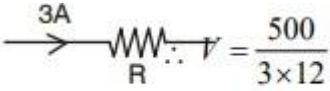
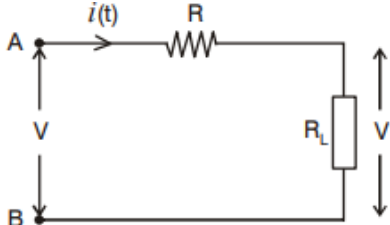
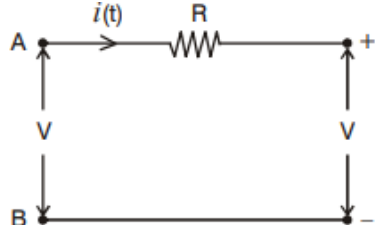
Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	<b>What are Dependent and independent sources?</b> The electrical energy supplied by a dependent source depends on another source of electrical energy. The electrical energy supplied by an independent source does not depend on another electrical energy. They convert energy in some form to electrical energy.	CO1
2.	<b>Find the equivalent resistance for the circuit shown below,</b>  <p>The two 20-Ω resistors in parallel have an equivalent resistance <math>R_{eq} = [(20)(20)/(20 + 20)] = 10 \Omega</math>. This is in series with the 10-Ω resistor so that their sum is 20 Ω. This in turn is in parallel with the other 20-Ω resistor so that the overall equivalent resistance is 10 Ω.</p>	CO1
3.	<b>State Kirchoff's voltage law?</b> Kirchoff's voltage law states that "The algebraic sum of the voltages around any closed path is zero". $\sum v = 0$ .	CO1
4.	<b>Discuss the significance of mesh current analysis in circuit analysis.</b> <b>Answer:</b> By assigning currents to different loops (meshes) in the circuit and applying Kirchhoff's Voltage Law to each mesh, one can set up and solve equations to determine the unknown currents flowing through each loop.	CO1
5.	<b>Draw the V-I Characteristics of ideal voltage source.</b> 	CO1
6.	<b>Describe the process of calculating total resistance in a parallel circuit.</b> <b>Answer:</b> In a parallel circuit, the reciprocal of the total resistance is equal to the sum of the reciprocals of the individual resistances. Mathematically, it can be expressed as $1/R_{total} = (1/R_1) + (1/R_2) + (1/R_3) + \dots$	CO1
7.	<b>Describe the procedure for solving a circuit using mesh current analysis.</b> <b>Answer:</b> To solve a circuit using mesh current analysis, follow these steps:	CO1

	<ol style="list-style-type: none"> <li>1. Identify the meshes (loops) in the circuit.</li> <li>2. Assign a clockwise or counterclockwise mesh current to each mesh.</li> <li>3. Apply Kirchhoff's Voltage Law to each mesh to set up equations.</li> <li>4. Solve the equations to find the unknown mesh currents.</li> </ol> <p>Use the mesh currents to find other quantities of interest, such as voltages or powers.</p>	
8.	<p><b>What is difference between Loop and Mesh?</b></p> <p>A loop is any closed path of network. A mesh is most elementary form of the loop and cannot be further divided into other loops.</p>	CO1
9.	<p><b>An electric heater draws 8A from 250V supply. What is its power rating? Also find the resistance of the heater element</b></p> <div style="display: flex; justify-content: space-around;"> <div> <p>Power rating, <math>P = V.I \times \cos \phi</math></p> <p><math>= 250 \times 8 \times 1</math></p> <p><b>P = 2000 watts</b></p> <p>(<math>\because \phi = 0, \cos \phi = 1</math>)</p> </div> <div> <p>Resistance (R) = <math>\frac{V}{I}</math></p> <p><math>R = \frac{250}{8}</math></p> <p><b>R = 31.25 <math>\Omega</math></b></p> </div> </div>	CO1
10.	<p><b>A resistor with a current of 3A through it converts 500 J of electrical energy into heat energy in 12 sec. What is the voltage across the resistor?</b></p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Energy = V.I.t.</p> <p><math>500 = V \times 3 \times 12</math></p> </div> <div style="text-align: center;">  <p><math>\therefore V = \frac{500}{3 \times 12}</math></p> <p><b>V = 13.88 volts</b></p> </div> </div>	CO1
11.	<p><b>What are the classifications of circuit elements?</b></p> <p>The classification of circuit elements are</p> <ul style="list-style-type: none"> <li>➤ Active Elements</li> <li>➤ Passive elements</li> <li>➤ Lumped and distributed elements</li> <li>➤ Bilateral and unilateral elements</li> <li>➤ Linear and nonlinear elements</li> </ul>	CO1
12.	<p><b>What is meant by Open circuit?</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Two terminal circuit element</p> </div> <div style="text-align: center;">  <p>An Open Circuit</p> </div> </div> <p>The current in an Open Circuit is always Zero, regardless of the voltage across it.</p> <p>Mathematically, <math>i(t) = 0, V(t) \neq 0</math></p>	CO1

13.	<b>Explain the concept of earthing and describe how plate earthing is implemented.</b> <b>Answer:</b> Earthing is connecting the metallic parts of electrical systems to the ground to prevent electric shock. Plate earthing uses a copper or GI plate buried in the ground with charcoal and salt around it, connected to the equipment through a wire.	CO1
14.	<b>Compare the safety implications of fuse-based protection versus circuit breakers in household wiring.</b> <b>Answer:</b> Fuses are simple and cheap but require replacement after a fault, while circuit breakers are reusable and provide quicker, more reliable protection. Circuit breakers are safer for modern installations.	CO1
15.	<b>Analyze why a neutral wire is necessary in a single-phase supply system.</b> <b>Answer:</b> The neutral wire provides a return path for current, ensuring a complete circuit. It maintains voltage stability and safety by keeping the system grounded.	CO1

# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – SHORT QUESTIONS – SET D

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 30

SL.NO	QUESTIONS	CO'S
1.	<p><b>Draw the V-I Characteristics of ideal voltage source.</b></p> <p style="text-align: center;">(a) Symbol                      (b) Circuit                      (c) Characteristics</p>	CO1
2.	<p><b>Describe the process of calculating total resistance in a parallel circuit.</b></p> <p><b>Answer:</b>In a parallel circuit ,the reciprocal of the total resistance is equal to the sum of the reciprocals of the individual resistances.Mathematically, it can be expressed as <math>1/R_{total}=(1/R_1)+(1/R_2)+(1/R_3)+...</math></p>	CO1
3.	<p><b>Describe the procedure for solving a circuit using mesh current analysis.</b></p> <p><b>Answer:</b>To solveacircuitusingmeshcurrentanalysis,followthese steps:</p> <ol style="list-style-type: none"> <li>1. Identify the meshes (loops) in the circuit.</li> <li>2. Assign a clockwise or counterclockwise mesh current to each mesh.</li> <li>3. ApplyKirchhoff'sVoltageLawtoeachmeshtosetup equations.</li> <li>4. Solvetheequationsto find theunknown mesh currents.</li> </ol> <p>Use the mesh currents to find other quantities of interest, such as voltages or powers.</p>	CO1
4.	<p><b>State Kirchhoff's Voltage Law (KVL) and explain its application in a series circuit with an example.</b></p> <p><b>Answer:</b> KVL states that the algebraic sum of all voltages in a closed loop is zero. In a series circuit with a 10 V battery and resistors <math>2\ \Omega</math> and <math>3\ \Omega</math> KVL gives <math>10-2I-3I=0</math>, solving for I.</p>	CO1
5.	<p>A technician uses a multimeter to measure resistance but notices fluctuations. Suggest possible causes and remedies.</p> <p><b>Answer:</b> Causes: Loose connections, unstable probe contact, or a faulty multimeter. Remedies: Secure connections, ensure stable contact, and check or replace the multimeter's battery.</p>	CO1
6.	<p><b>Explain the concept of earthing and describe how plate earthing is implemented.</b></p> <p><b>Answer:</b> Earthing is connecting the metallic parts of electrical systems to the ground to prevent electric shock. Plate earthing uses a copper or GI plate buried in the ground with charcoal and salt around it, connected to the equipment through a wire.</p>	CO1
7.	<p><b>Compare the safety implications of fuse-based protection versus circuit breakers in household wiring.</b></p> <p><b>Answer:</b> Fuses are simple and cheap but require replacement after a fault, while circuit breakers are reusable and provide quicker, more reliable protection. Circuit breakers are safer for modern installations.</p>	CO1

8.	<p><b>Analyze why a neutral wire is necessary in a single-phase supply system.</b></p> <p><b>Answer:</b> The neutral wire provides a return path for current, ensuring a complete circuit. It maintains voltage stability and safety by keeping the system grounded.</p>	CO1
9.	<p><b>In a basic house wiring system, how would you ensure that a single fault does not disable the entire system?</b></p> <p><b>Answer:</b> Use a distribution board with separate circuits for lights, sockets, and appliances. Install circuit breakers for each circuit to isolate faults without affecting the entire system.</p>	CO1
10.	<p><b>A multimeter shows fluctuating readings while measuring voltage. What could be the possible reasons and how would you fix them?</b></p> <p><b>Answer:</b> Possible reasons: loose connections, unstable probes, or a faulty meter. Fix: Tighten connections, ensure probe stability, and check or replace the multimeter.</p>	CO1
11.	<p><b>Identify and describe two main types of wiring systems used in households.</b></p> <p><b>Answer:</b> Concealed wiring: Cables are hidden in walls, aesthetically pleasing and safe but costly. Surface wiring: Cables are visible, cheaper, and easier to install but less attractive.</p>	CO1
12.	<p><b>Explain the safety precautions required while performing staircase wiring.</b></p> <p><b>Answer:</b> Ensure power is off before starting, use insulated tools, double-check connections of two-way switches, and test the circuit thoroughly after installation.</p>	CO1
13.	<p><b>Compare the efficiency and durability of aluminum wiring with copper wiring.</b></p> <p><b>Answer:</b> Copper wiring is more efficient, durable, and has higher conductivity than aluminum wiring. However, aluminum is cheaper and lighter but prone to corrosion and higher resistance.</p>	CO1
14.	<p><b>How would you troubleshoot a ceiling fan that does not start but hums when powered on?</b></p> <p><b>Answer:</b> Likely causes: a faulty capacitor or jammed motor bearings. Fix: Replace the capacitor or lubricate the motor bearings.</p>	CO1
15.	<p><b>Explain the working of a two-way switch system used in staircase wiring.</b></p> <p><b>Answer:</b> Two-way switches control a single light from two locations. Each switch has three terminals: common, L1, and L2. The switches alternate connections to complete or break the circuit for the light.</p>	CO1



# Department of EEE

Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

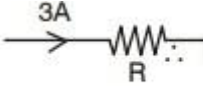
## 23ES1102- UNIT I – SHORT QUESTIONS – SET E

Year/Semester : I/II

Max Time : 30 Mins

Regulation : 2023

Max Marks : 15×2=30

SL.NO	QUESTIONS	CO'S
1.	<p><b>An electric heater draws 8A from 250V supply. What is its power rating? Also find the resistance of the heater element</b></p> <div style="display: flex; justify-content: space-around;"> <div> <p>Power rating, <math>P = V.I \times \cos \phi</math></p> <p><math>= 250 \times 8 \times 1</math></p> <p><b>P = 2000 watts</b></p> <p>(<math>\because \phi = 0, \cos \phi = 1</math>)</p> </div> <div> <p>Resistance (R) = <math>\frac{V}{I}</math></p> <p><math>R = \frac{250}{8}</math></p> <p><b>R = 31.25 <math>\Omega</math></b></p> </div> </div>	CO1
2.	<p><b>A resistor with a current of 3A through it converts 500 J of electrical energy into heat energy in 12sec. What is the voltage across the resistor?</b></p> <div style="display: flex; align-items: center; justify-content: center;"> <p>Energy = V.I.t.</p> <div style="text-align: center;">  <p><math>\therefore V = \frac{500}{3 \times 12}</math></p> </div> </div> <p><b>V = 13.88 volts</b></p>	CO1
3.	<p><b>A multimeter shows fluctuating readings while measuring voltage. What could be the possible reasons and how would you fix them?</b></p> <p><b>Answer:</b> Possible reasons: loose connections, unstable probes, or a faulty meter. Fix: Tighten connections, ensure probe stability, and check or replace the multimeter.</p>	CO1
4.	<p><b>Identify and describe two main types of wiring systems used in households.</b></p> <p><b>Answer:</b> Concealed wiring: Cables are hidden in walls, aesthetically pleasing and safe but costly. Surface wiring: Cables are visible, cheaper, and easier to install but less attractive.</p>	CO1
5.	<p><b>Explain the working of staircase wiring and its practical application.</b></p> <p><b>Answer:</b> Staircase wiring uses two-way switches to control a light from two locations. It is used in multi-level homes and staircases for convenience and safety.</p>	CO1
6.	<p><b>Compare the applications of ring earthing and pipe earthing.</b></p> <p><b>Answer:</b> Ring earthing is used in areas with a high water table for better conductivity, while pipe earthing is common in dry areas for economical and efficient grounding.</p>	CO1
7.	<p><b>Why is the live wire insulated, and what could happen if the insulation is damaged?</b></p> <p><b>Answer:</b> The live wire is insulated to prevent accidental contact that can cause electric shock. Damaged insulation can lead to short circuits, fires, or shocks.</p>	CO1
8.	<p><b>Propose a basic house wiring plan for a two-room house including switches, sockets, and lights.</b></p> <p><b>Answer:</b> Use separate circuits for lighting and sockets. Place switches near doors for convenience, install at least two sockets per room, and use parallel wiring for lights and appliances.</p>	CO1

9.	<p><b>A wire stripper damages the core of a wire during use. What could be the cause, and how can it be avoided?</b></p> <p><b>Answer:</b> Cause: Incorrect size of the stripper's blade or improper handling. Avoidance: Use a properly sized stripper and follow the tool's guidelines.</p>	CO1
10.	<p><b>Describe the process of calculating total resistance in a parallel circuit.</b></p> <p><b>Answer:</b> In a parallel circuit, the reciprocal of the total resistance is equal to the sum of the reciprocals of the individual resistances. Mathematically, it can be expressed as <math>1/R_{total} = (1/R_1) + (1/R_2) + (1/R_3) + \dots</math></p>	CO1
11.	<p><b>Describe the procedure for solving a circuit using mesh current analysis.</b></p> <p><b>Answer:</b> To solve a circuit using mesh current analysis, follow these steps:</p> <ol style="list-style-type: none"> <li>5. Identify the meshes (loops) in the circuit.</li> <li>6. Assign a clockwise or counterclockwise mesh current to each mesh.</li> <li>7. Apply Kirchhoff's Voltage Law to each mesh to set up equations.</li> <li>8. Solve the equations to find the unknown mesh currents.</li> </ol> <p>Use the mesh currents to find other quantities of interest, such as voltages or powers.</p>	CO1
12.	<p><b>State Kirchhoff's Voltage Law (KVL) and explain its application in a series circuit with an example.</b></p> <p><b>Answer:</b> KVL states that the algebraic sum of all voltages in a closed loop is zero. In a series circuit with a 10 V battery and resistors <math>2\ \Omega</math> and <math>3\ \Omega</math> KVL gives <math>10 - 2I - 3I = 0</math>, solving for I.</p>	CO1
13.	<p><b>Identify and describe two main types of wiring systems used in households.</b></p> <p><b>Answer:</b> Concealed wiring: Cables are hidden in walls, aesthetically pleasing and safe but costly. Surface wiring: Cables are visible, cheaper, and easier to install but less attractive.</p>	CO1
14.	<p><b>Explain the safety precautions required while performing staircase wiring.</b></p> <p><b>Answer:</b> Ensure power is off before starting, use insulated tools, double-check connections of two-way switches, and test the circuit thoroughly after installation.</p>	CO1
15.	<p><b>Compare the efficiency and durability of aluminum wiring with copper wiring.</b></p> <p><b>Answer:</b> Copper wiring is more efficient, durable, and has higher conductivity than aluminum wiring. However, aluminum is cheaper and lighter but prone to corrosion and higher resistance.</p>	CO1

# Department of EEE

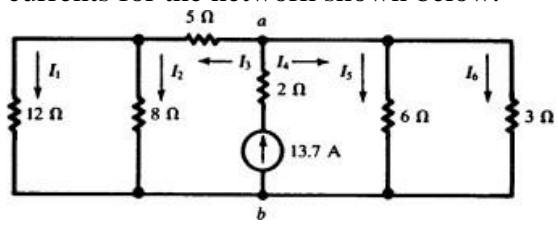
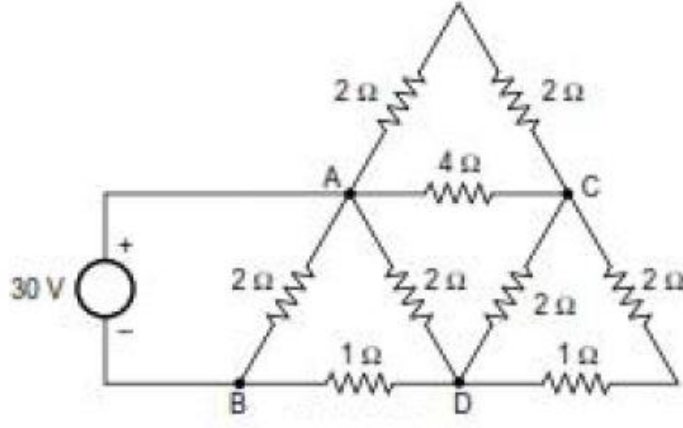
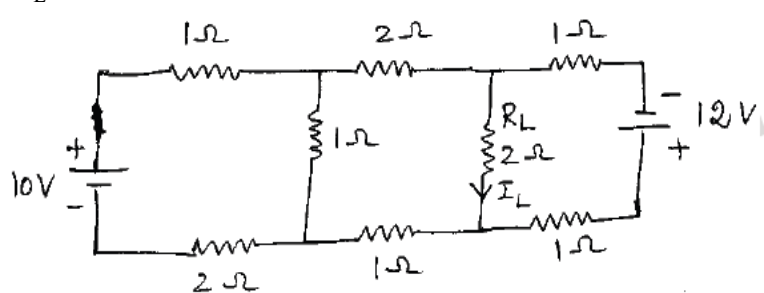
Course Code / Course Name: 23ES1102 /BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

## 23ES1102- UNIT I – ASSIGNMENT QUESTIONS

Year/Semester : I/II

Regulation : 2023

Max Marks : 50

SL.NO	QUESTIONS	CO'S
1.	<p>(a) Find all branch currents for the network shown below.</p>  <p>(b) Determine the current delivered by the source for the circuit shown</p> 	CO1
2.	<p>(a) Three loads A, B and C are connected in parallel to a 240V source. Load A takes 9.6 kW, Load B takes 60 A and Load C has a resistance of <math>4.8\Omega</math>. Calculate individual load resistances and equivalent resistance. Also find the total current and power delivered from source.</p> <p>(b) In the circuit shown in figure, find the different mesh currents, and the current through <math>R_L</math>.</p> 	CO1
3.	Explain the different types of wiring systems used in residential houses.	CO1
4.	List and explain safety measures that should be followed during electrical wiring installation in homes.	CO1
5.	Explain the concept of staircase wiring. How does it allow controlling a light from two different locations?	CO1

