

SNS COLLEGE OF TECHNOLOGY

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19EET101 / BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING I YEAR / I SEMESTER UNIT-I: ELECTRICAL CIRCUITS AND MEASUREMENTS

ELEMENTARY CONCEPTS OF ELECTRIC CIRCUITS





TOPIC OUTLINE









ELECTRICITY COME FROM?



- We buy it from Power Plants
- We can generate it ourselves
 - Diesel or gasoline generators
 - Generated in our Car



- Generated by home Solar or wind power
- We can get it from **Batteries**
- Sometimes we get it when we don't want it
 - Lightning



VOLTAGE (V)



- It is the push or pressure behind current flow through a circuit, and is measured in (V) volts.
- Quantitative expression of the potential difference in charge between two points in an electrical field.



CURRENT (I)



- Current refers to the quantity/volume of electrical flow. Measured in Amps (A)
- Flow of Electrons









RESISTANCE (R)



- Resistance to the flow of the current. Measured in Ohms Ω
- It opposes an Electric Current











Quantity	Symbol	Unit of Measurement	Unit Abbreviation
Current	1	Ampere ("Amp")	А
Voltage	E or V	Volt	٧
Resistance	R	Ohm	Ω





NATURE OF CURRENT



- Most power generated is Alternating Current (AC) power where the current and voltage varies Sinusoidal with time
- Direct Current (DC) power doesn't vary with time
- Most consumer products use both AC and DC





a. DC CURRENT



- DC current is used to power electronics
- DC current is easier to store (batteries)
- DC current is used in mobile applications
- Inverters convert DC to AC





b. AC CURRENT



- AC current is easier to distribute
 - Higher voltage and smaller current yields same power distributed
 - Transformers make it easy to change voltage levels so smaller wire can used
- AC is used for most machinery, lights and appliances
- Power supplies convert AC to DC







BASIC LAWS



- OHMS LAW
- KIRCHOFF'S LAW



OHMS LAW



 Ohm's Law explains the relationship between Voltage (V), Current (I) and Resistance (R)

Definition:

States that at constant temperature, the current through a conductor between two points is directly proportional to the potential difference across the two points

 $V = I \times R$







OHMS LAW TRIANGLE

• V (E) = I x R

• I = <u>V</u> R



• R = <u>V</u>







How do calculate?

- Battery voltage is 12V
- Current is Amp ?
- Resistance 2 Ohm







How to calculate?

- Voltage is 12V
- Current is 4 Amps
- Resistance Ohms ?



RESISTOR COLOR CHART





Resistor Color Code System







RECAP....



...THANK YOU

