

PHYSICS

4. CURRENT ELECTRICITY

1. Mark Questions:

1. What the direction of flow of electrons in a wire connected between two poles of a battery ?
2. What is meant by Drift velocity or Drift speed ?
3. What is lattice ?
5. What do you mean by electric current?
5. What is 'emf'?
6. What is resistance?
7. "The resistance increases with increasing temperatue". Which materials do not follow this law ?
8. Give reason for the filament in a bulb made of Tungsten.
9. State the junction law.
10. Define electric power?
11. What is the value of 1KWH in Joules?
12. Define Ohm's Law?
13. Why a bird does not get the shock when it stands on a high voltage wire?
14. If the resistance of your body is 100000Ω what would be the current that flows in your body when you touch the terminals of a 12V battery?
15. What is the use of a multimeter ?
16. What is the use of an ammeter ? How is it connect in a circuit ?
17. What is the use of a voltmeter ? How is it connect in a circuit ?
18. What are the characteristics of the fuge wire ?
19. What are the characteristics of the heating coil ?
20. Are the headlights of a car connected in series or parallel? Why?
21. Find the quantity of the current in the circuit?

KEY

1. When a wire connected between two poles of a battery, electrons flow from positive pole to negative pole
2. The constant average velocity or speed of electrons in a conductor is called as Drift velocity or Drift speed.
3. The arrangement of positive ions in a conductor is called lattice.
4. 1. The amount of electric charge flowing per second is called electric current.

$$i = \frac{Q}{t}$$

2. The S.I. Unit of electric current is Ampere.

$$\text{ampere} = \frac{\text{coloumb}}{\text{second}}$$

5. Work done by the chemical force to move unit positive charge from negative to positive terminal in a battery is called electro motive force.

$$E = \frac{W}{Q}$$

6. The property of the conductor to oppose the current flow through it is called resistance.
The S.I. Unit of resistance is ohm Ω

$$R = \frac{V}{i}$$

7. Silicon, Germanium, LED.
8. Because it has higher resistivity value and high melting point.
9. The algebraic sum of the currents at any junction of a circuit is zero. This law obeys law of conservation of charge.
10. Work done by electric field per second is called electric power.

$$P = \frac{W}{t} = \frac{QV}{t} = Vi$$

11. 1KWH = 36×10^5 Joules.
12. Ohm's Law:- At constant temperature, the potential difference of a conductor is directly proportional to the current passing through it.

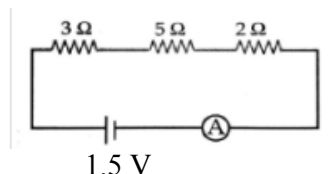
$$V = IR$$

13. 1. When the bird stands on a high voltage wire, there is no potential difference between the legs of the bird because it stands on a single wire.
2. So no current passes through the bird. Hence, it doesn't receive any electric shock.

14. Given : $V=12V$ $R= 1,00,000 \Omega$, $i=?$

$$\text{From Ohm's law, } I = \frac{V}{R} = \frac{12}{1,00,000} = 0.00012 \text{ Ampere}$$

15. 1. To measure the electric current in circuit or through a conductor.
2. To measure the resistance of the conductor.
3. To measure the potential difference between two ends of the conductor.
16. 1. To measure the electric current in circuit or through a conductor.
2. It is connected in series in a circuit.
17. 1. To measure the potential difference between any two points of a circuit.
2. It is connected in parallel in a circuit.
18. A thin wire of low melting point.
19. High resistance and high melting point.
20. Head lights of the car are connected in parallel because if one of the lights in the parallel combination fails, the other head light keeps working.
21. Given $V=1.5V$. $R=3+5+2=10\Omega$
Current, $I=?$



$$I = \frac{V}{R} = \frac{1.5}{10} = 0.15 \text{ Amp}$$