

PHYSICS-ELECTRICITY - STD-X

PERIODIC TEST : I

1. Name the scientist who gave the law of electrostatic attraction and repulsion?
2. What is the charge of an electron?
3. Name four devices that work on electricity?
4. From where do the electrons acquire power to move in an electric circuit?
5. How many kinds of charges exist in nature? Name them.
6. What is the literal meaning of the word current?
7. Which type of charge does an electron have?
8. When do you say that an atom is positively charged?
9. When do you say that an atom is negatively charged?
10. What is dynamic electricity or current electricity?
11. What kind of current is supplied by a cell?
12. What are conductors, insulators and semiconductors?
13. Human body is a conductor. How?
14. How is electric current expressed?
15. Why is a voltmeter connected in parallel in a circuit?
16. Define electric potential energy and give its unit?
17. What is the common name for electric potential?
18. Is potential difference a scalar or vector quantity?
19. What makes the charge to flow in a wire?
20. How does the cell generate the potential difference across its terminals?
21. Why does a potential difference exist across the terminal of a cell even when no current is drawn from it?
22. How much work is done when one coulomb of charge moves against a potential difference of one volt?
23. Define conventional current direction in terms of electric potential?
24. What is the relative potential of the two terminals of a voltage source?
25. What are the materials which offer low resistance to electric current called?
26. What is the main cause of loss of electrical energy during electricity transmission?
27. How is electrical energy lost during electricity transmission?
28. If the resistance of a wire is doubled, what effect it will have on its current?
29. What is a rheostat?
30. A long wire is cut into two pieces. The ratio of their length is 3:1. What is the ratio of their resistances?

31. How does the resistance of a conductor change with temperature?
32. Let the resistance of an electrical component remain constant while the potential difference across the two ends of the component decrease to half of its former value. What change will occur in the current flowing?
33. What affects the resistivity of a material?
34. Why are alloys used in making electrical heating devices?
35. How can one change the resistivity of materials?
36. What is a steady current?
37. Draw a simple circuit diagram and identify the direction of flow of electrons and the direction of flow of current.
38. What is emf?
39. What is the cause of electrical resistance in conductors?
40. A piece of wire is redrawn by pulling it until its length is doubled. Compare the new resistance with the original value.
41. Why is tungsten used almost exclusively for making filament in incandescent lamps?
42. What is a super conductor?
43. What is a critical or transition temperature?
44. What is super conductivity?
45. What happens to the value of current when a number of resistors are connected in series in a circuit?
46. How is the voltage drop across each resistance of series combination related to the corresponding resistance?

PROBLEM SOLVING:

1. Calculate the amount of charge that passes a given point of wire in a minute if $5\mu\text{A}$ current is flowing through the wire.
2. 50J of work is required for moving a charge of 8C in an electric field from one point to the other. Calculate the potential difference between these points.
3. How much work is done in moving an electron between two points at potential difference of 30V ?
4. How much work is done in moving a charge of $5\mu\text{C}$ across two points having a potential difference 25V .
5. How much energy is given to each coulomb of charge passing through a 10V battery?

6. How much current will an electric heater having internal resistance of 180Ω draw when connected to 220V power supply?
7. When a 12V battery is connected across an unknown resistor, there is a current of 4.5mA in the circuit. Find the value of the resistance in the resistor?
8. A current of 0.7A is drawn by a filament of an electric bulb for 5 minutes. Find the amount of electric charge that flows through the filament?
9. How much current will an electric heater coil draw from a 220V source if the resistance of the heater coil is 900Ω .
10. An aluminium wire of length 2m has a resistance of 10Ω . It is stretched so that its length becomes 4m and area of cross section is halved. Calculate the new resistance of the wire.
11. Calculate the resistivity of iron if an iron wire of length 1m and area of cross section 10mm^2
12. Calculate the resistance of 1km long nichrome wire of diameter 5mm .
 $\rho = 100 \times 10^{-6}\Omega\text{m}$.
13. A 2Ω resistance wire is doubled. Calculate the new resistance.
14. A piece of wire is redrawn by pulling it until its length is doubled. Compare the new resistance with the original value.
15. A wire has a diameter 0.5cm and resistivity $2.8 \times 10^{-8}\Omega\text{m}$. How much of this wire is required to make a 1.5Ω coil?
16. The net resistance of a series combination of resistances 5Ω and $X\Omega$ is 15Ω . Find the value of X .
17. In a circuit, three resistances 1Ω , 2Ω and 3Ω are connected in series across a 12V battery. Calculate the current flowing in the circuit and the voltage drop across each resistance
18. A battery of 9V is connected in series with resistors of 2Ω , 3Ω , 4Ω , 5Ω and 8Ω respectively. How much current will flow through the 8Ω resistor?
19. In an electric resistive circuit, having two resistances connected in series across a battery of 220V , voltage drop across one resistance is 150V . Calculate the voltage drop across another resistance.
20. A circuit having two electric bulbs of resistances 20Ω and 25Ω is connected in series across a battery. If a current of 2A is flowing in the circuit, find the voltage of the battery?