



BAL BHARATI PUBLIC SCHOOL, PITAM PURA

Assignment for Class X(2013-14)

ELECTRICITY

1. What is the SI unit of electric charge? How many electrons make one coulomb of charge?
2. Define the SI unit of current.
3. Which instrument is used to measure the current flowing in a circuit?
How is it connected in the circuit and why?
4. In which smaller units can we measure the small amount of current flowing in the circuit?
How are they related to the SI unit of current?
5. What makes the electric charge to flow?
6. State the energy conversion taking place in
(a) Electric cell (b) Electric torch
7. Define the electric potential difference between two points in an electric circuit carrying some current.
8. Define the SI unit of Electric potential.
9. Which instrument is used to measure the electric potential difference between two points in a circuit? How is it connected in the circuit and why?
10. State the law relating the potential difference across a conductor and the current through it?
11. The $V-I$ graph is a straight line that passes through the origin of the graph.
What do you conclude from this observation?
12. Define resistance of a material. Define its SI unit.
13. Which component is used to regulate current without changing the voltage source

in an electric circuit?

14. Fill in the blanks

(a) A component of a given size that offers a low resistance is a _____.

(b) A conductor having some appreciable resistance is called a _____.

(c) A component of identical size that offers a higher resistance is a _____.

(d) An _____ of the same size offers even higher resistance.

15. Discuss the activity to show that resistance of a conductor depends on its length and area of cross section.

16. What is the electrical resistivity of the material of the conductor? What is its SI unit?

17. Which common factor affects both resistance as well as resistivity and how?

18. Alloys are commonly used in electrical heating devices. Why?

19. When a number of resistors are connected in series in a circuit what would be their equivalent resistance and why?

20. When a number of resistors are connected in parallel in a circuit what would be their equivalent resistance and why?

21. It is impracticable to connect an electric bulb and an electric heater in series. Why?

22. What is heating effect of electric current.

Name the various devices in which this effect is utilized.

23. State the Joule's law of heating. Derive the expression for the same.

24. Which effect of current is responsible for the glow of an electric bulb? Explain.

25. The bulbs are usually filled with few gases. Name those gases. Also discuss the cause for the same.

26. Which metal is used as the filament of an electric bulb and why?

27. How does a fuse work in the electric circuit?

28. Which materials are preferred for making a fuse wire and why?
29. Give the ratings of various fuses used in the domestic circuit.
30. Define the commercial unit of energy. Relate it to joules.
31. Define resistivity of a conductor. What is its S.I unit?
32. Two resistors are connected in series. What happens to the net resistance-will it increase or decrease?
33. Two resistances of 5Ω , 5Ω are connected in parallel. The potential difference across the combination is $5V$. Calculate the current across each resistor.
34. A copper wire has a resistance of 0.5Ω . Another copper wire is of the same mass as the first one but double in length. Find the resistance of the second wire.
35. A piece of wire having resistance R is cut into four equal parts.
- 1) How will the resistance of each part compare with the original resistance?
 - 2) If the four parts are connected in parallel, what will be the resistance of the combination?
36. A wire of resistance 25Ω is bent in the form of a circle. What is the resistance between two points at the end of any diameter of the circle?
37. When a potential difference of $20V$ is applied across a given resistor, it draws a current of $3A$. If $30V$ is applied across the same resistor, what will be the current?
38. An electric iron draws a current of $0.5A$ when the voltage is $200V$. Calculate the amount of electric charge flowing through it in an hour.
39. Express ohm's law by a mathematical formula as well as a graph line. How can one obtain the value of resistance from the same?
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40. What are the characteristics of a good fuse wire?
41. In an experiment, the current flowing through a resistor and the potential difference across it are measured. Find the value of resistance from the table

I(A) 1.0 1.5 2.0 2.5 3.0

V(V) 4.0 6.0 8.0 10.0 12.0

42 A cylinder of a material is 10 cm long and has a c-sec of 2cm^2 . If its resistance along the length be 20 ohms, calculate its resistivity.

43 In which of the cases is more electrical energy consumed per hour;

a) a current of 1A is passed through a resistance of 300 ohm.

b) a current of 2A is passed through a resistance of 100 ohm.

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