

Board – CBSE

Class – 10th

Topic – Electricity

- Explain the following:
 - Why is the tungsten used almost exclusively for filament of electric lamps?
 - Why are the conductors of electric heating devices, such as bread-toasters and electric irons, made of an alloy rather than a pure metal?
 - Why is the series arrangement not used for domestic circuits?
 - How does the resistance of wire vary with its area of cross-section?
 - Why are copper and aluminum wires usually employed for electric transmission?
- The value of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below:

I (amperes)	1.5	1.0	2.0	3.0	4.0
V (volts)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of that resistor.

- How can three resistors of resistance 2Ω , 3Ω and 6Ω be connected to give a total resistance of (a) 4Ω (b) 9Ω ?
- What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series?
- (a) Define electrical energy with S.I. unit?
(b) A house hold uses the following electric appliance;
 - Refrigerator of rating 400w for ten hour each day.
 - Two electric fans of rating 80w each for twelve hours each day.
 - Six electric tubes of rating 18w each for 6hours each day.

Calculate the electricity bill of the household for the month of June if the cost per unit of electric energy is Rs. 3.00.
- Two wires A and B are of equal length, different cross sectional areas and made of same metal.
 - (i) Name the property which is same for both the wires,
(ii) Name the property which is different for both the wires.
 - If the resistance of wire A is four times the resistance of wire B, calculate
 - the ratio of the cross sectional areas of the wires and
 - The ratio of the radii of the wire.

7. A household uses the following electric appliances
 - (i) Refrigerator of rating 4 for ten hours each thy.
 - (ii) Two electric fans of rating 8 each for twelve hours each day.
 - (iii) Six electric tubes of rating 18 W each for 6 hours each day.Calculate the electricity bill of the household for the month of June if the cost per unit of electric energy is Rs. 3.00.
8. A wire of length L and resistance R is stretched so that its length its doubled. How will its (a) Resistance change (b) Resistively change?
9. Compare the power used in the $2\ \Omega$ resistor in each of the following circuits:
 - (i) A 6 volt battery in series with $1\ \Omega$ and $2\ \Omega$ resistors and,
 - (ii) A 4 V battery in parallel with $12\ \Omega$ and Ω resistors.
10. Show how you would connect three resistors, each of resistance $6\ \Omega$ so that the combination has resistance of (i) $9\ \Omega$ (ii) $4\ \Omega$.
11. A copper wire has diameter 0.5 mm and resistivity of $1.6 \times 10^{-8}\ \text{m}$. what will be the length of this wire to make its resistance 10? How much does the resistance change if the diameter is doubled?
12. An electric lamp of $100\ \Omega$, a toaster of resistance $50\ \Omega$ and a water filter of resistance $500\ \Omega$ are connected in parallel to a 220 V source. What is the resistance of an electric iron connected to the same source that takes as much current as all three appliances, and what is the current through it?
13. Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source? Why?
14. On what factor does the resistance of a conductor depend?
15. Define 1 volt. Express it in terms of SI unit of work and charge calculate the amount of energy consumed in carrying a charge of 1 coulomb through a battery of 3 V.