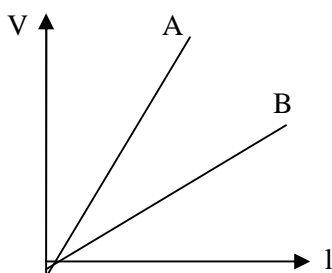
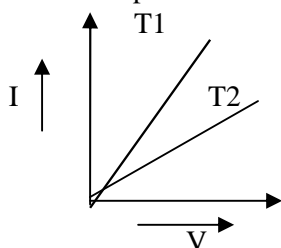


Class : XII Physics Assignment 2 : Current Electricity

1. What are the factors on which the resistance of a conductor depends? give the corresponding relation.
2. Name two physical conditions on which the resistivity of a metal depends.
3. Define electrical resistivity of a material.
4. How resistivity of a material depends on its conductivity?
5. Two wires of equal length, one of copper and the other of manganin, have the resistance. Which wire is thicker?
6. Define mobility of charge carriers. Give its S.I. unit.
7. A carbon resistor of $47 \text{ k } \Omega$ is to be marked with rings of different colours for its identification. write the sequence of the colours.
8. A copper wire of resistivity ρ is stretched to reduce its diameter to half of its previous value. What will be its resistivity?
9. The variation of potential difference with length in case of two potentiometers A and B is given below. Which of the two is more sensitive and why?



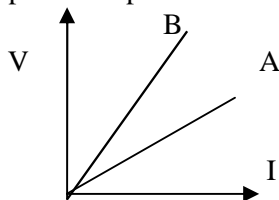
10. Give reason why the electrical conductance of an electrolyte is less than that of metals.
11. If the length of a wire conductor is doubled by stretching it, keeping the potential difference across it constant, by what factor does the drift speed of electrons change?
12. State the condition in which terminal voltage across a stationary cell is equal to its e.m.f.
13. If temperature of a good conductor increases, how does the relaxation time of electrons in the conductor change?
14. You are asked to measure emf of a cell. Which instrument will you use? A high resistance voltmeter or potentiometer and why?
15. Two 120 V light bulbs, one of 25 W and other of 200 W are connected in series. One bulb burnt out almost instantaneously. Which one was burnt out and why?
16. V.I. graph for a metallic wire of two different temperatures T_1 & T_2 is shown in the figure. Which of the two temperatures is higher and why?



17. State Joule's Law of Heating.
18. Draw V-I graph for ohmic and non-ohmic materials. Give one example of each.

2/3 marks questions

19. VI graph for parallel and series combination of two metallic resistors are shown in the fig. which graph shows parallel combination? Justify your answer.



20. Two wires A and B of the same material and having same lengths have their cross-sectional areas in the ratio 1:4. What would be the ratio of heat produced in these wires when same voltage is applied across each?
21. Using Kirchhoff's Laws, calculate the value of the electric currents, I_1 , I_2 and I_3 in the given electrical network.

Ans: $I_1 = 18/31 \text{ A}$, $I_2 = 66 / 31 \text{ A}$,

$I_3 = 48 / 31 \text{ A}$

22. Two bulbs are marked 60 W, 220 V and 100 W, 220 V. these are connected in parallel to 220 V mains. Which one out of the two will glow brighter? Why?

23. In the potentiometer circuit shown, the balance point is at X. state with reason, where the balance point will be shifted when:-

- (i) Resistance R is increased, keeping all parameters unchanged.
- (ii) Resistance S is increased, keeping R constt.
- (iii) Cell P is replaced by another cell whose e.m.f is lower than that of cell Q.

24. Deduce Ohm's Law using the concept of drift velocity.

25. In a meter bridge, the balance point is found to be at 39.5 cm from the end A, when the resistor AY is of 12.5Ω (i) Determine the resistance of X (ii) Why are the connections between resistors in a meter-bridge made of thick copper strips? (iii) Determine the balance point of the bridge above if XX & Y are interchanged. (iv) What happens if the galvanometer and cell are interchanged at the balance point of the bridge? Would the galvanometer show any current?

26. With the help of a ckt-diag, explain how you would compare the e.m.f of the two primary cells using a potentiometer. State the formula used.

27. What is Wheatstone bridge? Deduce the condition for which Wheatstone bridge is balanced.

In the following ckt, a meter bridge is shown in its balanced state. The meter bridge wire has a resistance of $1 \Omega/\text{cm}$. Calculate the value of the unknown resistance X and the current drawn from the battery of negligible internal resistance.

Ans: $X = 2 \Omega$, $I =$

1.26 A