

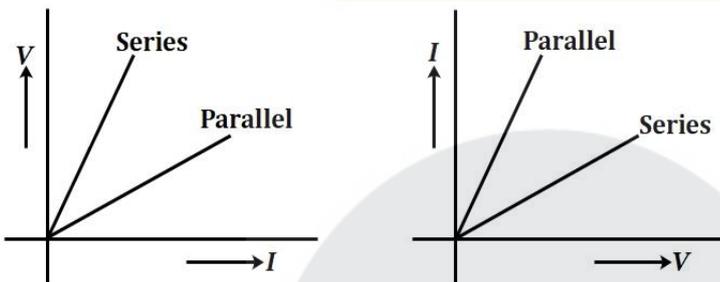
12 – Electricity

1 Mark

1. Why is a series arrangement not used for connecting domestic electrical appliances in a circuit? [CBSE,2008]
2. Out of 60 W and 40 W lamps, which one has a higher electrical resistance when in use? [CBSE,2008]
3. Draw a schematic diagram of an electric circuit consisting of a battery of two cells each of 1.5 V , $5\ \Omega$, $10\ \Omega$ and $15\ \Omega$ resistors and a plug key, all connected in series. [CBSE,2009]

2 Mark

4. What is an electric circuit? Distinguish between an open and a closed circuit. [CBSE,2009]
5. Calculate the resistance of an electric bulb which allows a 10 A current when connected to a 220 V power source. [CBSE,2009]
6. Two students perform the experiments on series and parallel combinations of two given resistors R_1 and R_2 and plot the following $V - I$ graphs



Which of the graphs is (are) correctly labelled in terms of the words 'series' and 'parallel' Justify your answer. Justify your answer. [Sample paper 2008]

3 Marks

7. Two lamps, one rated 60 W at 220 V and the other 40 W at 220 V , are connected in parallel to the electric supply at 220 V . [CBSE,2008]
 - A. Draw a circuit diagram to show the connections
 - B. Calculate the current drawn from the electric supply.
 - C. Calculate the total energy consumed by the two lamps together when they operate for one hour.
8.
 - A. Distinguish between the terms 'overloading' and 'short-circuiting' as used in domestic circuits.
 - B. Why are the coils of electric toasters made of an alloy rather than a pure metal? [CBSE, 2008]
9.
 - A. Define the term 'volt'.
 - B. State the relation between work, charge and potential difference for an electric circuit. Calculate the potential difference between the two terminals of a battery if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of the battery to the other. [CBSE, 2009]

5 Mark

10. Derive the expression for the heat produced due to a current ' I ' flowing for a time interval ' t ' through a resistor ' R ' having a potential difference ' V ' across its ends. With which name is the relation known? How much heat will an instrument of 12 W produce in one minute if it is connected to a battery of 12 V ?

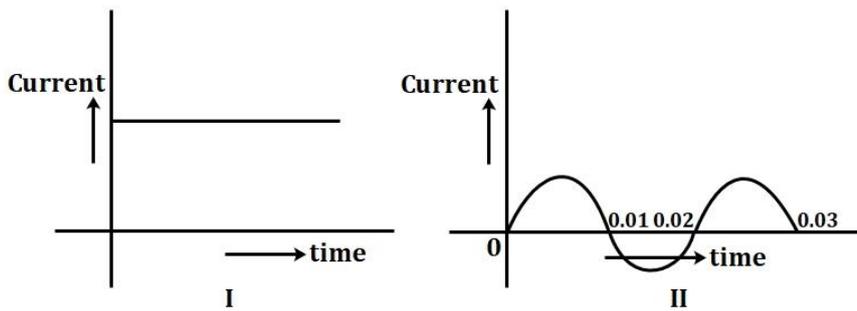
OR

Explain with the help of a labelled circuit diagram how you will find the resistance of a combination of three resistors, of resistance R_1 , R_2 and R_3 , joined in parallel. Also mention how you will connect the ammeter and the voltmeter in the circuit when measuring the current in the circuit and the potential difference across one of the three resistors of the combination. [CBSE, 2010]

11. In a household electric circuit different appliances are connected in parallel to one another. Give two reasons. An electrician puts a fuse of rating $5A$ in that part of domestic electrical circuit in which an electrical heater of rating $1.5 kW$, $220 V$ is operating. What is likely to happen in this case and why? What is likely to happen in this case and why? What change, if any, needs to be made? [Sample Paper 2008]

OR

12. You are given following current-time graphs from two different sources :



- I. Name the type of current in two cases.
- II. Identify any one source for each type of these currents.
- III. What is the frequency of current in case II in India?
- IV. Use above graphs to write two difference between the current in two cases.

[Sample Paper 2008]