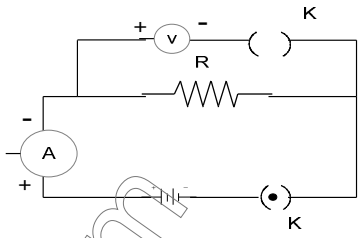
CBSE TEST PAPER-02

CLASS - X Science (Electricity and its Effects)

1. For the circuit arrangement shown below, a student would observe. [1]
   (a) Some reading in both ammeter and voltmeter.
   (b) No reading in either the ammeter or the voltmeter.
   (c) Some reading in the ammeter but no reading in the voltmeter.
   (d) Some reading in the voltmeter but no reading in the ammeter.



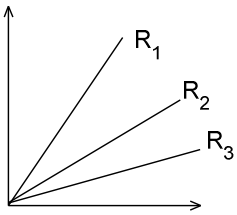
2. A wire of resistance R is cut into five equal pieces. These pieces are connected in parallel and the equivalent resistances of the combination are R'. Then the ration $\frac{R}{R'}$ is [1]

   $(a)\frac{1}{5}$ (b) 5

   (c) $\frac{1}{25}$ (d) 25

3. The resistance of the conductor is R. If its length is doubled, then its new resistance will be [1]
   (a) R (b) 2R
   (c) 4R (d) 8R

4. A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively as shown in the figure. Which of the following is live? [1]



   (a) $R_3 > R_2 > R_1$
   (b) $R_2 > R_3 > R_1$
   (c) $R_1 > R_2 > R_3$
   (d) $R_1 = R_2 = R_3$

5. The nature of the graph between potential difference and the electric current flowing through a conductor is [1]
   (a)parabolic (b) circle
   (c) straight line (d) hyperbolic

6. Define the term "volt"? [2]

7. Why does the connecting rod of an electric heater not glow while the heating element does? [2]

8. n resistors each of resistance R are first connected in series and then in parallel. [2]

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What is the ratio of the total effective resistance of the circuit is series combination and parallel combination?

9. Draw a schematic diagram of a circuit consisting of 3V battery, 5 ohm, 3 Ω and 1 Ω resistor, an ammeter and a plug key, all connected in series. [2]

10. The length of different metallic wires but of same area of cross section and made of the same material are given below [3]

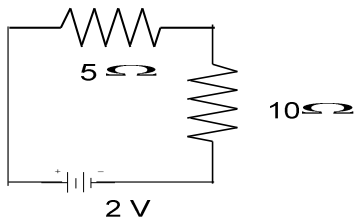
Wire	Length
A	1m
B	1.5m
C	2.0m

(i) Out of these two wires which wire has higher resistance.
(ii) Which wire has higher electrical Resistivity? Justify your answer.

11. Two resistors of resistances R and 2R are connected in series is an electrical circuit? Calculate the ratio of the electric power consumed by R and 2R? [3]

12. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then in parallel in an electric circuit. the ratio of heat produced in series and parallel combinations would be [3]
(a) 1:2 (b) 2:1 (c) 1:4 (d) 4:1

13. Calculate [3]
(i) effective resistance
(ii) current
(iii) Potential difference across 10Ω resistor of a circuit shown in the figure.



14. (a) State ohm's law? [5]
(b) The value of (I) current following through a conductor for the corresponding valves of (V) potential difference are given below

I (Ampere)	0.5	1.0	1.5	2.5	3
V(Volt)	1	2	3	4.5	5

Plot a graph between V and I and also calculate resistance.

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