

Octahedral classes, kharadi
2nd floor, yashwant plaza, near bank of India,

Class 10 - Science

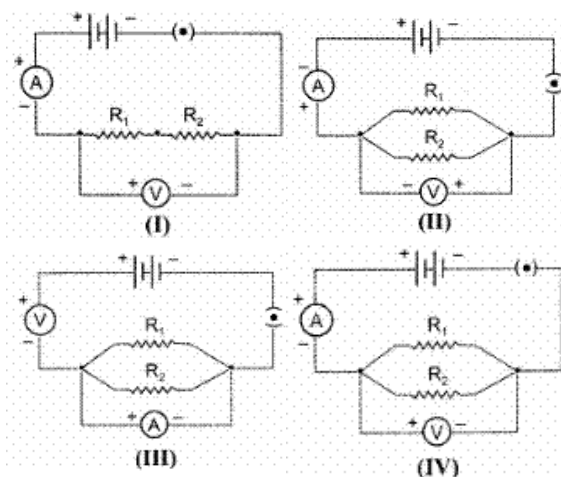
Electricity

Maximum Marks: 30

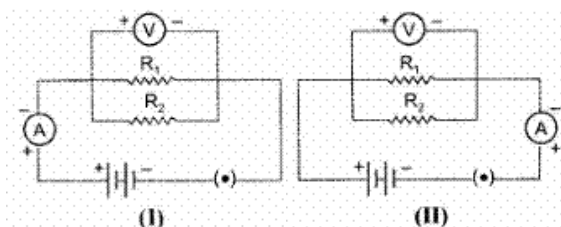
Time Allowed: 1 hour and 30 minutes

Section A

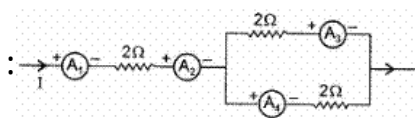
1. Following circuits were drawn by four students, to determine the equivalent resistance of two resistors when connected in parallel. The correct circuit is drawn by the student. 1



- a) III b) II
 c) I d) IV
2. In the experiment on finding the equivalent resistance of two resistors, connected in parallel, two students connected the ammeter in two different ways as shown in given circuits I and II. The ammeter has been correctly connected in 1



- a) both the circuits (I) and (II) b) circuit (II) only
 c) circuit (I) only d) neither of the two circuits.
3. The ammeters showing equal current in the following circuit are 1



a) A_3 and A_4

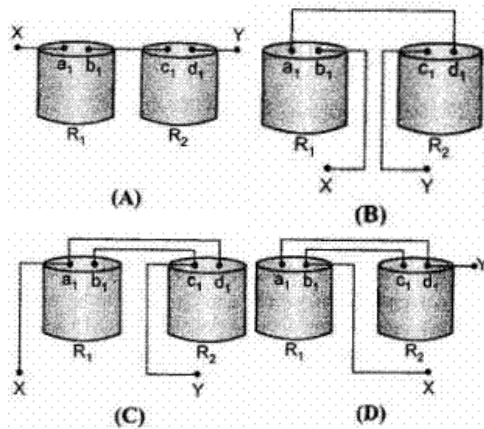
b) A_1 and A_2

c) A_2 , A_3 and A_4

d) A_1 , A_2 , A_3 and A_4

4. A student does the experiment on studying the dependence of current (I) 1
 flowing on the applied potential difference (V) by connecting the points X and Y of his circuit to the terminals marked A : (a_1, d_1) B : (b_1, c_1) C : (a_1, c_1) D : (b_1, d_1)

For the two resistors combination shown below :



The average values of the ratio $\frac{V}{I}$ would then be equal to each other for each of the pairs

a) (A, D) and (B, C)

b) (A, B) and (C, D)

c) (A, C) and (B, D)

d) (A, B) and (A, C)

5. A student has correctly set-up the circuit for finding the equivalent resistance 1
 of two resistors in parallel. Each terminal of each of the two resistors, in this circuit, would be connected to

a) at least four more

b) at least two more

components in the circuit

components in the circuit

c) only one more component in the circuit

d) at least three more components in the circuit

6. Which of the following terms does not represent electrical power in the 1
 circuit?

(a) I^2R ;

(b) IR^2 ;

(c) VI

(d) $\frac{V^2}{R}$?

7. What constitutes the current ? 1

8. You have two metallic wires of resistances 6Ω and 3Ω . How will you connect 1

these wires to get an effective resistance of 2Ω ?

9. Find the minimum resistance that can be made using five resistors each of $\frac{1}{5}\Omega$. 1

10. Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source? Why? 3

11. The values of the current I flowing in a given resistor for corresponding values of potential difference V across the resistor are given below: 3

I (amperes)	0.5	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.

12. How will you connect three resistors, each of resistance 6Ω , so that the combination has a resistance of (i) 9Ω , (ii) 4Ω ? 3

13. A potential difference of 220 V is applied across a resistance of 440Ω in an electric ion. 3

(i) Find the current.

(ii) Heat energy produced is 30 s .

14. 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

15. Draw a circuit diagram of an electric circuit containing of two resistors ammeter, a resistor of 2Ω in series with a combination of two resistors (4Ω each) in parallel and a voltmeter across the parallel combination. Will the potential difference across the 2Ω resistors be the same as that across the parallel combination of 4Ω resistors? Give reason. 3

16. Compare the power used in the 2Ω resistor in each of the following circuits: 3

(i) a 6 V battery in series with 1Ω and 2Ω resistors, and

(ii) a 4 V battery in parallel with 12Ω and 2Ω resistors.