BRAIN INTERNATIONAL SCHOOL

SUBJECT: PHYSICS ASSIGNMENT **CLASS X** **OCT, 24-25**

1. Work of 14 J is done to move 2 C charge between two points on a conducting wire. What is the potential difference between the two points?

   (a) 28 V

   (b) 14 V

   (c) 7 V

   (d) 3.5 V

2. Electrical resistivity of a given metallic wire depends upon

   (a) Its length

   (b) Its thickness

   (c) Its shape

   (d) Nature of the material

3. Two devices are connected between two points, say A and B, in parallel. The physical quantity that will remain the same between the two points is

   (a) Current

   (b) Voltage

   (c) Resistance

   (d) None of these

4. Unit of electric power may also be expressed as

   (a) Volt-ampere

   (b) Kilowatt-hour

   (c) Watt second

   (d) Joule second

5. In an electrical circuit, two resistors of 2 Ω and 4 Ω, respectively, are connected in series to a 6 V battery. The heat dissipated by the 4 Ω resistor in 5 s will be

   (a) 5 J

   (b) 10 J

   (c) 20 J

   (d) 30 J

ASSERTION AND REASON QUESTIONS

Directions: In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both Assertion and Reason are false.

6. **Assertion (A):** If a graph is plotted between the potential difference and the current flowing, the graph is a straight line passing through the origin.

   Reason (R): The current is directly proportional to the potential difference.

7. **Assertion (A):** Longer wires have greater resistance and the smaller wires have lesser resistance.

   Reason (R): Resistance is inversely proportional to the length of the wire.

8. **Assertion (A):** Alloys are commonly used in electrical heating devices, like electrical iron, toasters etc.

   Reason (R): Alloys do not oxidise (burn) readily at high temperatures.

9. **Assertion (A**): When the resistances are connected end-to-end consecutively, they are said to be in series.

   Reason (R): In case the total resistance is to be increased, then the individual resistances are connected in series.

10. **Assertion (A):** When the resistances are connected between the same two points, they are said to be connected in parallel.

    Reason (R): In case the total resistance is to be decreased, then the individual resistances are connected in parallel.

11. **Assertion (A):** The resistivity of a substance does not depend on the nature of the substance and temperature.

    Reason (R): The resistivity of a substance is a characteristic property of the material.

12. **Assertion (A):** Current is the rate of flow of charge.

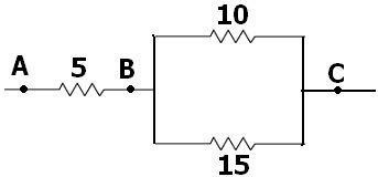
    Reason (R): Electric current will not flow between two charged bodies when connected, if they are at same potential.

13. **Assertion (A)**: When a wire is stretched to three times of its length, its resistance becomes 9 times.

    Reason (R): Resistance is directly proportional to length of wire.

14. A cylindrical conductor of length l and uniform area of cross-section A has resistance R. Another conductor of length 2l and resistance R of the same material has area of cross section
    (a) A/2
    (b) 3A/2
    (c) 2A
    (d) 3A
15. The instrument used for measuring electric current is:
    (a) Ammeter
    (b) Galvanometer
    (c) Voltmeter
    (d) Potentiometer

16. Three resistors are connected as shown in the diagram:



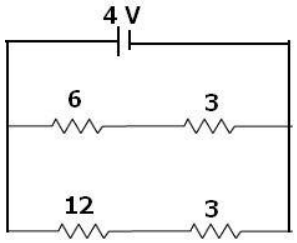
Through the resistor 5 Ω ohm, a current of 1A is flowing.

(i) What is the current through the other two resistors?

(ii) What is the p.d. across AB and across AC?

(iii) What is the total resistance?

17. For the circuit shown in the diagram below:



What is the value of: (i) current through 6 Ω resistor? (ii) p.d. across 12 Ω resistor?

18. With the help of a diagram, derive the formula for the equivalent resistance of three resistances connected in parallel.

19. What is electrical resistivity of a material? What is its unit? Describe an experimentally to study the factors on which the resistance of conducting wire depends?

20. Resistances of 4Ω and 12 Ω are connected in parallel across a 9 V battery. Determine (a) the equivalent circuit resistance, (b) the supply current, and (c) the current in each resistor.

21. There is wire of length I and cross section A. Which of the given have least resistance?

(a) Length doubled Area halved

(b) Length tripled, Area doubled

(c) Length halved, Area doubled

(d) The original wire