Roll No :
Date : 2025-12-24

School : ACHIEVERS
FOUNDATION
Assessment : Electricity MCQ
Subject : Physics
Class : CBSE -X

Time : 00:00
Marks: 90

1 A wire of length l, made of material resistivity r is cut into two equal parts. The resistivity of the two parts are equal to,   **1**
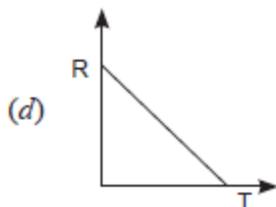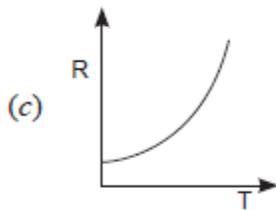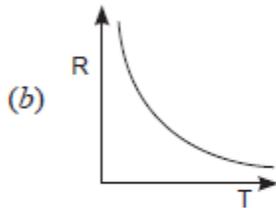
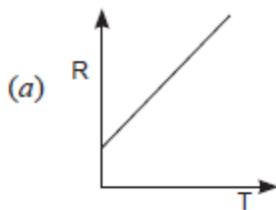(a) ρ

(b) $\dfrac{\rho}{2}$

(c) 2ρ

(d) 4ρ

Ans :
(a) Resistivity of the material depends only on the nature of material not dimensions.

2 The temperature of a conductor is increased. The graph best showing the variation of its resistance is   **1**

(a)

(b)

(c)

(d)

Ans :
(a) Resistance is directly proportional to temperature of the conductor.

3 A battery of 10 volt carries 20,000 C of charge through a resistance of
   20 Ω. The work done in 10 seconds is
   (a) 2×10^3 joule (b) 2×10^5 joule
   (c) 2×10^4 joule (d) 2×10^2 joule

1
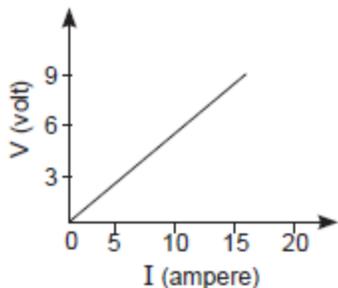
Ans :(b) W = qV = 20000 × 10 = 2,00, 000 = 2×10^5 J

4 A boy records that 4000 joule of work is required to transfer 10 coulomb
  of charge between two points of a resistor of 50 Ω. The current passing
  through it is
  (a) 2 A (b) 4 A
  (c) 8 A (d) 16 A

1

Ans :
(c) Work done in transferring the charge W = qV = qIR ..... (V = IR)

$$\Rightarrow \quad I = \frac{W}{qR} = \frac{4000}{10 \times 50} = 8A$$

5   The resistance whose V – I graph is given below is

1

(a) $\dfrac{5}{3}$ Ω   (b) $\dfrac{3}{5}$ Ω

(c) $\dfrac{5}{2}$ Ω   (d) $\dfrac{2}{5}$ Ω

Ans :(b) Resistance = slope line of V-I graph = $\dfrac{9-0}{15-0} = \dfrac{9}{15} = \dfrac{3}{5}$ Ω.

6   To get 2 Ω resistance using only 6 Ω resistors, the number of them
    required is
    (a) 2 (b) 3
    (c) 4 (d) 6

1

Ans :
(b) Three resistors of 2 Ω is required to get 6 Ω because resultant is more
than individual so they all must be connected in series.

7 Two wires of same length and area made of two materials of resistivity ρ_1 and ρ_2 are connected in series to a source of potential V. The equivalent resistivity for the same area is

   (a) $\rho_1 + \rho_2$ (b) $\dfrac{\rho_1 \rho_2}{\rho_1 + \rho_2}$

   (c) $\dfrac{(\rho_1 + \rho_2)}{\rho_1 \rho_2}$ (d) $\left(\dfrac{|\rho_1 + \rho_2|}{2}\right)$

Ans : (c) For same length and area of cross-section $R \propto \rho$.

        For series combination, equivalent resistance is

$$R_s = R_1 + R_2$$
$$\Rightarrow \quad P_s = \rho_1 + \rho_2.$$

8   The least resistance obtained by using 2 Ω, 4 Ω, 1 Ω and 100 Ω is

   (a) < 100 Ω (b) < 4 Ω

   (c) < 1 Ω (d) > 2 Ω

Ans :

(c) In parallel combination, the equivalent resistance is smaller than the least resistance used in the circuit.

9 Two wires of same length and area, made of two materials of resistivity ρ_1 and ρ_2 are connected in parallel V to a source of potential. The equivalent resistivity for the same length and area is

   (a) $\rho_1 + \rho_2$ (b) $\dfrac{\rho_1 \rho_2}{\rho_1 + \rho_2}$

   (c) $\dfrac{(\rho_1 + \rho_2)}{\rho_1 \rho_2}$ (d) $|\rho_1 - \rho_2|$

Ans :

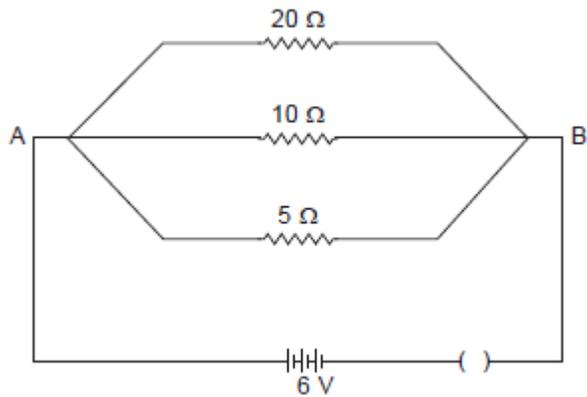(b) Equivalent resistance in parallel combination is $\dfrac{1}{R_P} = \dfrac{1}{R_1} + \dfrac{1}{R_2}$

For the same length and area of cross-section, $R \propto \rho$ (resistivity)

$$\therefore \qquad \frac{1}{\rho_p} = \frac{1}{\rho_2} = \frac{\rho_1 + \rho_2}{\rho_1 \rho_2}$$

or $\qquad\qquad \rho_p = \dfrac{\rho_1 \rho_2}{\rho_1 + \rho_2}$

10 Calculate the current flows through the 10 Ω resistor in the following circuit.

(a) 1.2 A (b) 0.6 A

(c) 0.2 A (d) 2.0 A

Ans :

(b) In parallel, potential difference across each resistor will remain same. So, current through 10 Ω resistor

$$I = \frac{V}{R} = \frac{6}{10} = 0.6 \text{ A}$$

11 Two resistors are connected in series gives an equivalent resistance of 10 Ω. When connected in parallel, gives 2.4 Ω. Then the individual resistance are

(a) each of 5 Ω (b) 6 Ω and 4 Ω

(c) 7 Ω and 4 Ω (d) 8 Ω and 2 Ω

Ans : (b) In series, $R_s = R_1 + R_2 = 10 \ \Omega$

In parallel, $\dfrac{1}{R_p} = \dfrac{1}{R_1} + \dfrac{1}{R_1} = \dfrac{1}{2.4} = \dfrac{10}{24} = \dfrac{5}{12}$

1

12 If R_1 and R_2 be the resistance of the filament of 40 W and 60 W respectively operating 220 V, then

(a) $R_1 < R_2$ (b) $R_2 < R_1$

(c) $R_1 = R_2$ (d) $R_1 \geq R_2$

1

Ans :

(b) Using power, $P = \dfrac{V^2}{R}$ or $R = \dfrac{V^2}{P}$

For the same voltage, $R \propto \dfrac{1}{P}$

More the power, lesser the resistance.

Accordingly, $R_2 < R_1$

13 The resistance of hot filament of the bulb is about 10 times the cold resistance. What will be the resistance of 100 W-220 V lamp, when not in use?

(a) 48 Ω (b) 400 Ω

(c) 484 Ω (d) 48.4 Ω

1

Ans :

(c) $R = \dfrac{V^2}{P} = \dfrac{220 \times 220}{100} = 484\ \Omega$

14 If P and V are the power and potential of device, the power consumed with a supply potential V_1 is

(a) $\dfrac{V_1^2}{V^2} P$ (b) $\dfrac{V^2}{V_1^2} P$

(c) $\dfrac{V}{V_1} P$ (d) $\dfrac{V_1}{V} P$

1

Ans :

(c) $R = \dfrac{V}{V_1}$ and $P_1 = \dfrac{V_1^2}{R} = \dfrac{V_1^2}{V^2} P$

15 A coil in the heater consume power P on passing current. If it is cut into halves and joined in parallel, it will consume power

(a) P (b) $\dfrac{P}{2}$ (c) 2 P (d) 4 P

1

Ans :

(d) Original power consumed, $P = \dfrac{V^2}{R}$

When used in parallel

$\dfrac{1}{R_P} = \dfrac{1}{R_1} + \dfrac{1}{R_2} = \dfrac{1}{\dfrac{R}{2}} + \dfrac{1}{\dfrac{R}{2}} = \dfrac{4}{R}$

$R_P = \dfrac{R}{4}$

∴ New power consumed when two halves in parallel

$P' = \dfrac{V^2}{R_P} = \dfrac{V^2}{\dfrac{R}{4}} = 4\,\dfrac{V^2}{R} = 4\,P$

16 A fuse wire repeatedly gets burnt when used with a good heater. It is advised to use a fuse wire of

(a) more length (b) less radius

(c) less length (d) more radius

1

Ans :

(d) In order to get the working of heater properly, fused wire of higher rating must be used.

17A cooler of 1500 W, 200 volt and a fan of 500 W, 200 volt are to be used from a household supply. The rating of fuse to be used is   **1**

(a) 2.5 A (b) 5.0 A
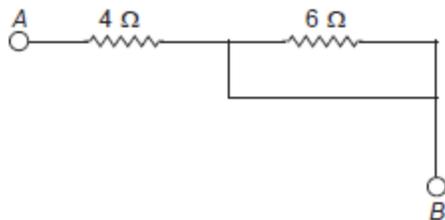
(c) 7.5 A (d) 10 A

Ans :

(d) Total power used, $P = P_1 + P_2 = 1500 + 500 = 2000$ W. Current drawn from the supply,

$$I = \frac{P}{V} = \frac{2000}{200} \; 10 \text{ A}$$

18 The effective resistance between A and B is   **1**

(a) 4 Ω   (b) 6 Ω

(c) May be 10 Ω   (d) Must be 10 Ω

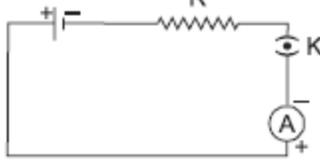**Ans :** (a) 6 Ω is shorted so effective resistance is 4 Ω.

19A cell, a resistor, a key and an ammeter are arranged as shown in the circuit diagrams. The current recorded in the ammeter will be   **1**
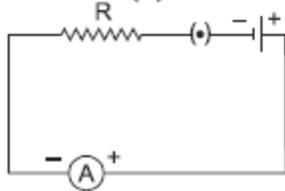
(a) maximum in (i)

(b) maximum in (ii)

(c) maximum in (iii)

(d) same in all the cases
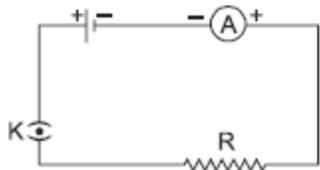
(i)

(ii)

(iii)

Ans :

(d) Ammeter is always connected in series with in the circuit. The reading is independent from its location.

20 A current of 1 A is drawn by a filament of an electric bulb. Number of electrons passing through a cross-section of the filament in 16 seconds would be roughly

(a) 10^{20} (b) 10^{16}

(c) 10^{18} (d) 10^{23}

Ans : (a) $Q = ne$ and $Q = It$

$$\therefore \quad ne = It$$

$$\text{or} \quad n = \frac{It}{e} = \frac{1 \times 16}{1.6 \times 10^{-19}} = 10^{20} \text{ electrons}$$

21 What is the maximum resistance which can be made using five resistors each of 1/5 W?

(a) 1/5 Ω (b) 10 Ω

(c) 5 Ω (d) 1 Ω

Ans :

(d) Series combination provide the maximum resistance.

Hence, R = R_1 + R_2 + R_3 + R_4 + R_5

$$= \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{5}{5} = 1 \ \Omega$$

22 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

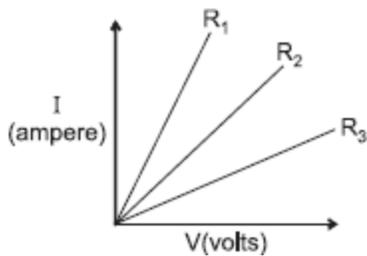(a) A/2 (b) 3A/2

(c) 2A (d) 3A

Ans : (c) Since $R \propto \dfrac{l}{A}$ So, $\dfrac{R_1}{R_2} = \dfrac{l_1}{l_2} \cdot \dfrac{A_2}{A_1}$

$\Rightarrow \dfrac{l}{2l} \times \dfrac{A_2}{A} = \dfrac{R}{R} = 1$

$\Rightarrow A_2 = 2A$

23 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. Which of the following is true?

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

(c) $R_3 > R_2 > R_1$ (d) $R_2 > R_3 > R_1$

Ans :

(c) Current is inversely proportional to the resistance for the same potential. So higher resistance would allow less current to pass through its which is shown by R_3, as $I_3 < I_2 < I_1$.

$\therefore R_3 > R_2 > R_1$

24 If the current I through a resistor is increased by 100 % (assume that temperature remains unchanged), the increase in power dissipated will be

(a) 100 % (b) 200 %

(c) 300 % (d) 400 %

Ans : (c) Since, $P \propto I^2$

So $\dfrac{P_2}{P_1} = \left(\dfrac{I_2}{I_1}\right)^2 = \left(\dfrac{2I}{I}\right)^2 = 4$

$\Rightarrow P_2 = 4P_1$

$\therefore$ % increase in power $= \dfrac{P_2 - P_1}{P_1} \times 100 = \dfrac{4P - P}{P} \times 100 = 300\%$

25 The resistivity does not change if 1
   (a) the material is changed
   (b) the temperature is changed
   (c) the shape of the resistor is changed
   (d) both material and temperature are changed

Ans :
(c) The resistivity does not change if the shape of resistor is changed because nature of material will remain same.

26 In an electrical circuit two resistors of 2 Ω and 4 Ω respectively are 1
   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

Ans :

$$\text{Current, I} = \frac{V}{R_s} = \frac{6}{6} = 1$$

(c) Total resistance of the combination Heat dissipation in 4 Ω resistor,
Rs = 2 + 4 = 6 Ω $H = I^2Rt = 1^2 \times 4 \times 5 = 20$ J

27 The electric current in the conductor exists only when the quantity that 1
   flows through it is
   (a) electric charge
   (b) air current
   (c) water current
   (d) all of these

Ans :(a)

28 Amount of charge flowing through a particular area in unit time is 1
   called
   (a) electric charge
   (b) electric current
   (c) electric potential
   (d) all of these

Ans :(b)

29 The unit of electric charge is 1
   (a) ampere
   (b) joule
   (c) coulomb

(d) ohm

Ans :(c)

30 Choose the incorrect statements from the following:　　1
   (a) Charge on the body may be positive or negative.
   (b) Electric charge is scalar quantity.
   (c) Coulomb is the cgs unit of charge.
   (d) A continuous and closed path is required for the flow of electric charge.

Ans :(c)

31 The particles that constitute the flow of charge through a conductor is　　1
   (a) electrons
   (b) protons
   (c) neutrons
   (d) atoms

Ans :(a)

32 The materials which allow electric current to pass through them easily are called　　1
   (a) conductors
   (b) insulators
   (c) semiconductors
   (d) alloys

Ans :(a)

33 Conventionally, direction of electric current in the circuit is taken as the direction of flow of　　1
   (a) negative charge
   (b) atoms
   (c) positive charge
   (d) neutrons

Ans :(C)

34 The relation between electric current and electric charge is　　1
   (a) $Q = I/t$
   (b) $t = QI$
   (c) $I = Qt$
   (d) $I = Q/t$

Ans :(d)

35 The number of electrons constituting one coulomb of charge is   **1**
    (a) 6×10^{18}
    (b) 1.6×10^{-19}
    (c) 6×10^{-18}
    (d) 1.6×10^{19}

Ans :(a)

36 SI unit of electric current is   **1**
    (a) ohm
    (b) ampere
    (c) volt
    (d) joule

Ans :(b)

37 The value of 1 mA and 1 μA are   **1**
    (a) 10^{-6} and 10^{-3} A respectively
    (b) 10^{-6} and 10^{-9} A respectively
    (c) 10^{-3} and 10^{-6} A respectively
    (d) 10^{3} and 10^{6} A respectively

Ans :(c)

38 The amount of work done to move a unit charge from one point to the   **1**
    other in an electric circuit carrying some current is called as
    (a) power
    (b) electric potential difference
    (c) electric current
    (d) resistance

Ans :(b)

39 Amount of work done needed for each coulomb of charge between two   **1**
    points in a current carrying conductor having potential difference of 1 V
    is
    (a) 1 Joule
    (b) 1 Watt
    (c) 1 Ohm
    (d) 1 kW

Ans :(a)

40 1 volt is equal to   1

    (a) 1 Js^{-1}

    (b) 1 JC^{-1}

    (c) 1 Nm^{-1}

    (d) 1 CJ^{-1}

Ans :(b)

41 The source of energy which provide the potential difference for the   1
steady flow of current in the electric circuit is

    (a) ammeter

    (b) voltmeter

    (c) battery

    (d) all of these

Ans :(c)

42 Potential difference between two points in an electric circuit is   1
measured by an instrument called

    (a) battery

    (b) ammeter

    (c) galvanometer

    (d) voltmeter

Ans :(d)

43 Which of the following expressions correctly represent the potential   1
difference between two points in an electric circuit?

    (a) $V = \dfrac{W}{Q}$ (b) $V = \dfrac{Q}{W}$

    (c) $V = Q \times W$ (d) $Q = VW$

Ans :(a)

44 When two points at different potential are connected across the ends of   1
a conductor, the electric current flows through it from the point

    (a) at a higher potential to a lower potential

    (b) at a lower potential to a higher potential

    (c) at zero potential to the some potential point

    (d) cannot say

Ans :(a)

45 A continuous and closed path of an electric current is called   **1**
    (a) an electric circuit
    (b) electric pressure
    (c) circuit element
    (d) all of these

  Ans :(a)

46 The position of switch/key in an electric circuit is   **1**
    (a) right side of the cell or battery
    (b) left side of the cell or battery
    (c) anywhere in the circuit
    (d) before the circuit element

  Ans :(c)

47 The function of switch in an electric circuit is   **1**
    (a) to make the circuit closed
    (b) to make the circuit open
    (c) both (a) and (b)
   (d) neither (a) nor (b)

  Ans :(c)

48 Which of the following is an essential element in an electric circuit? **1**
    (a) Connecting wire
    (b) Bulb
    (c) An ammeter
    (d) A plug key

  Ans :(a)

49 A schematic diagram drawn by using symbols which represent   **1**
   electrical components is called
    (a) electric diagram
    (b) circuit diagram
    (c) element diagram
    (d) current diagram

  Ans :(b)

50 Identify the electrical components labelled as A, B, C and D.   **1**
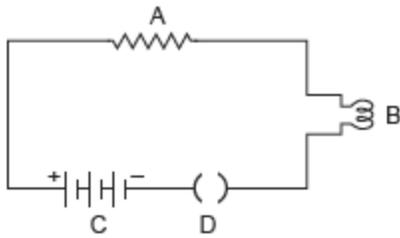
(a) A-Bulb, B-Battery, C-Open key, D-Resistor

(b) A-Resistor, B-Bulb, C-Battery, D-Open key

(c) A-Cell, B-Bulb, C-Resistor, D-Closed key

(d) A-Variable Resistor, B-Bulb, C-Cell, D-Closed key

Ans :(b)

51 Choose the incorrect statement regarding Ohm's law.   1

(a) It is temperature independent

(b) It is valid for constant temperature

(c) It is valid for ohmic resistance

(d) It defines the relationship between potential difference and current through the conductor.

Ans :(a)

52 In Ohm's law, if physical condition of the conductor remains same, then   1

(a) $I \propto V$ (b) $I \propto \dfrac{1}{V}$

(c) $I \propto V^2$ (d) $I \propto \dfrac{1}{V^2}$

Ans :(a)

53 In the experiment on studying the dependence of current (I) and potential difference (V), three students plotted the following graph between (V) and (I) as per their respective observations.   1
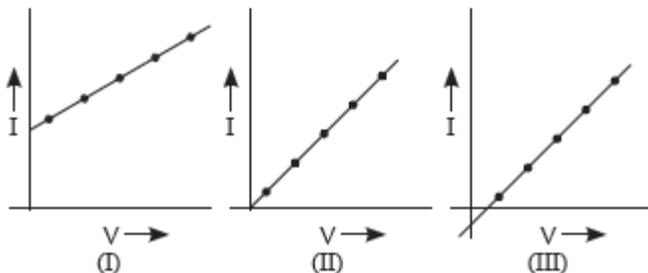
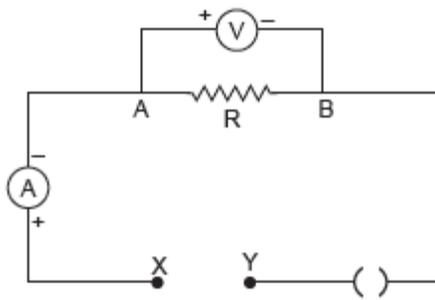The observation likely to be correct are those of

(a) Student I only

(b) Student II only
(c) Student III only
(d) All the three students

Ans :(b)

54To the terminals marked as X and Y in the given circuit, three students   1
connect 4 cells of voltage 1.5 V each in three different manners shown
below.

Which of the following student(s) get the maximum reading of
voltmeter?
(a) Student A
(b) Student B
(c) Student C
(d) All three students

Ans :(a)

55For verifying Ohm's law, we design an electric circuit diagram in which   1
we show the arrangement of different circuit components. We find that
with respect to resistor
(a) ammeter is connected in parallel and voltmeter in series.
(b) ammeter is connected in series and voltmeter in parallel.
(c) ammeter and voltmeter are both connected in series.
(d) ammeter and voltmeter are both connected in parallel.

Ans :(b)

56When a 4 V battery is connected across an unknown resistor there is a   1
current of 100 mA in the circuit. The value of the resistance of the

resistor is

(a) 4 Ω

(b) 40 Ω

(c) 400 Ω

(d) 0.4 Ω

Ans :(b) Given: V = 4 V, I = 100 mA = 0.1 A Using, V = IR ∴ $R = \dfrac{V}{I} = \dfrac{4}{0.1} = 40\ \Omega$

57 A cylindrical conductor of length 'l' and uniform area of cross-section 'A' has resistance 'R'. Another conductor of length 2.5l and resistance 0.5R of the same material has area of cross-section

(a) 5 A

(b) 2.5 A

(c) 0.5 A

(d) $\dfrac{1}{5}$ A

Ans :

(a) Case I: $\quad R = \rho\dfrac{l}{A}$

Case II: $0.5R = \rho\dfrac{2.5l}{A'}$

On dividing, we get,

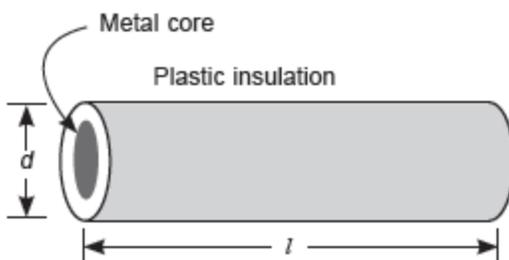$\qquad A' = 5\ A$

58 The value of specific resistance depends upon

(a) area of cross-section of the conductor

(b) length of the conductor

(c) nature of material of conductor

(d) all of above

Ans :(c)

59

Plastic insulation surrounds a wire having diameter d and length l as shown above. A decrease in the resistance of the wire would be produced by an increase in the [CBSE Sample Paper 2023]

(a) length l of the wire

(b) diameter d of the wire

1

1

1

(c) temperature of the wire

(d) thickness of the plastic insulation

Ans :(b) diameter (d) of the wire

60 A complete circuit is left on for several minutes, causing the connecting copper wire to become hot. As the temperature of the wire increases, the electrical resistance of the wire
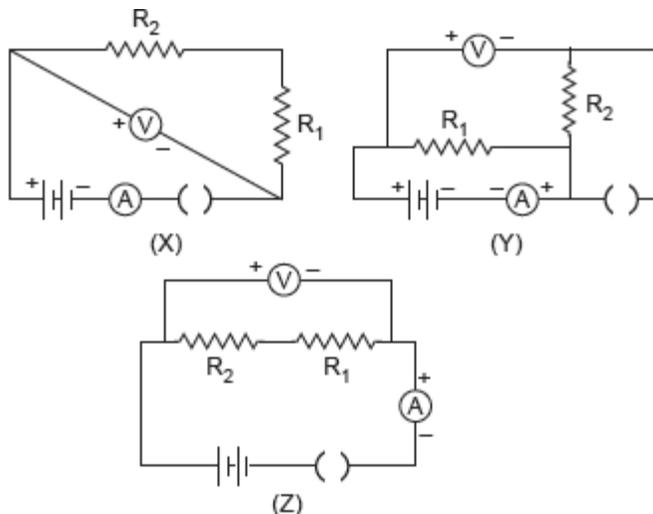
(a) decreases.

(b) remains the same.

(c) increases.

(d) increases for some time and then decreases.

Ans :(c)

61 For determining the equivalent resistance of two resistors R_1 and R_2 connected in series, three students X, Y and Z set up their circuits as shown below:

The correct set up is that of

(a) student X only

(b) student Y only

(c) student Z only

(d) student X and Z

Ans :(d)

62 If a person has five resistors each of value $\frac{1}{5}$ Ω, then the maximum resistance he can obtain by connecting them is

(a) 1 Ω

(b) 5 Ω

(c) $10\ \Omega$

(d) $25\ \Omega$

Ans :

(a) For maximum resistance, all resistors should be connected in series.

$$\therefore \qquad R_s = R_1 + R_2 + R_3 + R_4 + R_5$$
$$= \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$$
$$= \frac{5}{5} = 1\ \Omega$$

63 Two bulbs of 100 W and 40 W are connected in series. The current   1
through the 100 W bulb is 1 A. The current through the 40 W bulb will be:

(a) 0.4 A

(b) 0.6 A

(c) 0.8 A

(d) 1 A

Ans :(d)

64 In series combination of resistors, the flow of current across each   1
resistor is

(a) initially increases then decreases

(b) increases continuously

(c) decreases continuously

(d) remains the same

Ans :(d)

65 In your daily life experience, which of the following is not used in series   1
combination?

(a) Decorative bulbs

(b) Fuses

(c) Domestic appliances

(d) All of them

Ans :(c)

66 Pick out the incorrect statement from the following about series   1
combination of resistors.

(a) The current across each resistor is the same.

(b) The potential difference is same across each resistor

(c) Equivalent resistance is larger than the largest resistor

(d) It is used to decrease the current in the circuit.

Ans :(b)

67 Three resistors of resistance 1 Ω, 2Ω and 3 Ω are connected in series   1
combination and draw the current 0.5 A from the power source. The
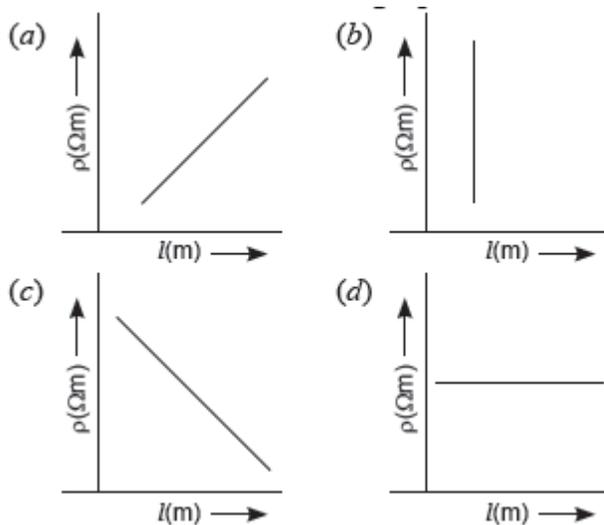potential difference across the combination is

(a) 3 V

(b) 12 V

(c) $\frac{1}{12}$ V

(d) 6 V

Ans :(a)

68 Raman wants to draw the graph to show how the resistivity (ρ) of a wire   1
change with length (l) of the wire. What should his graph look like?

Ans :(d)

69 The resistor R_1 and R_2 are connected in parallel the equivalent   1
resistance of the combination is

(a) $R_1 + R_2$ (b) $R_1 - R_2$

(c) $\dfrac{R_1 R_2}{R_1 + R_2}$ (d) $\dfrac{R_1 + R_2}{R_1 R_2}$

Ans :(c)

70 The equivalent resistance of the resistors connected in parallel is   1

(a) greater than the greatest resistance

(b) smaller than the smallest resistance

(c) sum of all the resistance

(d) multiple of all the resistance

Ans :(b)

71 Magnitude of current in different branches of the parallel combination is

(a) same in each branch
(b) different in different branches
(c) divides as per number of branches
(d) none of the above

Ans :(b)

72 The total current in parallel combination of three resistors is

(a) $I = I_1 + I_2 + I_3$
(b) $I = \dfrac{I_1 + I_2}{I_3}$
(c) $I = (I_1 + I_2) \times I_3$
(d) $I = I_1 + I_2 - I_3$

Ans :(a)

73 The resistance of resistor is reduced to half of its initial value. If other parameters of the circuit remain unchanged, the amount of heat produced in the resistor will become

(a) four times
(b) two times
(c) half
(d) one fourth

Ans : (b) Heat produced,

$$H \propto \dfrac{1}{R} \qquad (\because V = \text{Constant})$$

$$\therefore \quad \dfrac{H_1}{H_2} = \dfrac{R_2}{R_1}$$

$$= \dfrac{R/2}{R} = \dfrac{1}{2}$$

$$\therefore \quad H_2 = 2H_1$$

74 In a resistive circuit if the current is increased to two times, the percentage change in the amount of heat dissipated in the circuit would be:

(a) 400%
(b) 300%
(c) 200%
(d) 100%

Ans :

(b) The percentage change in heat dissipation

$$= \left(\frac{H' - H}{H}\right) \times 100 = \left(\frac{I'^2 - I^2}{I^2}\right) \times 100$$
$$= 3 \times 100 = 300\%$$

75 Elements of electric heating devices, such as bread toasters and electric iron are generally made up of   **1**

(a) metal

(b) non-metal

(c) alloy

(d) tin

Ans :(c)

76 According to Joule's law of heating, the heat produced in a resistor in time t is   **1**

(a) $H = I^2Rt$

(b) $H = IR^2t$

(c) $H = V^2It$

(d) All of these

Ans :(a)

77 Which of the following is used almost exclusively for filaments of electric lamp?   **1**

(a) Copper

(b) Silver

(c) Tungsten

(d) Titanium

Ans :(c)

78 Water boils in an electric kettle in 18 minutes after switching on. If the length of heating wire is decreased to 1/3rd of its initial value, then the same amount of water will boil with the same supply of voltage in   **1**

(a) 6 minutes

(b) 12 minutes

(c) 54 minutes

(d) 18 minutes

Ans :(a)

79 50 J heat is produced each second in a 2 Ω resistor. The potential difference across the resistor is   1

(a) 10 V
(b) 25 V
(c) 50 V
(d) 100 V

Ans :
(a) From Joule's law of heating, $H = I^2 Rt = \dfrac{V^2 t}{R} \Rightarrow V^2 = \dfrac{HR}{t} = \dfrac{50 \times 2}{1}$
$V^2 = 100 \Rightarrow V = 10 \text{ V}$

80 An electric fuse is based on   1

(a) the chemical effect of current
(b) the magnetic effect of current
(c) the heating effect of current
(d) none of these

Ans :(c)

81 The fuse wire should have a   1
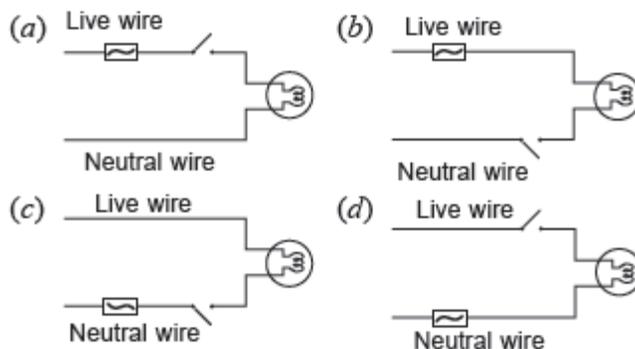
(a) low melting point
(b) high resistance
(c) high melting point
(d) both (a) and (b)

Ans :(d)

82 Which circuit shows the correct and safe position for the fuse and switch?   1

Ans :(a)

83 For maximum power consumption, all given resistors should be connected in   1

(a) parallel
(b) series

(c) some in parallel and some in series

(d) none of these

Ans : (a) For the same voltage, $P \propto \dfrac{1}{R}$

84 Which of the following does not represent electric power?   1

(a) I^2R

(b) IR^2

(c) VI

(d) V^2/R

Ans : (b)

85 One kilowatt hour is equal to   1

(a) 36×10^6 J

(b) 3.6×10^6 J

(c) 0.36×10^6 J

(d) all of these

Ans : (b)

86 If R_1 and R_2 are respectively the filament resistances of a 200 W bulb   1
and 100 W bulb design to operate on the same voltage, then

(a) $R_1 = 4R_2$

(b) $R_2 = 4R_1$

(c) $R_2 = 2R_1$

(d) $R_1 = 2R_2$

Ans : (c)

87 Two heater wires of same length and same material but of different   1
thickness are connected in series across a power supply. The power
dissipated will be

(a) more in thicker wire

(b) more in thinner wire

(c) same in both

(d) cannot say

Ans : (b)

88 Two LED bulbs of 12 W and 6 W are connected in series. If the current   1
through 12 W bulb is 0.06 A, the current through 6 W bulb will be

(a) 0.04 A

(b) 0.06 A

(c) 0.08 A

(d) 0.12 A

Ans :(b) Same current will flow in series.

89 An electric iron of 1500 W, 200 V and a flash light of 500 W, 200 V are used in homes. The rating of fuse to be used should be

1

(a) 5 A

(b) 10 A

(c) 15 A

(d) 20 A

Ans :

(b) Total power used in home, P = P1 + P2 = 1500 + 500 = 2000 W

∴ Current drawn from the supply,

∴ Current drawn from the supply,

$$I = \frac{P}{V} = \frac{2000}{200} = 10 \text{ A}$$

90 The resistivity of the metals and alloys are in the range of

1

(a) 10^{-8} Ω m to 10^{-6} Ω m

(b) 10^{-10} Ω m to 10^{-14} Ω m

(c) 10^{10} Ω m to 10^{14} Ω m

(d) 10^{8} Ω m to 106 Ω m

Ans :(a)