Work sheet -1
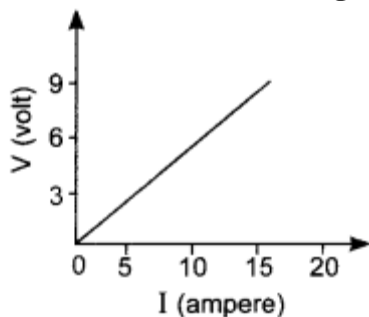
1. The resistance whose V-I graph is given below is
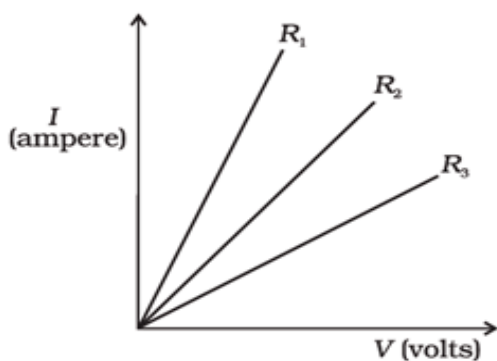

(a) $\dfrac{5}{3}\ \Omega$ (b) $\dfrac{3}{5}\ \Omega$

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

2. A wire of length l, made of material resistivity ρ is cut into two equal parts. The resistivity of the two parts are equal to,

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

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

(a) $R_1 = R_2 = R3$ (b) $R_1 > R_2 > R_3$

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

4. The resistivity does not change if

(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

5. Keeping the potential difference constant, the resistance of the circuit is halved. The current will become:

(a) One-fourth   (b) Four times   (c) Half   (d) Double

6. When a 40V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. Find the value of the resistance of the resister:

(a) 4000 Ω (b) 400 Ω   (c) 0.4 Ω   (d) 40Ω

7. Identify the circuit in which the electrical components have been properly connected.

(i) (ii) (iii) (iv)
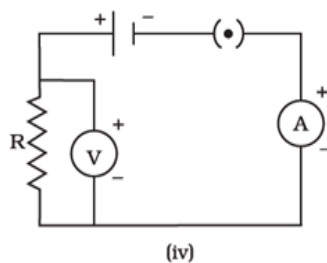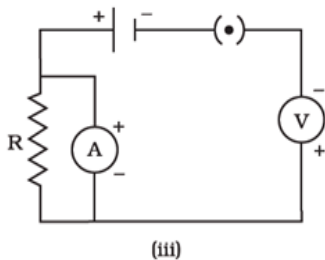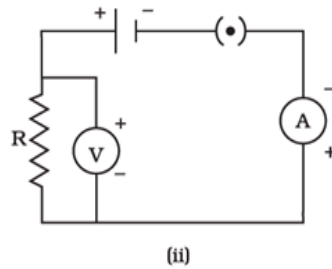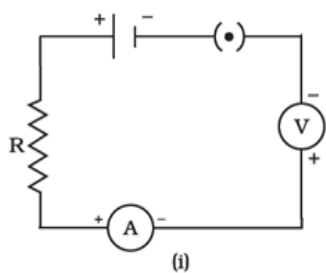
(a) (i)   (b) (ii)   (c) (iii)   (d) (iv)

8. A given length of a wire is doubled on itself and this process is repeated once again. By what factor does the resistance of the wire change?
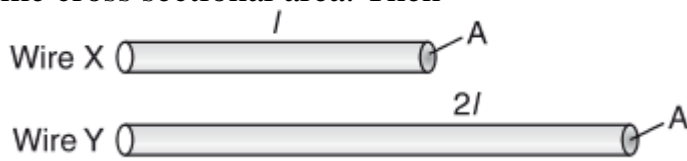
(a) $\dfrac{1}{4}$ (b) $\dfrac{1}{2}$ (c) $\dfrac{1}{8}$ (d) $\dfrac{1}{16}$

9. The figure below shows two copper wires X and Y of different length and same cross sectional area. Then

Wire X ⊏━━━━━━━━⊐ _A

Wire Y ⊏━━━━━━━━━━⊐ _A

(a) Resistance of wire X > Resistance of wire Y
(b) Resistance of wire Y > Resistance of wire X
(c) Resistance of wire X = Resistance of wire Y
(d) None of these

10. The property of a substance which offers opposition to the flow of current through it is called

(a) Energy   (b) current   (c) resistance   (d) voltage

11. The figure below shows three copper wires X, Y and Z of different lengths and different cross sectional areas. Choose the correct statement
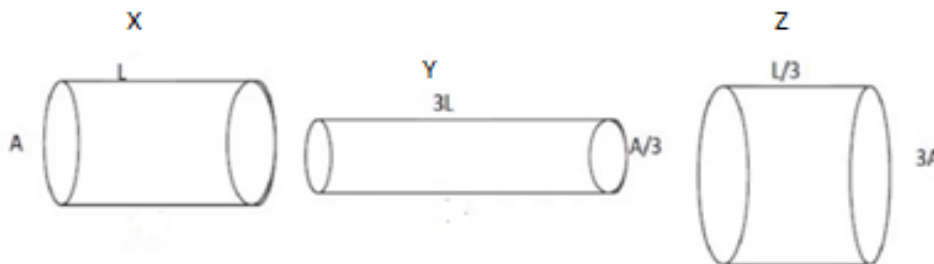
(a) Resistivity of X = Resistivity of Y= Resistivity of Z

(b) Resistivity of X > Resistivity of Y> Resistivity of Z

(c) Resistivity of X < Resistivity of Y> Resistivity of Z

(d) Resistivity of X > Resistivity of Y< Resistivity of Z

12. What happens to the current and resistance if the voltage in the circuit becomes two times?

(a) Current becomes two times and resistance also becomes two times

(b) Current becomes two times and resistance also becomes half.

(c) Current remains the same and resistance also becomes two times.

(d) Current becomes two times and resistance remains the same

13.For verification of Ohm's Law:

(a) Ammeter and voltmeter should be connected in series
(b) Ammeter should be connected in series and voltmeter in parallel
(c) Ammeter should be connected in parallel and voltmeter in series
(d) Ammeter and voltmeter should be connected in parallel

14 If a wire of resistance R ohms is stretched to double its length then its resistance will be

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

15. A 9Ω resistance is cut into three equal parts then the resistance of each part will be

(a) 3Ω   (b) 9 Ω   (c) $\dfrac{1}{9}$ Ω   (d) $\dfrac{1}{3}$ Ω

16. How much current will an electric bulb draw from 220 V source if the resistance of the bulb is 1200Ω?
(a) 0.18 A   (b) 1.8 A   (c) 5.45 A   (d) .0545 A

17. A copper wire of resistivity 1.68 x 10^{-8} Ω m and an aluminium wire of resistivity 2.65 x 10^{-8} Ω m are having same length and same cross sectional area. Then
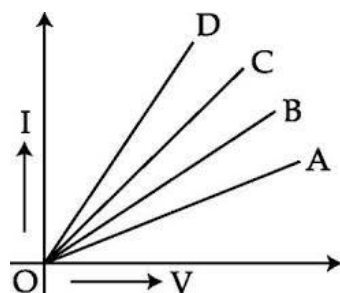(a) Resistance of copper wire > Resistance of Aluminium wire
(b) Resistance of copper wire < Resistance of Aluminium wire
(c) Resistance of copper wire = Resistance of Aluminium wire
(d) Resistance of wires will depend on the current flowing in the circuit

18. Study the I-V graph for four conductors A, B, C and D having resistance R_A, R_B, R_c and R_D respectively,

Which one of these is the best conductor?

(a) A   (b) B   (c) C   (d) D

19. Why are copper wires used as connecting wires?

(a) Low resistivity   (b) low conductivity   (c) high resistivity   (d) both a and b

20. What is the unit of resistivity?

(a) Ω m   (b) $\dfrac{\Omega}{m}$ (c) $\dfrac{m}{\Omega}$ (d) $\dfrac{1}{\Omega}$