TEST PAPER: PHYSICS

Time: 45 Minutes **Class:** CBSE 10

Max. Marks: 30 Marks **Date:** 12th December 2018

Marking Scheme: *All questions carry 10 marks each. Subparts (A) and (B) carry 3 marks each and subpart (C) carries 4 marks.*

Question 1:

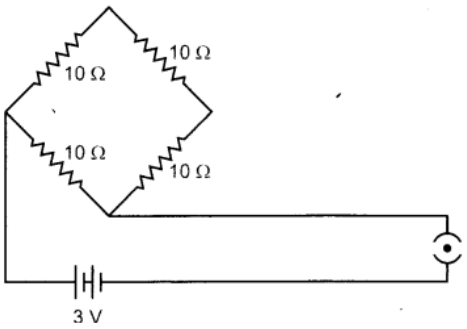
A. Calculate the resistance of 2 km long copper wire of radius 2 mm. (Resistivity of copper = $1.72 * 10^{-8}$ in SI units)

B. Name the unit of (a) electrical resistance (b) resistivity. Define resistivity.

C. State Ohm's law. Write the necessary conditions for its validity. How is this law verified experimentally? What will be the nature of graph between potential difference and current for a conductor? Name the physical quantity that can be obtained from this graph.

Question 2:

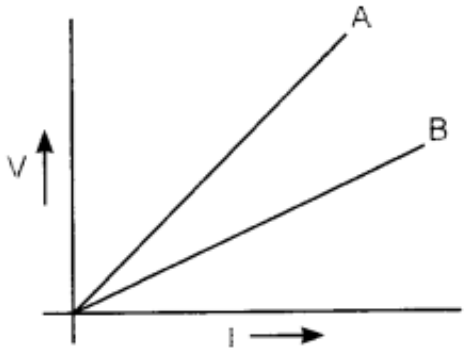
A. Find the current drawn from the battery by the network of four resistors Shown in the figure.



B. Solve the following:

i. Calculate the amount of work done in carrying a charge of 1 coulomb through a battery of 3 V.

ii. V-I graph for two wires A and B are shown in the figure. If both wires are of same length and same thickness, which of the two is made of a material of high resistivity? Give justification for your answer.



C. Answer the following:

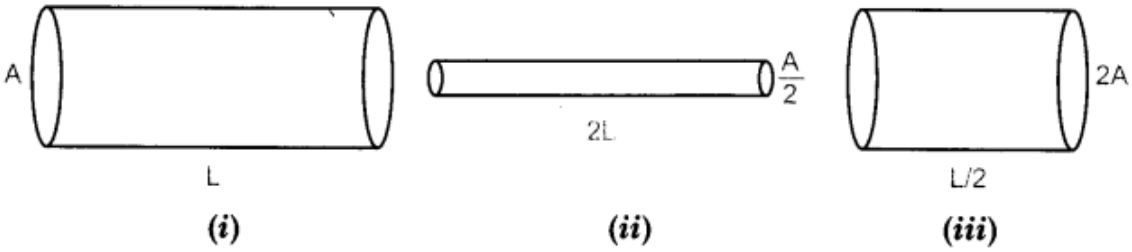
iii. Define electric power. Express it in terms of potential difference V and resistance R.

iv. An electrical fuse is rated at 2 A. What is meant by this statement?

v. An electric iron of 1 kW is operated at 220 V. Find which of the following fuses that respectively rated at 1 A, 3 A and 5 A can be used in it.

Question 3:

A. The figure below shows three cylindrical copper conductors along with their face areas and lengths. Discuss in which geometrical shape the resistance will be highest.



(i) (ii) (iii)

B. What is geothermal energy and how do we harness it to generate electricity?

C. Explain the working of a solar cooker with the help of a diagram. State two advantages of using solar cells.