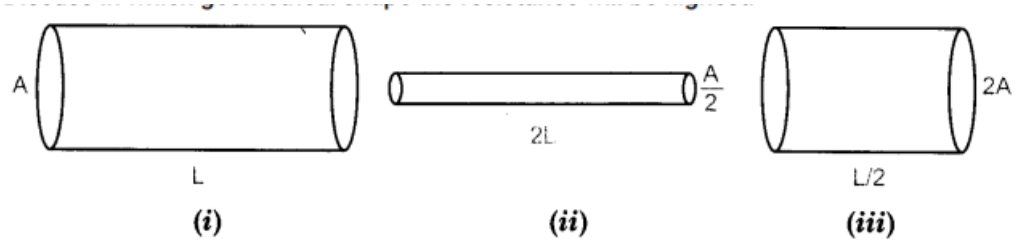
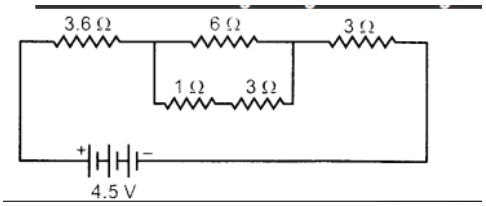
SUBJECT-PHYSICS **CLASS-X**

1. What is meant by electric current? Name and define its SI unit. In a conductor electrons are flowing from B to A. What is the direction of conventional current? Give justification for your answer. A steady current of 1 ampere flows through a conductor. Calculate the number of electrons that flows through any section of the conductor in 1 second. (Charge on electron 1.6 X 10-19 coulomb).
2. What is meant by electrical resistivity of a material? Derive its S.I. unit. Describe an experiment to study the factor on which the resistance of a conducting wire depends.
3. 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.



4. Find the current flowing through the following electric circuit.



5. (a) Calculate the resistance of 1 km long copper wire of radius 1 mm. Resistivity of the copper is 1.72 x 10-8 Ω m.

   (b) Draw a schematic diagram of a circuit consisting of a battery of 4 cells of 2V each connected to a key, an ammeter and two resistors of 2 Ω and 3 Ω respectively in series and a voltmeter to measure potential difference across 3 Ω
6. When a high resistance voltmeter is connected directly across a resistor its reading is 2 V. An electric cell is sending the current of 0.4 A, (measured by an ammeter) in the electric circuit in which a rheostat is also connected to vary the current.

   (a) Draw an equivalent labelled circuit for the given data.

   (b) Find the resistance of the resistor.

   (c) Name and state the law applicable in the given case. A graph is drawn between a set of values of potential difference (V) across the resister and current (I) flowing through it. Show the nature of graph thus obtained.
7. How much current will an electric bulb draw from 220 V source if the resistance of the bulb is 1200Ω? If in place of bulb, a heater of resistance 100 Ω is connected to the sources, calculate the current drawn by it.
8. Two wires A and B are of equal length and have equal resistance. If the resistivity of A is more than that of B which wire is thicker and why?
9. What do you mean by Joule's heating law?
10. Write and prove that resistance in series is sum of individual resistances with the help of activity.

CHEMISTRY

1) What is meant by catenation?

2) Write the simplest ketone and draw its structure.

3) Define esterification reaction. Mention a chemical equation for the reaction of an ester with a base.

4) Write the structure of

(a) Ethanoic acid (b) Butanone (c) Hexanal.

5) Why are detergents better cleansing agents than soaps?

6) Which type of reactions occurs when saturated hydrocarbons are added to chlorine in sunlight?

Write a chemical equation if the saturated hydrocarbon is methane.

7) Write the differences between soaps and detergents.

8) Distinguish between ethanol and ethanoic acid on the basis of

(a) blue litmus test, (b) reaction with sodium bicarbonate (c) sodium metal test.

9) Define hydrocarbons. Mention general formulae of the following hydrocarbons;

a)Alkene b) Alkane c) Alkyne

10) How ethene is prepared from ethanol? Give the reaction involved in it.

11) Expand the abbreviations UNEP and IUCN.

12) What is Chipko Andolan.

13) What are the harmful effects of large dams?

14) List the advantages of water stored underground.

15) Who is a stakeholder? Mention the role of different categories of stakeholders in forest organisation.

BIOLOGY

1) What is speciation? List four factors that could lead to speciation.

2) How do Mendel's experiments show that the (a) traits may be dominant or recessive

(b) traits are inherited independently.

3) How fossils were formed, describe in brief two methods of determining the age of fossil.

4) With the help of a flow chart explain in brief how the sex of a new born is genetically determined in human beings.

5) Distinguish between acquired and inherited traits by giving one example of each.

6) Distinguish between homologous organs and analogous organs. In which category would you place wings of a bird and wings of a bat?

7) A woman has only daughters. Analyse the situation genetically and provide a suitable explanation?

8) Why is variation beneficial for the species, but not necessary for the individual?

9) An organ like a wing in birds is an advantage to the organism. Did they appear I different stages or were formed due to a single sudden change in them.

10) Symbolically a plant with green pod colours (GG) is known as homozygous. What will be the following plants known as;

(i) Gg (ii) gg.