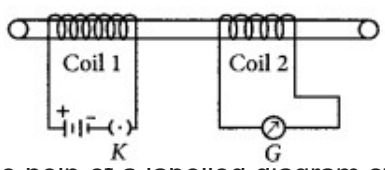


**Topics: CARBON AND ITS COMPOUNDS
MAGNETIC EFFECT OF ELECTRIC CURRENT
HEREDITY AND EVOLUTION
OUR ENVIRONMENT**

- 1) What are covalent compounds? Why are they different from ionic compounds? List their three characteristic properties.
- 2) Give reasons for the following:
 - (i) Element carbon forms compounds mainly by covalent bonding.
 - (ii) Diamond has high melting point.
 - (iii) Graphite is a good conductor of electricity.
- 3) State the reason why carbon can neither form C^{4+} cations nor C^{4-} anions, but forms covalent compounds. Also state reasons to explain why covalent compound :
 - (i) are bad conductors of electricity?
 - (ii) have low melting and boiling points?
- 4) Which element exhibits the property of catenation to maximum extent and why?
- 5) State two properties of carbon which lead to a very large number of carbon compounds.
- 6) An aldehyde as well as a ketone can be represented by the same molecular formula, say C_3H_6O . Write their structures and name them. State the relation between the two in the language of science.
- 7) Write the molecular formula of the following compounds and draw their electron-dot structures:
 - (i) Ethane
 - (ii) Ethene
 - (iii) Ethyne
- 8) Why is homologous series of carbon compounds so called? Write the chemical formula of two consecutive members of any homologous series and state the part of these compounds that determines their (i) physical and (ii) chemical properties.
- 9) State the meaning of the functional group in an organic compound. Write the formula of the functional group present in alcohols, aldehydes, ketones and carboxylic acids.
- 10) What are hydrocarbons? Distinguish alkanes from alkenes and each of them from alkynes, giving one example of each. Draw the structure of each compound cited as example to justify your answer.
- 11) mL of ethanol is taken in a test tube and warmed gently in a water bath. A 5% solution of alkaline potassium permanganate is added first drop by drop to this solution, then in excess.
 - (i) How is 5% solution of $KMnO_4$ prepared?
 - (ii) State the role of alkaline potassium permanganate in this reaction. What happens on adding it in excess?
 - (iii) Write chemical equation of this reaction.
- 12) A compound 'X' on heating with excess cone. sulphuric acid at 443 K gives an unsaturated compound 'Y'. 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of formation of 'Y' and also write the role of sulphuric acid in the reaction.
- 13) Complete the following chemical equations : (Delhi 2017)
 - (i) $CH_3COOC_2H_5 + NaOH \rightarrow$
 - (ii) $CH_3COOH + NaOH \rightarrow$
- 14) List two tests for experimentally distinguishing between an alcohol and a carboxylic acid and describe how these tests are performed.
- 15) Soaps and detergents are both, types of salts. State the difference between the two. Write the mechanism of the cleansing action of soaps. Why do soaps not form lather (foam) with hard water? Mention any two problems that arise due to the use of detergents instead of soaps
- 16) Draw magnetic field lines around a bar magnet. Name the device which is used to draw magnetic field lines.
- 17) What are magnetic field lines? Justify the following statements:
 - (a) Two magnetic field lines never intersect each other.
 - (b) Magnetic field are closed curves.
- 18) (a) State three factors on which the strength of magnetic field produced by a current carrying solenoid depends.
(b) Draw circuit diagram of a solenoid to prepare an electromagnet.
- 19) Describe in brief an activity to study the magnetic field lines due to a current carrying circular oil.

- 20) Describe an activity with labelled diagram to show that a force acts on current carrying conductor placed in a magnetic field and its direction of current through conductor. Name the rule which determines the direction of this force.
- 21) (a) State Fleming's left hand rule.
 (b) Write the principle of working of an electric motor.
 (c) Explain the function of the following parts of an electric motor.
 (i) Armature (ii) Brushes (iii) Split ring
- 22) Two coils of insulated copper wire are wound over a non-conducting cylinder as shown. Coil 1 has comparatively large number of turns. State your observations, when
 (i) Key K is closed
 (ii) Key K is opened
 Give reason for each of your observations.
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- 23) (a) A coil of insulated copper wire is connected to a galvanometer. With the help of a labelled diagram state what would be seen if a bar magnet with its south pole towards one face of this coil is
 (i) moved quickly towards it, (ii) moved quickly away from it, (iii) placed near its one face?
 (b) Name the phenomena involved in the above cases.
 (c) State Fleming's right hand rule.
- 24) Mention and explain the function of an earth wire. Why it is necessary to earth metallic appliances?
- 25) (a) Draw a schematic diagram of a common domestic circuit showing provision of
 (i) Earth wire, (ii) Main fuse
 (iii) Electricity meter and
 (iv) Distribution box.
 (b) Distinguish between short circuiting and overloading.
- 26) "Only variations that confer an advantage to an individual organism will survive in a population." Justify this statement.
- 27) Write a difference between inherited traits and acquired traits giving one example of each.
- 28) (a) Why did Mendel carry out an experiment to study inheritance of two traits in garden pea?
 (b) What were his findings with respect to inheritance of traits in F_1 and F_2 generation?
 (c) State the ratio obtained in the F_2 generation in the above mentioned experiment.
- 29) How did Mendel's experiments show that different traits are inherited independently? Explain.
- 30) "It is a matter of chance whether a couple will have a male or a female child." Justify this statement by drawing a flow chart.
- 31) Give one method which could be applied to reduce our intake of pesticides through food to some extent.
- 32) In the following food chain, plants provide 500 J of energy to rats. How much energy will be available to hawks from snakes? _____
 Plants → Rats → Snakes → Hawks
- 33) What is meant by biological magnification? Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.
- 34) What does a trophic level represent in a food chain? State the position of autotrophs and herbivores in a food chain.
- 35) (a) What is an ecosystem?
 (b) List any two natural ecosystems.
 (c) We do not clean ponds or lakes but an aquarium needs to be cleaned regularly. Why?
- 36) What is a food chain? Why is the flow of energy in an ecosystem unidirectional? Explain briefly.
- 37) The depletion of ozone layer is a cause of concern. Why?
- 38) What is ozone? How and where is it formed in the atmosphere? Explain how does it affect an ecosystem.