

WORKSHEET 2

CHEMISTRY

CLASS X

CARBON AND ITS COMPOUNDS

Q1. Write the IUPAC names of the following?

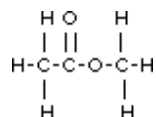
- (a) CH_3OH .
- (b) CH_3COOH .

Q2. Which two of the following compounds could belong to the same homologous series?

- (a) $\text{C}_2\text{H}_4\text{O}_2$.
- (b) $\text{C}_2\text{H}_6\text{O}$.
- (c) C_2H_6 .
- (d) CH_4O .

Q3. Write the names of any two alkanes along with their structural and electron dot structures.

Q4. The structural formula of an ester is given below .write its I.U.P.A.C name



Q5. Fermentation of sugar solutions with enzymes is being carried out in a vessel at 20°C to 30°C in the presence of air. Which organic compound will be produced in this process?

Q6. Write the structural formula of ethane and show all the covalent bonds present in it.

Q7. The molecular formula of two member of a homologous series is C_5H_{12} and C_2H_{10} . Write the molecular formula of a member having three carbon atoms in its molecules.

Q8. What is meant by a functional group in an organic compound? Give the structural formula of the functional groups in :

- (a) Acetic acid.
- (b) Ethyl alcohol.

Q9. How does acetic acid and ethyl alcohol react when warmed together in presence of a small quantity of concentrated sulphuric acid? Write the chemical equation for the reaction taking place.

Q10. Name the products formed when methane burns in :

- (a) Sufficient supply of air.
- (b) Insufficient supply of air.

Write the chemical equations for above reactions.

Q11. How is an ester prepared in the lab? Write its one use in daily life.

Q12. What are synthetic detergents? Give one example of synthetic detergent. Write its two advantages over soap.

Q13. Describe soap making process in laboratory.

Q14. A hydrocarbon 'A' is obtained by cracking of kerosene. Identify the hydrocarbon. What happens when it reacts with bromine water? Write chemical equation for the reaction.

Q15. Give any one test to distinguish between methane and ethene gases in the lab. Name the reaction by which ethene molecule can be converted into polythene.

Q16. Define isomerism. Write the structural formula and names of the isomers of butane.

Q17 Two compounds 'A' and 'B' have the same molecular formula $\text{C}_4\text{H}_8\text{O}_2$. Compound 'A' is an acid and compound 'B' has fruity smell. Suggest (1) chemical formulae and (2) the structural formulae of the compounds A and B. Name the functional group of compound B. What name would you give to the relationship between the compound A and B?

Q18. What is meant by homologous series? State any four characteristics.

Q19. What is saponification? Describe how soap is prepared in the laboratory. Explain the cleansing action of soap.

Q20. What is fermentation? How is ethanol prepared by fermentation? Give two uses of ethyl alcohol. What are the harmful effects of drinking alcohol?

Q 21 Give reasons for the following :

- a. Carbon form covalent bond by sharing electron.
- b. Covalent compounds are in gaseous or liquid state at normal temperature and pressure.
- c. Covalent compounds are bad conductors of electricity.
- d. Diamond known as the hardest metal
- e. Covalent compounds have less melting and boiling points
- f. Diamond is not a good conductor of electricity

Q. 22 Why does carbon has maximum tendency for catenation?

Q.23 Give the names of the functional groups: (i) — CHO (ii) — OH

Q.24 Write the chemical formula of the simplest ketone.

Q.25 Write the formulae for the given compounds and name the functional groups present in each of them:

(i) Ethanoic acid (ii) Propanone (iii) Ethanol.

Q 26 An organic compound X with a molecular formula C_2H_6O undergoes oxidation with in presence of alkaline $KMnO_4$ to form a compound Y. X on heating in presence of Conc. H_2SO_4 at 443K gives Z. Which on reaction with H_2O in presence of H_2SO_4 gives back 'X' 'Z' reacts with Br_2 (aq) and decolorizes it. Identify X, Y, & Z and write the reactions involved.

Q 27 An organic compound 'A' is widely used as a preservative in pickles and has a molecular formula $C_2H_2O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'.

- (i) Identify the compound 'A'
- (ii) Write the chemical equation for its reaction with ethanol to form compound 'B'.
- (iii) How can we get compound 'A' back from 'B'?
- (iv) Name the process and write corresponding chemical equation.
- (v) Which gas is produced when compound 'A' reacts with washing soda?

Q28 (a) Hydrocarbon 'X' and 'Y' having molecular formulae C₃H₈ and C₃H₆ respectively. Both are burnt in different spatula on the Bunsen flame. Indicate the color of the flame produced by 'X' and 'Y'. Identify 'X' and 'Y'. Write the structural formulae.

(b). A compound 'X' has molecular formula C₄H₁₀. It undergoes substitution reaction readily than addition reaction. It burns with blue flame and is present in LPG. Identify 'X' and give the balanced equation for its combustion and substitution reaction with Cl₂ in presence of sunlight.

29 A compound works well with hard water. It is used for making shampoos & products for cleaning clothes. A is not 100% biodegradable and causes water pollution. 'B' does not work well with hard water. It is 100% biodegradable and does not create water pollution. Identify A & B.

30 An organic compound P with molecular formula C₂H₆O is an active ingredient of all alcoholic drinks. It is also used in medicines such as tincture iodine, cough syrups. Identify 'P'. Drop a small piece of sodium into the test tube containing 'P'. A new compound 'Q' is formed with the evolution of colorless and odorless gas. Name the gas evolved and compound 'Q' write the chemical reaction.

31 A cyclic compound 'X' has molecular formula C₆H₆. It is unsaturated and burns with sooty flame. Identify 'X' and write its structural formula. Will it decolorize bromine water or not and why?

32 An organic compound 'A' is a constituent of antifreeze and has the molecular formula C₂H₆O. Upon reaction with alkaline KMnO₄, the compound 'A' is oxidized to another 'B' with formula C₂H₄O₂. Identify the compound 'A' and 'B'. Write the chemical equation for the reaction which leads to the formulation of 'B'.

33 Two compounds 'X' and 'Y' have the same formula C₂H₄O₂. One of them reacts with sodium metal to liberate H₂ and CO₂ with NaHCO₃. Second one does not react with Na metal and NaHCO₃ but undergoes hydrolysis with NaOH to form salt of carboxylic acid and compound 'Z' which is called wood spirit. Identify 'X', 'Y', and 'Z' and write chemical equation for the reaction involved.

34 A compound 'X' with molecular formula C₂H₄ burns with a sooty flame. It decolorises bromine water. Identify 'X'. Will it dissolve in water or not? Will it conduct electricity in aq. solution? Will it have high melting point or low melting point? 35 Two Give a test that can be used to differentiate chemically between butter and cooking oil.

35 How will you distinguish between ethanol and ethanoic acid by a suitable chemical test? Write chemical reactions involved.

36 Complete the following reactions:-

