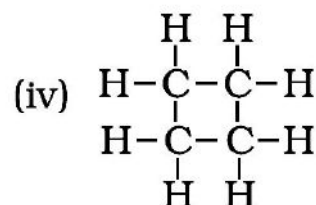
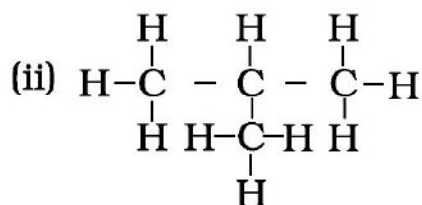
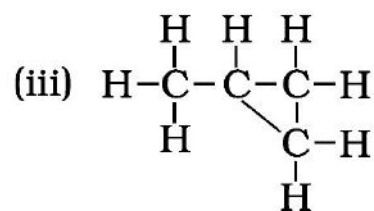
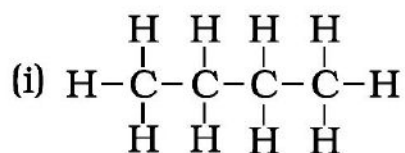


ASSIGNMENT QUESTIONS SET – 2
CHAPTER – 4
CARBON AND ITS COMPOUND

1. Carbon exists in the atmosphere in the form of
 - (a) carbon monoxide only
 - (b) carbon monoxide in traces and carbon dioxide
 - (c) carbon dioxide only
 - (d) coal
2. Which of the following statements are usually correct for carbon compounds? These
 - (i) are good conductors of electricity
 - (ii) are poor conductors of electricity
 - (iii) have strong forces of attraction between their molecules
 - (iv) do not have strong forces of attraction between their molecules
 - (a) (i) and (iii) (b) (ii) and (iii)
 - (c) (i) and (iv) (d) (ii) and (iv)
3. A molecule of ammonia (NH_3) has
 - (a) only single bonds
 - (b) only double bonds
 - (c) only triple bonds
 - (d) two double bonds and one single bond
4. Buckminsterfullerene is an allotropic form of
 - (a) phosphorus
 - (b) sulphur
 - (c) carbon
 - (d) tin
5. Oils on treating with hydrogen in the presence of palladium or nickel catalyst form fats.
This is an example of
 - (a) Addition reaction
 - (b) Substitution reaction
 - (c) Displacement reaction
 - (d) Oxidation reaction
6. In which of the following compounds, — OH is the functional group?
 - (a) Butanone
 - (b) Butanol
 - (c) Butanoic acid
 - (d) Butanal

7. Which of the following are correct structural isomers of butane?



(a) (i) and (iii) (b) (ii) and (iv)

(c) (i) and (ii) (d) (iii) and (iv)

8. In the below given reaction, alkaline $KMnO_4$ acts as



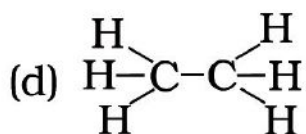
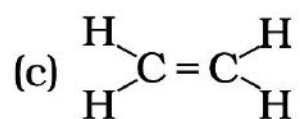
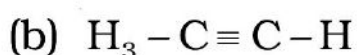
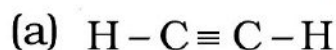
(a) reducing agent

(b) oxidising agent

(c) catalyst

(d) dehydrating agent

9. Structural formula of ethyne is



10. The soap molecule has a

(a) hydrophilic head and a hydrophobic tail

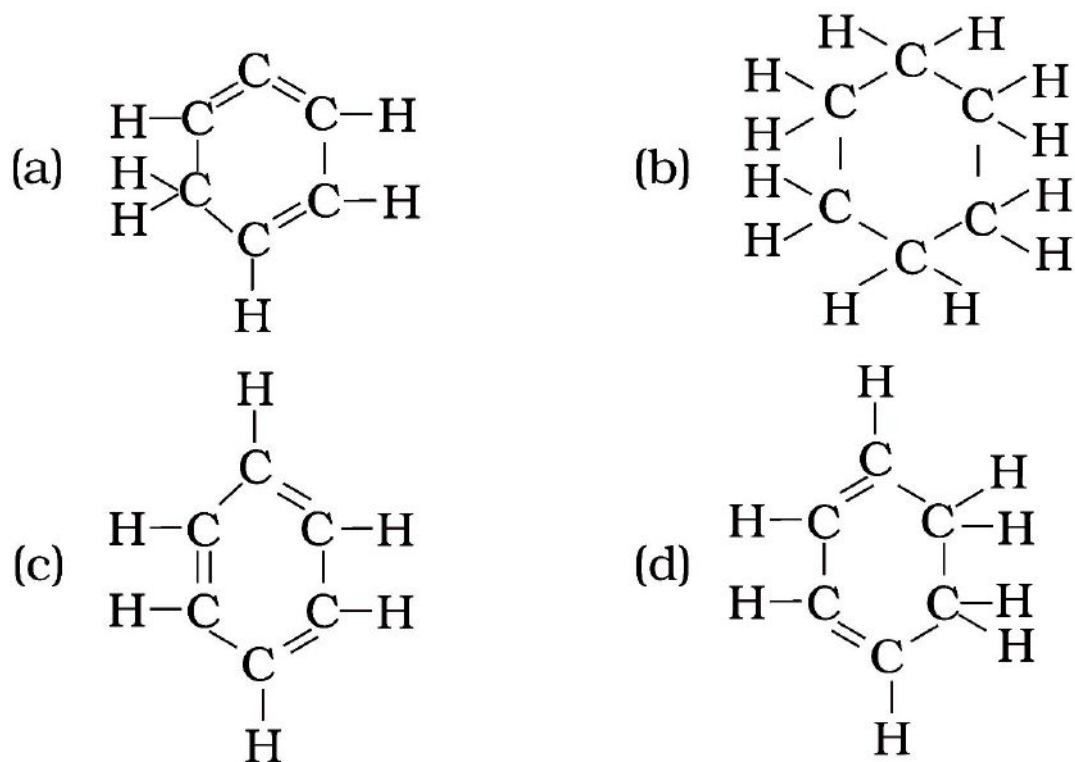
(b) hydrophobic head and a hydrophilic tail

(c) hydrophobic head and a hydrophobic tail

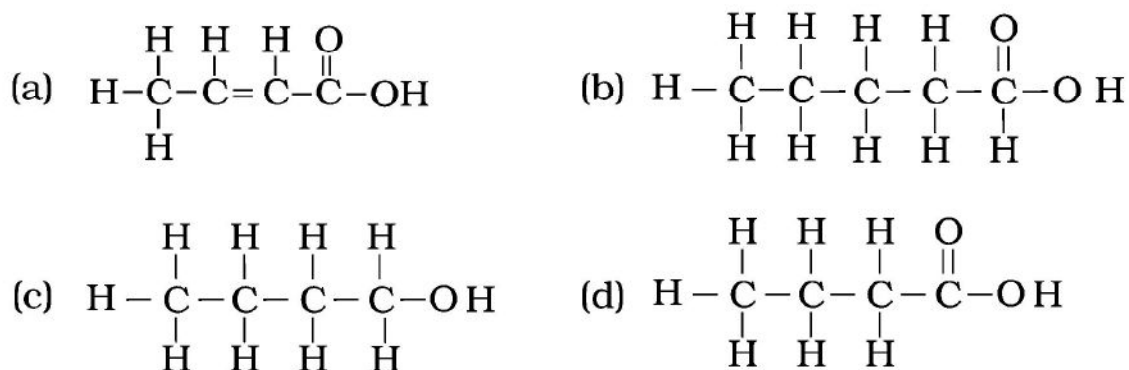
(d) hydrophilic head and a hydrophilic tail

11. Which of the following is the correct representation of electron dot structure of nitrogen?
- (a) $:\ddot{\text{N}} : \ddot{\text{N}}:$
- (b) $:\dot{\text{N}} :: \dot{\text{N}}:$
- (c) $:\ddot{\text{N}} : \dot{\text{N}}:$
- (d) $:\text{N} :: \text{N}:$
12. Identify the unsaturated compounds from the following
- (i) Propane
(ii) Propene
(iii) Propyne
(iv) Chloropropane
- (a) (i) and (ii) (b) (ii) and (iv)
(c) (iii) and (iv) (d) (ii) and (iii)
13. Chlorine reacts with saturated hydrocarbons at room temperature in the
- (a) absence of sunlight
(b) presence of sunlight
(c) presence of water
(d) presence of hydrochloric acid
14. In the soap micelles
- (a) the ionic end of soap is on the surface of the cluster while the carbon chain is in the interior of the cluster.
(b) ionic end of soap is in the interior of the cluster and the carbon chain is out of the cluster.
(c) both ionic end and carbon chain are in the interior of the cluster
(d) both ionic end and carbon chain are on the exterior of the cluster
15. Pentane has the molecular formula C_5H_{12} . It has
- (a) 5 covalent bonds
(b) 12 covalent bonds
(c) 16 covalent bonds
(d) 17 covalent bonds
16. Ethanol reacts with sodium and forms two products. These are
- (a) sodium ethanoate and hydrogen
(b) sodium ethanoate and oxygen
(c) sodium ethoxide and hydrogen
(d) sodium ethoxide and oxygen

17. Structural formula of benzene is:



18. The correct structural formula of butanoic acid is



19. Vinegar is a solution of

- (a) 50% – 60% acetic acid in alcohol
- (b) 5% – 8% acetic acid in alcohol
- (c) 5% – 8% acetic acid in water
- (d) 50% – 60% acetic acid in water

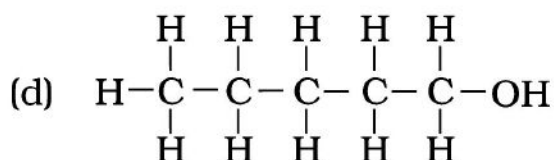
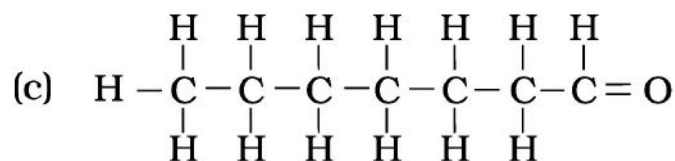
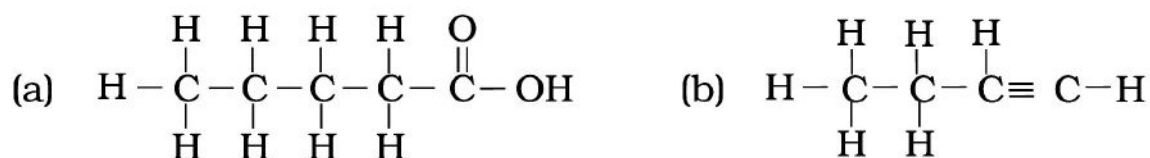
20. Mineral acids are stronger acids than carboxylic acids because

- (i) mineral acids are completely ionised
 - (ii) carboxylic acids are completely ionised
 - (iii) mineral acids are partially ionised
 - (iv) carboxylic acids are partially ionised
- (a) (i) and (iv) (b) (ii) and (iii) (c) (i) and (ii) (d) (iii) and (iv)

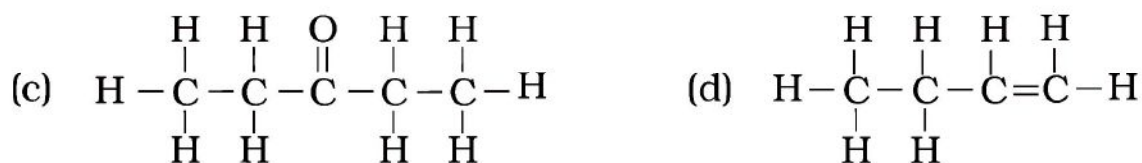
21. Carbon forms four covalent bonds by sharing its four valence electrons with four univalent atoms, e.g. hydrogen. After the formation of four bonds, carbon attains the electronic configuration of
- helium
 - neon
 - argon
 - krypton
22. The correct electron dot structure of a water molecule is
- $\text{H} \cdot \ddot{\text{O}} \cdot \text{H}$
 - $\text{H} : \ddot{\text{O}} : \text{H}$
 - $\text{H} : \ddot{\text{O}} : \text{H}$
 - $\text{H} : \text{O} : \text{H}$
23. Which of the following is not a straight chain hydrocarbon?
- $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}_2}$
 - $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$
 - $\text{H}_2\overset{\text{CH}_3}{\text{C}}-\text{H}_2\text{C}-\text{H}_2\text{C}-\underset{\text{CH}_3}{\text{CH}_2}$
 - $\begin{array}{l} \text{CH}_3 \\ \diagdown \\ \text{H}_3\text{C} \end{array} \text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3$
24. Which among the following are unsaturated hydrocarbons?
- $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$
 - $\text{H}_3\text{C}-\text{C}\equiv\text{C}-\text{CH}_3$
 - $\text{H}_3\text{C}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$
 - $\text{H}_3\text{C}-\underset{\text{CH}_3}{\text{C}}=\text{CH}_2$
- (i) and (iii) (b) (ii) and (iii)
 - (ii) and (iv) (d) (iii) and (iv)
25. Which of the following does not belong to the same homologous series?
- CH_4
 - C_2H_6
 - C_3H_8
 - C_4H_8

26. The name of the compound $\text{CH}_3 - \text{CH}_2 - \text{CHO}$ is
- Propanal
 - Propanone
 - Ethanol
 - Ethanal
27. The heteroatoms present in $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_2\text{Cl}$ are
- oxygen
 - carbon
 - hydrogen
 - chlorine
- (i) and (ii) (b) (ii) and (iii)
 - (iii) and (iv) (d) (i) and (iv)
28. Which of the following represents saponification reaction?
- $\text{CH}_3\text{COONa} + \text{NaOH} \xrightarrow{\text{CaO}} \text{CH}_4 + \text{Na}_2\text{CO}_3$
 - $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{H}_2\text{SO}_4} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$
 - $2\text{CH}_3\text{COOH} + 2\text{Na} \rightarrow 2\text{CH}_3\text{COONa} + \text{H}_2$
 - $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$
29. The first member of alkyne homologous series is
- ethyne
 - ethene
 - propyne
 - methane
30. Draw the electron dot structure of ethyne and also draw its structural formula
31. Why detergents are better cleansing agents than soaps? Explain.
32. Name the functional groups present in the following compounds
- $\text{CH}_3\text{COCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
 - $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
 - $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CHO}$
 - $\text{CH}_3\text{CH}_2\text{OH}$
33. How is ethene prepared from ethanol? Give the reaction involved in it.
34. Intake of small quantity of methanol can be lethal. Comment.
35. A gas is evolved when ethanol reacts with sodium. Name the gas evolved and also write the balanced chemical equation of the reaction involved.

36. Write the names of the following compounds



37. Identify and name the functional groups present in the following compounds.



38. A compound X is formed by the reaction of a carboxylic acid $\text{C}_2\text{H}_4\text{O}_2$ and an alcohol in presence of a few drops of H_2SO_4 . The alcohol on oxidation with alkaline KMnO_4 followed by acidification gives the same carboxylic acid as used in this reaction. Give the names and structures of (a) carboxylic acid, (b) alcohol and (c) the compound X. Also write the reaction.

39. Ethene is formed when ethanol at 443 K is heated with excess of concentrated sulphuric acid. What is the role of sulphuric acid in this reaction? Write the balanced chemical equation of this reaction.

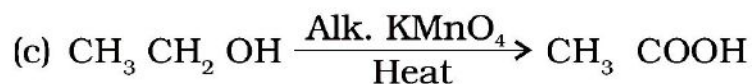
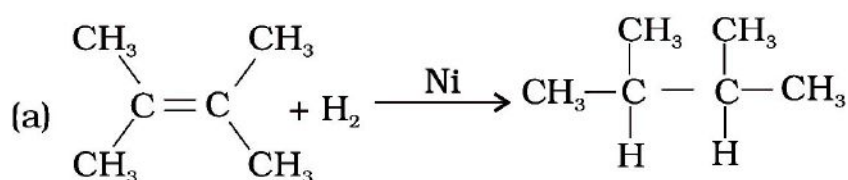
40. Carbon, Group (14) element in the Periodic Table, is known to form compounds with many elements. Write an example of a compound formed with

(a) chlorine (Group 17 of Periodic Table)

(b) oxygen (Group 16 of Periodic Table)

41. In electron dot structure, the valence shell electrons are represented by crosses or dots. (a) The atomic number of chlorine is 17. Write its electronic configuration (b) Draw the electron dot structure of chlorine molecule.

42. Catenation is the ability of an atom to form bonds with other atoms of the same element. It is exhibited by both carbon and silicon. Compare the ability of catenation of the two elements. Give reasons.
43. Unsaturated hydrocarbons contain multiple bonds between the two C-atoms and show addition reactions. Give the test to distinguish ethane from ethene.
44. Write the structural formulae of all the isomers of hexane.
45. What is the role of metal or reagents written on arrows in the given chemical reactions?



46. A salt X is formed and a gas is evolved when ethanoic acid reacts with sodium hydrogencarbonate. Name the salt X and the gas evolved. Describe an activity and draw the diagram of the apparatus to prove that the evolved gas is the one which you have named. Also, write chemical equation of the reaction involved.
47. What are hydrocarbons? Give examples.
48. Give the structural differences between saturated and unsaturated hydrocarbons with two examples each.
49. What is a functional group? Give examples of four different functional groups.
50. Name the reaction which is commonly used in the conversion of vegetable oils to fats. Explain the reaction involved in detail.
51. Write the formula and draw electron dot structure of carbon tetrachloride.
52. What is saponification? Write the reaction involved in this process.
53. Esters are sweet-smelling substances and are used in making perfumes. Suggest some activity and the reaction involved for the preparation of an ester with well labeled diagram.
54. A compound C (molecular formula, $\text{C}_2\text{H}_4\text{O}_2$) reacts with Na – metal to form a compound R and evolves a gas which burns with a pop sound. Compound C on treatment with an alcohol A in presence of an acid forms a sweet smelling compound S (molecular formula, $\text{C}_3\text{H}_6\text{O}_2$). On addition of NaOH to C, it also gives R and water. S on treatment with NaOH solution gives back R and A. Identify C, R, A, S and write down the reactions involved.
55. Draw the possible isomers of the compound with molecular formula $\text{C}_3\text{H}_6\text{O}$ and also give their electron dot structures.

56. How would you bring about the following conversions? Name the process and write the reaction involved.
- (a) ethanol to ethene.
 - (b) propanol to propanoic acid.
- Write the reactions.
57. Explain the given reactions with the examples
- (a) Hydrogenation reaction
 - (b) Oxidation reaction
 - (c) Substitution reaction
 - (d) Saponification reaction
 - (e) Combustion reaction
58. An organic compound A on heating with concentrated H_2SO_4 forms a compound B which on addition of one mole of hydrogen in presence of Ni forms a compound C. One mole of compound C on combustion forms two moles of CO_2 and 3 moles of H_2O . Identify the compounds A, B and C and write the chemical equations of the reactions involved.
59. Define Allotropy.
60. What is vinegar ?
61. What is combustion ?
62. How can you differentiate saturated and unsaturated Hydrocarbon on the basis of burning behaviour ?
63. Give two advantages of synthetic detergents over soaps ?
64. What are substitution reactions ?
65. Differentiate between diamond and graphite.
66. Discuss the method of preparation of soap in the laboratory.
67. Write five ill effects of alcohol drinking.
68. Differentiate between ionic compounds and covalent compounds.
69. Give some important properties of ethanol (ethyl alcohol).
70. Give five main advantages of synthetic detergents over soaps.
71. Write important uses of (a) ethanol and (b) ethanoic acid.
72. What happens when ethanol reacts with (i) sodium (ii) potassium permanganate solution.
73. An organic acid 'X' is a liquid which often freezes during winter time in cold countries, has the molecular formula, $\text{C}_2\text{H}_4\text{O}_2$. On warming it with ethanol in the presence of a few drops of concentrated sulphuric acid, a compound 'Y' with a sweet smell is formed
- (i) Identify 'X' and 'Y'.
 - (ii) Write a chemical equation for the reaction involved.

74. Write name of the following –
- Alkaline earth metal belonging to the third period
 - The alkali metal atom having largest atomic radius
 - The halogen atom belonging to fourth period
 - The element having lowest ionization energy
 - The element having second lowest electronegativity
75. Organic compound 'x' of molecular formula $C_2H_4O_2$ gives brisk effervescence with sodium bicarbonate . give name and molecular formula of x with balanced equation
76. Soaps are not considered as effective cleansing agent. Why?
77. How does melting and boiling points of hydrocarbon change with the increase in molecular mass ?
78. Write down the relevant chemical equation involved in decolourisation.
79. A compound X has molecular formula C_3H_4 one mole of X reacts with 2 moles of hydrogen to yield a compound Y deduce the structure of X and Y.
80. What is dehydration reaction? Give one example.
81. What is hydrolysis?
82. Why doesn't soap form micelles in ethanol as they form in water?
83. Three elements X,Y and Z belong to 17TH group but to 2nd 3th and 4th period respectively. Number of valance electrons in X is 7Find the number of valance electrons in X and Z.
84. What is the use of oxyacetylene flame?
85. What is observed on adding 5% solution of alkaline potassium permanganate solution drop by drop to some warm ethanol taken in testube.
86. Write the name of the compound formed during chemical reaction.
87. How would you distinguish experimentally between an alcohol and a carboxylic acid on the basis of a chemical property?
88. Why are vegetable oils healthy as compared to vegetable ghee ? how are vegetable oils converted into vegetable ghee name the process.
89. When acetic acid reacts with X, a salt is formed which on reaction with soda lime gives a gas Y. Identify X and Y
90. "Alkenes form a homologous series" Explain.
91. Why does Ethanoic acid called glacial acetic acid? (Imp.)
92. Why is the conversion of ethanol to ethanoic acid an oxidation reaction? (Imp.)
93. A mixture of ethyne and oxygen is burnt for welding. Can you tell why a mixture of ethyne and air is not used? (Imp.)

94. Why is the conversion of ethanol to ethanoic acid considered an oxidation reaction?
 95. Who was the first to suggest the classification of chemical compounds into inorganic compounds and organic compounds?
 96. Why are the compounds of carbon studied as a separate branch of chemistry?
 97. Compounds like calcium carbide, carbon monoxide, carbon dioxide, calcium carbonate etc., are considered as inorganic compounds although they have carbon atoms in their molecule. Give reason.
 98. Why compounds like B-B, Si-Si, and S-S do not exist in nature?
 99. What is "Buckminster fullerene"? And why it is called so?
 100. Name the first organic compound obtained from an inorganic source in the laboratory. Who synthesized it?
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