CHEMISTRY

BOOKS - TARGET CHEMISTRY (HINGLISH)

CARBON COMPOUNDS

Choose The Correct Alternative 1 Mark Each

1. The first organic compound synthesized from inorganic compounds was _____.

A. urea

B. methane

C. acetic acid

D. methanol

Answer: A

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2. Which of the following is NOT an organic compound ?

A. CH_4

B. $CHCl_3$

C. CH_3OH

D. CO_2

Answer: D

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3. The number of covalent bonds that one carbon atom can form is _____ .

A. 2

B. 4

C. 3

D. 5

Answer: B

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4. The saturated hydrocarbon from the following carbon compounds is _____ .

A. ethene

B. ethyne

C. ethane

D. benzene

Answer: C

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5. Tincture of iodine contains iodine and _____ .

A. ethanol

B. methanol

C. ethanal

D. acetic acid

Answer: A

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6. The function group in butanone is _____ .

A. ether

B. ester

C. ketone

D. aldehyde

Answer: C

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7. In which of the following compounds -OH is the functional group ?

A. Butanone

B. Butanol

C. Butanoic acid

D. Butanal

Answer: B

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8. Which of the following compounds will burn with a sooty flame?

A. Benzene

B. Propanol

C. Ethanoic acid

D. Butane

Answer: A

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9. Which of the following compounds will burn with clean blue flame?

A. Benzene

B. Naphthalene

C. Butane

D. Oleic acid

Answer: C

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10. Iodine decolourises in stearic acid because _____ .

A. it is saturated

B. it contains single bonds

C. it is unsaturated

D. cannot tell

Answer: C

Watch Video Solution

11. Combustion of coal in air is a _____ reaction.

A. combination

B. displacement

C. decomposition

D. double displacement

Answer: A

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12. In laboratory, a student added 3 mL ethanol and 5 mL sodium carbonate in a test tube and warmed the mixture for few minutes. He then slowly added few drops of potassium permanganate to this warm solution with constant stirring. He observed that the pink colour of potassium permanganate had disappeared. This is because _____ .

A. ethanol is reduced to ethane

B. ethanol is oxidized to ethane

C. ethanol is oxidized to ethanoic acid

D. ethanol is reduced to ethanoic acid

Answer: C

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13. 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

Answer: C

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14. In an experiment to study the properties of ethanoic acid, a student dipped red and blue litmus papers to the solution of ethanoic acid. What would he observe?

A. Red litmus remains red and blue litmus turns red.

B. Red litmus turns blue and blue litmus remains blue.

C. Red litmus turns blue and blue litmus turns red.

D. Red litmus becomes colourless and blue litmus remains blue.

Answer: A

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15. A student takes about 2 mL ethanoic acid in a dry test tube and adds a pinch of sodium carbonate to it. What will he observe ?

A. A colourless and odourless gas evolves which burns with pop sound.

B. A colourless and odourless gas evolves with a brisk effervescence.

C. A brown coloured gas with foul smell evolves with a brisk effervescence.

D. A brown coloured gas with foul smell evolves which burns with pop sound.

Answer: B

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16. When you add a few drops of acetic acid to a test tube containing sodium bicarbonate power, a gas is evolved which _____ .

A. burns with explosion

B. has a foul smell of rotten eggs

C. turns lime water milky

D. has a fruity smell

Answer: C

Watch Video Solution

17. Which of the following represents esterification reaction ?

A. $CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$

B. $CH_3COOH + C_2H_5OH \xrightarrow[\text{catalyst}]{\text{Acid}} CH_3COOC_2H_5 + H_2O$

C. $2CH_3COOH + 2Na \rightarrow 2CH_3COONa + H_2 \uparrow$

D. $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

Answer: B

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18. When ethanoic acid reacts with ethanol, the product formed _____.

A. is odourless

B. has pungent odour

C. has a foul smell of rotten eggs

D. has a fruity smell

Answer: D

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19. Which of the following are main constituents of cooking gas ?

A. Propane + Butane

B. Butane + Benzene

C. Propane + Benzene

D. Methane + Acetylene

Answer: A

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20. Which of the following is used in kitchen cabinet ?

A. Teflon

B. Polyethylene

C. Polyvinyl chloride

D. Rubber

Answer: C

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B. methanol

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B. ester

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D. aldehyde

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Watch Video Solution

27. Which of the following compound has the functional group $-OH$

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C. Butanoic acid

D. Butanal

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29. Which of the following compounds will burn with clean blue flame?

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Watch Video Solution

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C. ethanol is oxidized to ethanoic acid

D. ethanol is oxidized to ethanoic acid

Answer: D

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A. sodium ethanoate and hydrogen

B. sodium ethanoate and oxygen

C. sodium ethoxide and hydrogen

D. sodium ethoxide and oxygen

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34. In an experiment to study the properties of ethanoic acid, a student dipped red and blue litmus papers to the solution of ethanoic acid. What would he observe?

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C. Red litmus turns blue and blue litmus turns red.

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Answer: B

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36. When you add a few drops of acetic acid to a test tube containing sodium bicarbonate power, a gas is evolved which _____ .

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B. has a foul smell of rotten eggs

C. turns lime water milky

D. has a fruity smell

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D. $CH_3COOC_2H_5 + NaOH \rightarrow CH_3COONa + C_2H_5OH$

Answer: B

Watch Video Solution

38. When ethanoic acid reacts with ethanol, the product formed _____.

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B. has pungent odour

C. has a foul smell of rotten eggs

D. has a fruity smell

Answer: D

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D. Methane + Acetylene

Answer: A

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40. Which of the following is used in kitchen cabinet ?

A. Teflon

B. Polyethylene

C. Polyvinyl chloride

D. Rubber

Answer: C

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Complete The Paragraph

1. (polymer, starch, rubber, macromolcules, nucleic acids, proteins, polyethylene, cellulose)

We know that some carbon compounds haave large molecular masses up to 10^{12}. Such molecules are called a _____. They contain large number of single compound or different compounds joined together by chemical bonds. If the macromolecule is formed by regular repetition of a small unit, then it is called, a _____. the proteins and nucleic acids play an important role in our life. Our clothes, papers, etc. are made up of polysaccharide called _____ and the polysaccharide that provides energy is_____ . constitute large part of our body and are responsible for various physiological functions and growth. The natural macromolecules called _____ control the heredity.

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2. (polymer, starch, rubber, macromolcules, nucleic acids, proteins, polyethylene, cellulose)

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Name The Following

1. The unique property of carbon atom to form covalent bonds with other carbon atoms

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2. Molecular formula of major component present in natural gas

Watch Video Solution

3. The compounds having different structural formulae having the same moleuclar formulais called ..... .

Watch Video Solution

4. The first member of alkyne homologous series is

Watch Video Solution

5. Name two commonly used oxidizing agent

Watch Video Solution

6. The process by which unsaturated fats are changed to saturated fats

Watch Video Solution

7. Name two catalysts which can be used in the hydrogenation of unsaturated compounds.

Watch Video Solution

8. The name of the reaction in which replacement of an atom or a group of atoms in a molecule by another atom or group if atoms takes place

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9. The gas evolved when sodium metal reacts with ethanol.

Watch Video Solution

10. The common name of CH_3COOH

Watch Video Solution

11. The common name of CH_3COONa

Watch Video Solution

12. The small unit that repeats regularly to form a polymer

Watch Video Solution

13. The monomer unit of PVC is:

Watch Video Solution

14. The polymer used for making injection syringe.

Watch Video Solution

15. The monomer for Teflon polymer is

Watch Video Solution

16. An example for copolymer

Watch Video Solution

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31. The monomer for Teflon polymer is

Watch Video Solution

32. Which of the following is an example of copolymer?

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True Or False

1. Most of the carbon compounds are good conductors of electricity.

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2. The valence shell of carbon contains six electrons.

Watch Video Solution

3. The compounds formed by mutual sharing of electrons between the atoms are called covalent compounds.

Watch Video Solution

4. Carbon compounds in which the carbon atoms are linked to each other by single bonds are called satureated carbon compounds.

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5. Isobutylene contains a carbon-carbon triple bond.

Watch Video Solution

6. Combustion involves heating or burning of a substance strongly in presence of hydrogen.

Watch Video Solution

7. Naphthalene burns with a clean blue flame.

Watch Video Solution

8. The decolourisation of bromine is used to detect the presence of $C = C$ or $C \equiv C$ bonds.

Watch Video Solution

9. Unsaturated fats containing double bonds are harmful to health.

Watch Video Solution

10. Saturated hydrocarbons do not undergo addition reactions.

Watch Video Solution

11. Ethanol mixed with poisonous propanol is called denatured spirit.

Watch Video Solution

12. Carbonates and bicarbonates release carbon dioxide gas on reacting with acids.

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13. Polystyrene is used to make thermocol articles.

Watch Video Solution

14. Teflon is used to make winter clothing.

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Odd One Out

1. Carbon dioxide, methanol, acetaldehyde, propane

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2. Ethane, ethene, ethyne, propene

Watch Video Solution

3. Cyclohexene, cyclohexane, cyclopentane, isobutane

Watch Video Solution

4. Methane, ethene, ethyne, ethanoic acid

Watch Video Solution

5. Methanoic acid, acetic acid, propanoic acid, butanoic acid

Watch Video Solution

6. Polyethylene, polysaccharide, polystyrene, polypropylene .

Find the Odd one out.

Watch Video Solution

7. Carbon dioxide, methanol, acetaldehyde, propane

Watch Video Solution

8. Ethane, ethene, ethyne, propene

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9. Cyclohexene, cyclohexane, cyclopentane, isobutane

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10. Methane, ethene, ethyne, ethanoic acid

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12. Polyethylene, polysaccharide, polystyrene, polypropylene .

Find the Odd one out.

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Complete The Analogy

1. Nitrogen molecule : Triple bond :: Oxygen molecule : _____

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2. Carbon - carbon single bond : Alkanes :: Carbon- carbon triple bond : _____

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3. Alkynes : C_nH_{2n-2} :: Alkenes : _____

Watch Video Solution

4. Contains a single type of monomers : Homopolymers :: Contains two or more types of monomers : _____

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5. Cellulose : glucose :: Rubber : _____.

Watch Video Solution

6. Nitrogen molecule : Triple bond :: Oxygen molecule : _____

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Match The Following

1. Match the following :

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2. Match the paris

View Text Solution

3. Match the functional groups to their formulae.

View Text Solution

4. Match the following :

View Text Solution

5. Match the pairs :

View Text Solution

6. Match the pairs. :

View Text Solution

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9. Match the functional groups to their formulae.

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View Text Solution

11. Match the pairs :

View Text Solution

12. Match the pairs. :

View Text Solution

Answer The Following Can You Recall

1. What are the types of compounds ?

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2. Objects in evryday use such as foodstuff, fibres, paper, medicines, wood, fuels are made of various compounds. Which constituent elements are common in these compounds ?

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3. Two which group in the periodic table does the element carbon belongs? Write down the electronic configuration of carbon and deduce the valency of carbon.

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Answer The Following Can You Tell

1. What is meant by a chemical reaction?

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2. What is the number of chemical bonds that an atom of an element forms called ?

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3. What are the two important types of chemical bonds ?

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4. What is meant by a chemical bond?

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Answer The Following Intext Question

1. Are the melting and boiling point of carbon compounds (covalent compounds) higher or lower as compared to ionic compounds ?

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2. Why does carbon neither form C^{4+} cation nor C^{4-} anion, but forms covalent compounds?

Watch Video Solution

3. Explain the term covalent bond with example .

Watch Video Solution

4. How is electron-dot structure of a molecule drawn ? Explain giving example.

Watch Video Solution

5. Draw electron-dot structures with circles and line structures of the following molecules :

Hydrogen (H_2)

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6. Draw electron-dot structures with circles and line structures of the following molecules :

Nitrogen (N_2)

Watch Video Solution

7. Draw electron-dot structures with circles and line structures of the following molecules :

Oxygen (O_2)

Watch Video Solution

8. Carbon atoms come together in a large number to form extremely big molecules. What is the cause of this unique property of carbon?

Watch Video Solution

9. What causes the existence of vey large number of carbon compounds ?

Watch Video Solution

10. Explain properties of carbon :

i. Catenation

Watch Video Solution

11. Explain properties of carbon :

ii. Tetravalency :

Watch Video Solution

12. Write name and molecular formula of the smallest carbon compounds.

Watch Video Solution

13. Write a short note on hydrocarbons.

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14. Give any four examples of saturated hydrocarbons.

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Answer The Following Use Your Brain Power

1. What is the number of electrons in the valence shell of chlorine (Z-17)?

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2. Molecular formula of chlorine is Cl_2. Draw electron -dot and line structure of a chlorine molecule.

Watch Video Solution

3. The molecular formula of water is H_2O. Draw electron-dot and line structures for this triatomic molecule. (Use dots for electrons of oxygen atom and crosses for electrons of hydrogen atoms.)

Watch Video Solution

4. The molecular formula of ammonia is NH_3. Draw electron-dot and line structures for ammonia molecule.

Watch Video Solution

5. What would be the electron dot structure of carbon dioxide which has the formula CO_2?

Watch Video Solution

6. With which bond C atom in CO_2 is bonded to each of the O atoms ?

Watch Video Solution

7. The molecular formula of sulphur is S_8 in which eight sullphur atoms are bonded to each other to form one ring. Draw an electron-dot structure for S_8 without showing the circules.

Watch Video Solution

8. Molecular formula of propane is C_3H_8. From this, draw its structural formula.

Watch Video Solution

9. Draw the electron dot structure of ethyne and also draw its structure of ethyne and also its structural formula.

Watch Video Solution

10. How mnay bonds have to be there in between the two carbon atoms in ethyne so as to satisfy their tetravalency ?

Watch Video Solution

11. What is the number of electrons in the valence shell of chlorine (Z-17)?

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12. Molecular formula of chlorine is Cl_2. Draw electron -dot and line structure of a chlorine molecule.

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13. The molecular formula of water is H_2O. Draw electron-dot and line structures for this triatomic molecule. (Use dots for electrons of oxygen atom and crosses for electrons of hydrogen atoms.)

Watch Video Solution

14. The molecular formula of ammonia is NH_3. Draw electron-dot and line structures for ammonia molecule.

Watch Video Solution

15. The molecular formula of carbon dioxide is CO_2. Draw the electron-dot structure (without showing circles) and line structure for CO_2.

Watch Video Solution

16. With which bond C atom in CO_2 is bonded to each of the O atoms ?

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17. The molecular formula of sulphur is S_8 in which eight sullphur atoms are bonded to each other to form one ring. Draw an electron-dot structure for S_8 without showing the circules.

Watch Video Solution

18. Molecular formula of propane is C_3H_8. From this, draw its structural formula.

Watch Video Solution

19. The molecular formula of ethyne is C_2H_2. From this, draw its structural formula and electron-dot structure.

Watch Video Solution

Watch Video Solution

20. How mnay bonds have to be there in between the two carbon atoms in ethyne so as to satisfy their tetravalency ?

Watch Video Solution

Answer The Following

1. Write the number of covalent bonds in the molecules of butane, C_4H_{10} .

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2. Explain the stpes to draw structural formula of ethane.

Watch Video Solution

3. Draw an electron-dot structure of the following molecules (without showing the circles).

i. Methane

Watch Video Solution

4. Draw an electron-dot structure of the following molecules (without showing the circles).

ii. Ethene

Watch Video Solution

5. Draw an electron-dot structure of the following molecules (without showing the circles).

iii. Methanol

Watch Video Solution

6. Draw an electron-dot structure of the following molecules (without showing the circles).

iv. Water

Watch Video Solution

7. Write the molecular formulae and draw electron-dot structures of the following compounds :

i. Ethane

Watch Video Solution

8. Draw an electron-dot structure of the following molecules (without showing the circles).

ii. Ethene

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9. Explain the term with example : Unsaturated hydrocarbon

Watch Video Solution

10. What is the difference between satureated hydrocarbons and unsaturated hydrocarbons ?

Watch Video Solution

11. Write a short note on : Crude oil

Watch Video Solution

12. Explain the term with example : Structural isomerism

Watch Video Solution

13. Molecular formula of propane is C_3H_8. From this, draw its structural formula.

Watch Video Solution

14. Draw all possible structural formulae of compounds from their molecular formulae given below.

ii. C_4H_{10}

Watch Video Solution

15. Draw all possible structural formulae of compounds from their molecular formulae given below.

iii. C_3H_4

Watch Video Solution

16. Write the molecular formula of the following :

i. Hexane

Watch Video Solution

17. Write the molecular formula of the following :

ii. Cyclohexane

Watch Video Solution

18. Draw electron-dot structure of cyclohexane.

Watch Video Solution

19. Saturated hydrocarbons are calssified into three types. Write these names giving one example each.

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20. Explain the structure of benzene .

Watch Video Solution

21. Explain the term with example : Hetero atom in a carbon compound

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22. Explain the term with example : Functional group

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23. Which of the following compound has the functional group $-OH$

Watch Video Solution

24. Write the name of each of the following functional group :

ii. $-\underset{\underset{O}{||}}{C}-$

Watch Video Solution

25. Give any four functional groups containing oxygen as the heteroatom in it. Write name and structural formula of one example each.

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26. Give names of three functional groups containing three different hetero atoms. Write name and structural formula of one example each.

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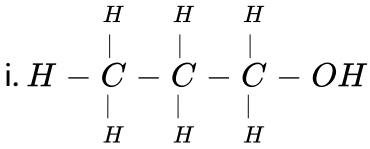
27. Identify and name the functional groups present in the following compounds.

i. 

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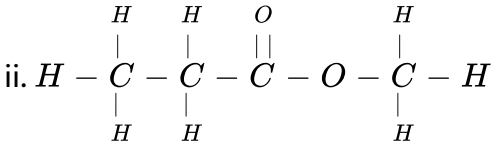
ii. 

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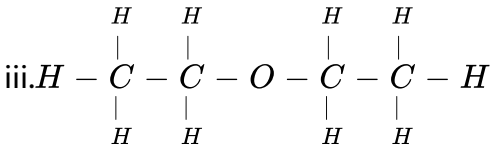
iii. 

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30. Define homologous series.

Watch Video Solution

31. State the characteristics of a homologous series.

Watch Video Solution

32. Write the molecular formulae of the first two members of the homologous series having functional group, $-COOH$.

Watch Video Solution

33. By how many $-CH_2-$ (methylene) units do the formulae of the first two members of homologous series of alkanes, methane (CH_4) and ethane (C_2H_6) differ? Similarly, by how many $-CH_2-$ units do the

neighbouring members ethane (C_2H_6) and propane (C_3H_8) differ from each other ?

Watch Video Solution

34. How many methylene units are extra in the formula of the fourth member than the third member of the homologous series of alcohols ?

Watch Video Solution

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Watch Video Solution

36. Explain the term with example : Alkane

Watch Video Solution

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Watch Video Solution

38. The general molecular formula for the homologous series of alkynes is C_nH_{2n-2}. Write down the individual molecular formulae of the value 2, 3 and 4 respectively for 'n' in this formula.

Watch Video Solution

39. Complete the following flowchart and write the general formula of alkane :

View Text Solution

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Watch Video Solution

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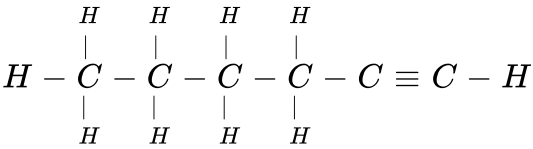
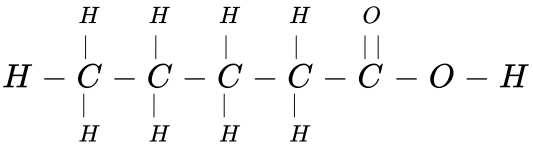


Watch Video Solution

42. Write the IUPAC names of the following compounds :



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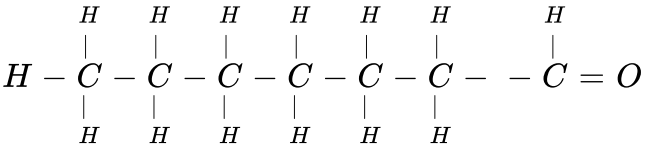

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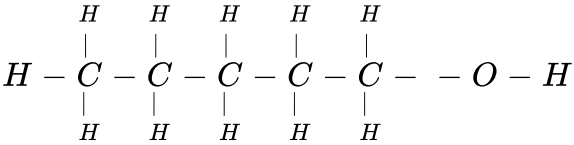

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45. Write the IUPAC names of the following structural formulae.

$CH_3 - CH_2 - CH_3$

Watch Video Solution

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$CH_3 - CHOH - CH_3$

Watch Video Solution

47. Write the IUPAC name of CH_3CH_2COOH

Watch Video Solution

48. Write the IUPAC names of the following structural formulae.

$CH_3 - CH_2 - NH_2$

Watch Video Solution

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$CH_3 - CHO$

Watch Video Solution

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Watch Video Solution

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Watch Video Solution

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Watch Video Solution

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Watch Video Solution

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Watch Video Solution

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View Text Solution

75. An organic compound P has molecular formula C_2H_4. On reduction, it gives another compound Q with molecular formula C_2H_6. Q reacts with chlorine in the presence of sunlight to give R having molecular formula C_2H_5Cl.

Identify P, Q and R.

Watch Video Solution

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Identify P, Q and R.

Watch Video Solution

77. Write any two physical properties of ethanol.

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78. What is denatured spirit?

Watch Video Solution

79. What are the harmful effects of ethanol?

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80. When ethanol is heated at $170^{\circ}C$ with conc. H_2SO_4, it forms an organic compound 'A' and water. The compound 'A' reacts with hydrogen in the presence of nickel to form 'B'.

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Watch Video Solution

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ii.Identify the homologous series to which A and B belongs.

Watch Video Solution

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iii. Name the products formed when 'B' undergoes combustion in presence of sufficient amount of oxygen. Write its chemical equation.

Watch Video Solution

83. What is meant by vinegar and gasohol? What are their uses ?

Watch Video Solution

84. State two physical properties of ethanoic acid.

Watch Video Solution

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Watch Video Solution

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Watch Video Solution

89. Identify the type of the following reaction of carbon compounds.

$CH_3 - CH_2 - CH_2 - Oh \rightarrow CH_3 - CH_2 - COOH$

Watch Video Solution

90. Identify the type of the following reaction of carbon compounds.

$CH_3 - CH_2 - CH_3 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

Watch Video Solution

91. Identify the type of the following reaction of carbon compounds.

$CH_3 - CH = CH - CH_3 + Br_2 \rightarrow CH_3 - CHBr - CHBr - CH_3$

Watch Video Solution

92. Identify the type of the following reaction of carbon compounds.

$CH_3 - CH_3 + Cl_2 \rightarrow CH_3 - CH_2 - Cl + HCl$

Watch Video Solution

93. Identify the type of the following reaction of carbon compounds.

$CH_3 - CH_2 - CH_2 - CH_2 - OH \rightarrow CH_3 - CH_2 - CH = CH_2 + H_2O$

Watch Video Solution

94. Identify the type of the following reaction of carbon compounds.

$CH_3 - COOH + CH_3 - OH \rightarrow CH_3 - COO - CH_3 + H_2O$

Watch Video Solution

95. Identify the type of the following reaction of carbon compounds.

View Text Solution

96. State the role of reagents shown on arrows in the following chemical reactions.

$$CH_3COOH + CH_3CH_2OH \xrightarrow{\text{Conc.}H_2SO_4} CH_3COOC_2H_5 + H_2O$$

Watch Video Solution

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$$CH_3CH_2OH \xrightarrow{KMnO_4} CH_3COOH$$

Watch Video Solution

98. Explain the saponification reaction with example.

Watch Video Solution

99. Define the following terms :

Macromolecules

Watch Video Solution

100. Define the following terms :

Polymers

Watch Video Solution

101. Define the following terms :

Polymerization

Watch Video Solution

102. Define the following terms :

Copolymer

Watch Video Solution

103. Explain the terms polymer and monomer.

Watch Video Solution

104. Explain the terms with example : Homopolymer

Watch Video Solution

105. Give four examples of the following :

Natural macromolecules

Watch Video Solution

106. Give four examples of the following :

Manmade macromolecules

Watch Video Solution

107. Give four examples of the following :

Homopolymers

Watch Video Solution

108. Structural formulae of some monomers are given below. Write the structural formula of the homopolymer formed from them.

(a) $CH_2 = \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}$

View Text Solution

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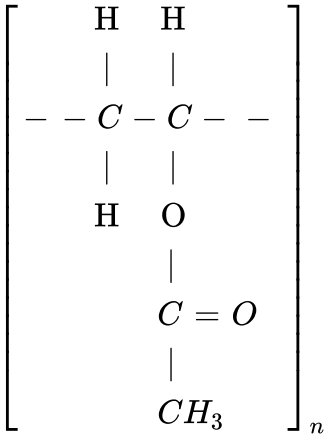
(b) $CH_2 = \overset{\overset{CH_3}{|}}{\underset{\underset{CN}{|}}{C}}$

Watch Video Solution

110. From the given structural formula of polyvinyl acetate, that is used in paints and glues, deduce the name and structural formula of the corresponding monomer.



View Text Solution

111. Give names of three natural polymers. Write the place of their occurrence and names of monomers from which they are formed.

Watch Video Solution

112. Write the number of covalent bonds in the molecules of butane, C_4H_{10}.

Watch Video Solution

113. Explain the stpes to draw structural formula of ethane.

Watch Video Solution

114. Draw an electron-dot structure of the following molecules (without showing the circles).

i. Methane

Watch Video Solution

115. Draw an electron-dot structure of the following molecules (without showing the circles).

ii. Ethene

Watch Video Solution

116. Draw an electron-dot structure of the following molecules (without showing the circles).

iii. Methanol

Watch Video Solution

117. Draw an electron-dot structure of the following molecules (without showing the circles).

iv. Water

Watch Video Solution

118. Write the molecular formulae and draw electron-dot structures of the following compounds :

i. Ethane

Watch Video Solution

119. Write the molecular formulae and draw electron-dot structures of the following compounds :

ii. Ethene

Watch Video Solution

120. Explain the term with example : Unsaturated hydrocarbon

Watch Video Solution

121. What is the difference between satureated hydrocarbons and unsaturated hydrocarbons ?

Watch Video Solution

122. Write a short note on : Crude oil

Watch Video Solution

123. Explain the term with example : Structural isomerism

Watch Video Solution

124. Draw all possible structural formulae of compounds from their molecular formulae given below.

i. C_3H_8

Watch Video Solution

125. Draw all possible structural formulae of compounds from their molecular formulae given below.

ii. C_4H_{10}

Watch Video Solution

126. Draw all possible structural formulae of compounds from their molecular formulae given below.

iii. C_3H_4

Watch Video Solution

127. Write the molecular formula of the following :

i. Hexane

Watch Video Solution

128. Write the molecular formula of the following :

ii. Cyclohexane

Watch Video Solution

129. Draw electron-dot structure of cyclohexane.

Watch Video Solution

130. Saturated hydrocarbons are calssified into three types. Write these names giving one example each.

Watch Video Solution

131. Explain the structure of benzene .

Watch Video Solution

132. Explain the term with example : Hetero atom in a carbon compound

Watch Video Solution

133. Explain the term with example : Functional group

Watch Video Solution

134. Write the name of each of the following functional group :

i. $-OH$

Watch Video Solution

135. Write the name of each of the following functional group :

ii. $-\underset{\underset{O}{||}}{C}-$

Watch Video Solution

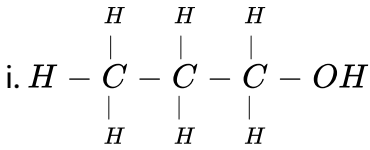
136. Give any four functional groups containing oxygen as the heteroatom in it. Write name and structural formula of one example each.

Watch Video Solution

137. Give names of three functional groups containing three different hetero atoms. Write name and structural formula of one example each.

Watch Video Solution

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

i. 

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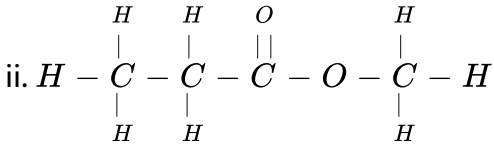
ii. 

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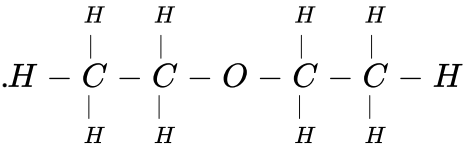
iii. 

Watch Video Solution

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Watch Video Solution

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Watch Video Solution

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Watch Video Solution

146. How many methylene units is less in the formula of the second member than the third member of the homologous series of alkenes ?

Watch Video Solution

147. Explain the term with example : Alkane

Watch Video Solution

148. What would be the general formula for the molecular formulae of the members of the homologous series of alkanes ? What would be the value of 'n' for the first member of this series ?

Watch Video Solution

149. The general molecular formula for the homologous series of alkynes is C_nH_{2n-2}. Write down the individual molecular formulae of the value 2, 3 and 4 respectively for 'n' in this formula.

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150. Complete the following flowchart and write the general formula of alkane :

View Text Solution

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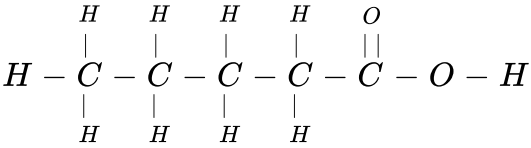
Watch Video Solution

152. How would you name the following compounds ?

$$H-\overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}}-\overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}}-\overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}}-\overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}}-C\equiv C-H$$

Watch Video Solution

153. Write the IUPAC names of the following compounds :



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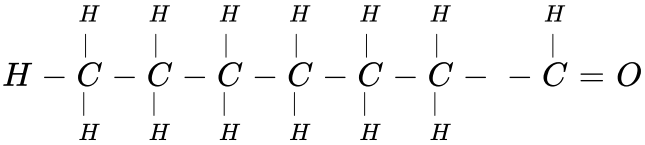

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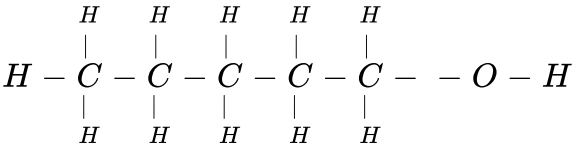

Watch Video Solution

156. Write the IUPAC names of the following structural formulae.

$CH_3 - CH_2 - CH_3$

Watch Video Solution

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$CH_3 - CHOH - CH_3$

Watch Video Solution

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Watch Video Solution

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$CH_3 - CH_2 - NH_2$

Watch Video Solution

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$CH_3 - CHO$

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Watch Video Solution

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View Text Solution

186. An organic compound P has molecular formula C_2H_4. On reduction, it gives another compound Q with molecular formula C_2H_6. Q reacts with chlorine in the presence of sunlight to give R having molecular formula C_2H_5Cl.

Identify P, Q and R.

Watch Video Solution

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Identify P, Q and R.

Watch Video Solution

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Watch Video Solution

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i. Name the compounds A and B. Write the chemical equations of the reactions involved.

Watch Video Solution

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ii.Identify the homologous series to which A and B belongs.

Watch Video Solution

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Watch Video Solution

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$CH_3 - CH_2 - CH_2 - Oh \rightarrow CH_3 - CH_2 - COOH$

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$CH_3 - CH_3 + Cl_2 \rightarrow CH_3 - CH_2 - Cl + HCl$

Watch Video Solution

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$CH_3 - CH_2 - CH_2 - CH_2 - OH \rightarrow CH_3 - CH_2 - CH = CH_2 + H_2O$

Watch Video Solution

205. Identify the type of the following reaction of carbon compounds.

$$CH_3 - COOH + CH_3 - OH \rightarrow CH_3 - COO - CH_3 + H_2O$$

Watch Video Solution

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View Text Solution

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Watch Video Solution

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Watch Video Solution

210. Define the following terms :

Macromolecules

Watch Video Solution

211. Define the following terms :

Polymers

Watch Video Solution

212. Define the following terms :

Polymerization

Watch Video Solution

213. Define the following terms :

Copolymer

Watch Video Solution

214. Explain the term with example : Monomer

Watch Video Solution

215. Explain the terms with example : Homopolymer

Watch Video Solution

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Natural macromolecules

Watch Video Solution

217. Give four examples of the following :

Manmade macromolecules

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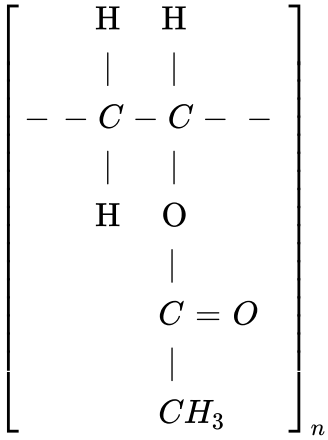

Watch Video Solution

222. Give names of three natural polymers. Write the place of their occurrence and names of monomers from which they are formed.

Watch Video Solution

Give Reasons

1. Carbon is a tetravalent atom.

Watch Video Solution

2. Carbon generally forms compounds by covalent bonds.

Watch Video Solution

3. A wax candle burns with yellow flame.

iii. These carbon particles rise in the the flame, get heated and glow to impart yellowish colour to the flame.

Hence, a wax candle burns with yellow flame.

View Text Solution

4. Propene undergoes addition reaction.

iii. Unsaturated compounds contain multiple bonds as their functional group and hence, they undergo addition reaction to forms a saturated compound as the product.

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View Text Solution

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Watch Video Solution

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Watch Video Solution

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Hence, propene undergoes addition reaction.

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Give Balanced Chemical Equation

1. Complete the following equations :

$CH_3COOH + Na_2CO_3 \rightarrow$

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2. Complete the following equations :

$CH_4 + O_2 \rightarrow$

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3. Complete the following equations :

$C_2H_5OH + Na \rightarrow$

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4. Complete the following equations :

$CH_3COOC_2H_5 + NaOH \rightarrow$

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5. Complete the following equations :

$CH_3COOH + NaOH \rightarrow$

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6. Complete the following equations :

$C_2H_5OH + CH_3COOH \rightarrow$

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7. Write the chemical equation for the conversion of ethanol to ethanoic acid in the presence of $KMnO_4$.

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8. How will you convert ethanol to ethene? Write chemical equation

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9. Complete the following equations :

$CH_3COOH + Na_2CO_3 \rightarrow$

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10. Complete the following equations :

$CH_4 + O_2 \rightarrow$

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11. Complete the following equations :

$C_2H_5OH + Na \rightarrow$

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13. Complete the following equations :

$CH_3COOH + NaOH \rightarrow$

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14. Complete the following equations :

$C_2H_5OH + CH_3COOH \rightarrow$

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15. Write the chemical equation for the conversion of ethanol to ethanoic acid in the presence of $KMnO_4$.

Watch Video Solution

16. How will you convert ethanol to ethene? Give the reaction involved in it.

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Distinguish Between

1. Differentiate between covalent and ionic compounds.

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2. Saturated hydrocarbons and unsaturated hydrocarbons.

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3. Differentiate between covalent and ionic compounds.

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4. Saturated hydrocarbons and unsaturated hydrocarbons.

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Complete The Given Chart Table

1. The first column of the following table shows straight chains of carbon atom. Write the structural formulae of the corresponding straight chain hydrocarbons in the second column satisfying the tetravalency to the carbon atom by joining them to hydrogen atoms. Work out the molecular formula from this and write it down in the third column. The name of the hydrocarbon is given in the fourth column.

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2. Complete the following chat.

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3. Complete the table :

Fill in the gaps in the following tables of different homologous series.

i. Homologous series of alkanes :

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4. Complete the table :

Fill in the gaps in the following tables of different homologous series.

ii. Homologous series of alcohols:

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5. Complete the table :

Fill in the gaps in the following tables of different homologous series.

iii. Homologous series of alkenes :

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6. Write the names of first four members of homologous series of alcohols.

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7. Complete the following table.

View Text Solution

8. Complete the table.

The following table shown common names and structural formulae of a few carbon compounds.

Complete the table by writing their IUPAC names in the third column.

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9. Complete the following table.

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10. Given the table below, identify substances which contain multiple bonds. Indicate number of multiple bonds and also identify substances which decolourize I_2.

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11. Complete the following table :

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12. The first column of the following table shows straight chains of carbon atom. Write the structural formulae of the corresponding straight chain hydrocarbons in the second column satisfying the tetravalency to the carbon atom by joining them to hydrogen atoms. Work out the molecular formula from this and write it down in the third column. The name of the hydrocarbon is given in the fourth column.

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13. Complete the following chat.

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Fill in the gaps in the following tables of different homologous series.

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22. Complete the following table :

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Questions Based On Diagram

1. Given below are two different types of molecular models of methane.

Identify ball and stick model and space filling model.

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2. Given below are two different types of molecular models of methane.

Identify ball and stick model and space filling model.

View Text Solution

3. The experimental setup showing the reaction between ethanoic acid and sodium carbonate is as shown below :

Identify the gas evolved in the above experiment.

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4. The experimental setup showing the reaction between ethanoic acid and sodium carbonate is as shown below :

What happens when the evolved gas reacts with lime water ? Give the chemical equation involved.

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5. The experimental setup showing the reaction between ethanoic acid and sodium carbonate is as shown below :

iii. Write the chemical equation for the reaction of ethanoic acid with sodium carbonate.

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Questions Based On Paragraph

1. Carbon forms a large number of compounds because of its two unique properties formed many have long straight chains of carbon, branched chains of carbon or rings of carbon. In these compounds, carbon atoms may form single, double or triple covalent bonds. Compounds in which the carbon atoms are linked to each other by single bonds are called saturated carbon compounds whereas compounds having at least one carbon-carbon double or triple bond are called unsaturated carbon compounds. Compounds containing only carbon and hydrogen are known as hydrocarbons. Based on the above information, answer the following questions.

i. Why does carbon form large number of compounds?

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2. Carbon forms a large number of compounds because of its two unique properties formed many have long straight chains of carbon, branched chains of carbon or rings of carbon. In these compounds, carbon atoms may form single, double or triple covalent bonds. Compounds in which the carbon atoms are linked to each other by single bonds are called saturated carbon compounds whereas compounds having at least one carbon-carbon double or triple bond are called unsaturated carbon compounds. Compounds containing only carbon and hydrogen are known as hydrocarbons. Based on the above information, answer the following questions.

Give two examples of carbon compounds which have ring structure.

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What are saturated hydrocarbons? Give one example.

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Give IUPAC names of first two members of hydrocarbon which contain carbon-carbon double bonds.

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What is common name and molecular formula of ethyne?

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i. Why does carbon form large number of compounds?

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Apply Your Knowledge Use Your Brain Power

1. Hydrogen peroxide decomposes on its own by the following reaction

$H-O-O-H \rightarrow 2H-O-H+O_2$

From this, what will be year inference about the strength of $O-O$ covalent bond?

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2. Tell from the above example whether oxygen has catenation power or not.

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3. Inspect the molecular formulae of the members of the homologous series of alkenes. Do you find any relationship, in the number of carbon atoms and the number of hydrogen atoms in the molecular formulae?

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4. If the number of carbon atoms in the molecular formulae of alkenes is denoted by 'n', what will be the number of hydrogen atoms?

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5. Write down structure formulae of the first four members of the various homologous series formed by making use of the functional groups :

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6. General formula of the homologous series of alkanes is C_nH_{2n+2}. Write down the molecular formula of the 8^{th} and 12^{th} member using this.

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7. Draw three structural formulae having molecular formula C_5H_{12}.

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8. Give the names n-pentane, isopentane (i-pentane) and neopentane to the above three structural formulae.

(Use the same logic as used in the names of the isomeric butanes for this purpose.)

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9. Draw all the possible structural formulae having molecular formula C_6H_{14}. Give names to all the isomers. Which difficulties were faced by you while naming?

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10. In the chlorination, substitution reaction of propane, two isomeric products containing one chlorine atom are obtained. Draw their structural formulae and give their IUPAC names.

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11. Explain by writing a reaction, what will happen when pieces of sodium metal are put in n-propyl alcohol.

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12. Explain by writing a reaction, which product will be formed on heating n-butyl alcohol with concentrated sulphuric acid.

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13. Which one of ethanoic acid and hydrochloric acid is stronger?

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14. Which indicator paper out of blue litmus paper and pH paper is useful to distinguish between ethanoic acid and hydrochloric acid?

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15. Explain with reaction why the lime water turns milky when carbon dioxide is passed through it.

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16. Explain the reaction that would take place when a piece of sodium metal is dropped in ethanoic acid.

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17. Two test tubes contain two colourless liquids ethanol and ethanoic acid. Explain by writing reaction which chemical test you would perform to tell which substance is present in which test tube.

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18. When fat is heated with sodium hydroxide solution, soap and glycerine are formed. Which functional groups might be present in fat and glycerine? What do you think?

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19. Hydrogen peroxide decomposes on its own by the following reaction

$H - O - O - H \rightarrow 2H - O - H + O_2$

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Apply Your Knowledge Try This

1. Apparatus: Bunsen burner, copper gauze, metal plate, etc.

Chemicals : Ethanol, acetic acid, naphthalene

Procedure: Place one of the above chemicals (3-4 drops or a pinch) on clean copper gauze at room temperature, hold it on a blue flame of the Bunsen burner and observe.

Is smoke/soot seen to form due to combustion? Hold the metal plate on the flame when the substance is undergoing combustion. Does any diposit get collected on the plate? Which colour? Repeat the same procedure using other chemicals from the above list.

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2. The proportion of carbon atoms in ethanol (C_2H_5OH) and naphthalene $(C_{10}H_8)$.

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3. A mixture of oxygen and ethyne is burnt for welding. Can you tell why a mixture of ethyne and air is not used?

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4. Light a Bunsen burner. Open and close the air hole at the bottom of the burner by means of the movable ring around it. When do you get yellow sooty flame? When do you get blue flame?

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5. Nisha observed that the bottoms of cooking utensils were turning black in colour while the flame of her stove is yellow in colour.Her daughter suggested cleaning the air holes of the stove to get a clean, blue flame. She also told her mother that this would prevent the fuel from getting wasted.

What could be the reason for this sooty flame?

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6. Nisha observed that the bottoms of cooking utensils were turning black in colour while the flame of her stove is yellow in colour.Her daughter suggested cleaning the air holes of the stove to get a clean, blue flame. She also told her mother that this would prevent the fuel from getting wasted.

How does cleaning the air holes of the stove help in saving the fuel?

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7. Apparatus: Test tube, Bunsen burner, measuring cylinder, dropper, etc.

Chemicals : Ethanol,sodium carbonate, dilute solution to it and warm the mixture by holding the test tube on the burner for a while. Do drop wise addition of a dilute solution of potassium permanganate to this warm mixutre with stirring.

Does the typical pink colour of potassium permanganate stay as it is on addition? Does the pink colour stop vanishing and stays on after some time of the addition process?

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8. Apparatus: Test tubes, droppers, etc.

Chemicals : Tincture iodine, bromine water, liquefied vanaspati ghee, various vegetable oils (peanut, safflower, sunflower, olive, etc.)

Procedure : Take 4 mL oil in a test tube and add 4 drops of tincture iodine or bromine water in it. Shake the test tube. Find out whether the original colour of bromine or iodine disappears or not. Repeat the same procedure using other oils and vanaspati ghee.

What inference will you draw from this?

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original colour of bromine or iodine disappears or not. Repeat the same procedure using other oils and vanaspati ghee.

Which of the substances do contain multiple bonds ?

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10. Apparatus: Big test tube, delivery tube fitted in a rubber cork, knife, candle, etc.

Chemicals : Sodium metal, ethanol, magnesium ribbon, etc.

Procedure : Take 10 mL ethanol in a big test tube. Cut Sodium metal into 2-3 pieces of a cereal grain size. Put the sodium pieces into the ethanol in the test tube and fix the gas delivery tube to the test tube. Take a burning candle near the outlet of the gas delivery tube and observe.

Which is the combustible gas coming out of the gas delivery tube?

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Why do the sodium pieces appear to dance on the surface of ethanol?

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Repeat the above procedure using magnesium ribbon instead of sodium.

Do you see gas bubble released from the piece of magnesium ribbon?

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Does magnesium metal react with ethanol?

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14. Apparatus : Glazed tile, glass rods, pH paper, blue litmus paper.

Chemicals : Dilute ethanoic acid, dilute hydrochloric acid

Procedure : Place two strips of blue litmus paper on a glazed tile. Put one drop of dilute hydrochloric acid on one strip with the help of a glass rod. Put one drop dilute ethanoic acid with the help of another glass rod on the other strip. Note the colour change taken place in the litmus strip. Repeat the same procedure using strips of pH paper. Note all the observation in the following table.

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15. Apparatus : Big test tube, small test tube, bent gas delivery tube, rubber cork, thistle funnel, stand, etc.

Chemicals : Acetic acid, sodium carbonate power, freshly prepared lime water.

Procedure : Arrange the apparatus as shown in figure. Place sodium carbonate power in the big test tube. Pour 10 mL acetic acid through the thistle funnel. Observe the changes taking place in the two test tubes.

Which gets does come out as effervescence in the big test tube?

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Why are bubbles seen in the small test tube.

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What is the colour change in the lime water? Write the related equation.

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18. Apparatus : Test tube, beakers, burner, etc.

Chemicals : Glacial ethanoic acid, ethanol, concentrated sulphuric acid, etc.

Procedure : Take 1 mL ethanol and 1 mL glacial ethanoic acid in a test tube. Add a few drops of concentrated sulphuric acid in it. Keeps this test tube in the beaker containing hot water (hot water bath) for five minutes. Then take 20-30 mL water in another beaker, and pour the above reaction mixture in it and smell it.

What can you say about the smell of the reaction mixture?

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34. Apparatus : Big test tube, small test tube, bent gas delivery tube, rubber cork, thistle funnel, stand, etc.

Chemicals : Acetic acid, sodium carbonate power, freshly prepared lime water.

Procedure : Arrange the apparatus as shown in figure. Place sodium carbonate power in the big test tube. Pour 10 mL acetic acid through the thistle funnel. Observe the changes taking place in the two test tubes.

Why are bubbles seen in the small test tube.

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35. Apparatus : Big test tube, small test tube, bent gas delivery tube, rubber cork, thistle funnel, stand, etc.

Chemicals : Acetic acid, sodium carbonate power, freshly prepared lime water.

Procedure : Arrange the apparatus as shown in figure. Place sodium carbonate power in the big test tube. Pour 10 mL acetic acid through the thistle funnel. Observe the changes taking place in the two test tubes.

What is the colour change in the lime water? Write the related equation.

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36. Apparatus : Test tube, beakers, burner, etc.

Chemicals : Glacial ethanoic acid, ethanol, concentrated sulphuric acid, etc.

Procedure : Take 1 mL ethanol and 1 mL glacial ethanoic acid in a test tube. Add a few drops of concentrated sulphuric acid in it. Keeps this test tube in the beaker containing hot water (hot water bath) for five minutes. Then take 20-30 mL water in another beaker, and pour the above reaction mixture in it and smell it.

What can you say about the smell of the reaction mixture?

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Apply Your Knowledge Can You Tell

1. What are the chemical names of the nutrients that we get from the food stuffs, namely, cereals, pulses and meat.

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2. What are the chemical substances that make cloth, furniture and elastic objects?

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3. What are the chemical names of the nutrients that we get from the food stuffs, namely, cereals, pulses and meat.

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4. What are the chemical substances that make cloth, furniture and elastic objects?

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Chapter Assessment Choose The Correct Alternative

1. When ethanol reacts with sodium, a gas is evolved which _____.

A. burns with pop sound

B. turns lime water milky

C. CARBON COMPOUNDS

D. has a foul smell of rotten eggs

Answer: A

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2. Which of the following compounds burns with sooty flame?

A. Ethanol

B. Butane

C. Hexane

D. Naphthalene

Answer:

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3. In a laboratory, a student added 2 mL of ethanol and 4 mL of sodium carbonate solution in a test tube and warmed the mixture for few minutes. He than slowly added few drops of potassium permanganate to this warm solution with constant stirring. He observed that the pink colour of potassium permanganate had disappeared. This is because _____

A. ethanol is reduced to ethane

B. ethanol is oxidized to acetic acid

C. ethanol is reduced to methanoic acid

D. ethanol is oxidized to acetone.

Answer:

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4. The structure of the monomer unit of Telfon is _____ .

A. $CH_2 = CH - C \equiv N$

B. $CH_2 = CH_2$

C. $CH_2 = CF_2$

D. $CH_3 - CH = CH_2$

Answer:

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5. When ethanol reacts with sodium, a gas is evolved which _____.

A. burns with pop sound

B. turns lime water milky

C. CARBON COMPOUNDS

D. has a foul smell of rotten eggs

Answer: A

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6. Which of the following compounds burns with sooty flame?

A. Ethanol

B. Butane

C. Hexane

D. Naphthalene

Answer:

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7. In laboratory, a student added 3 mL ethanol and 5 mL sodium carbonate in a test tube and warmed the mixture for few minutes. He then slowly added few drops of potassium permanganate to this warm solution with constant stirring. He observed that the pink colour of potassium permanganate had disappeared. This is because _____ .

A. ethanol is reduced to ethane

B. ethanol is oxidized to acetic acid

C. ethanol is reduced to methanoic acid

D. ethanol is oxidized to acetone.

Answer:

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8. The structure of the monomer unit of Telfon is _____ .

A. $CH_2 = CH - C \equiv N$

B. $CH_2 = CH_2$

C. $CF_2 = CF_2$

D. $CH_3 - CH = CH_2$

Answer:

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Chapter Assessment Answer The Following

1. Name the monomer of natural rubber

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2. Complete the analogy and explain.

Ethane : _____ :: Acetylene : Unsaturated hydrocarbon.

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3. True of false. If false, write the correct sentence.

When benzene burns in air, it gives clean blue flame.

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4. What is homologous series ? Write the name and molecular formula of the 2^{nd} member of homologous series of alkenes.

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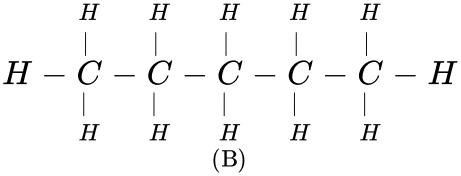
5. Name the components of cooking gas. Write their molecular formulae.

Watch Video Solution

6. Identify the carbon chain type for each of the following compounds.



(B)

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7. Complete the following reactions.

$$CH_3CH_2Oh \xrightarrow[H_2SO_4]{\text{Hot conc.}} \_\_\_\_\_ + \_\_\_\_\_$$

$$2CH_3CH_2OH + 2Na \rightarrow \_\_\_\_\_ + \_\_\_\_\_$$

$$CH_3COOH + NaOH \rightarrow \_\_\_\_\_ + \_\_\_\_\_$$

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8. Select the appropriate option and complete the following paragraph.

(single, double, hydrocarbons, C_2H_4, C_2H_6, $CHCl_3$, CH_3Cl, methane, ethane)

Carbon compounds contain carbon and hydrogen as the only two

elements are called _____. The smallest hydrocarbon is _____. Another hydrocarbon is _____with molecular formula _____. In both these hydrocarbons, the valencies of all the atoms are satisfied by the _____ bonds. If one hydrogen atom of methane is replaced by another monovalent element chlorine, then a new carbon compounds is formed. The molecular formula of this compound is _____.

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9. Draw all the possible structural formulae having molecular formula C_6H_{14}. Give names to all the isomers.

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10. (a) Esters are sweet smelling substances and are used in making perfumes. Describe an activity for the preparation of an ester with the help of a well labelled diagram. Write an equation for the chemical reaction involved in the formation of the ester . Also write the names of

all the substances involved in the process of esterification.

(b) State any two uses of esters.

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11. Name the monomer of natural rubber.

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12. Complete the analogy and explain.

Ethane : _____ :: Acetylene : Unsaturated hydrocarbon.

Watch Video Solution

13. True of false. If false, write the correct sentence.

When benzene burns in air, it gives clean blue flame.

Watch Video Solution

14. What is homologous series ? Write the name and molecular formula of the 2^{nd} member of homologous series of alkenes.

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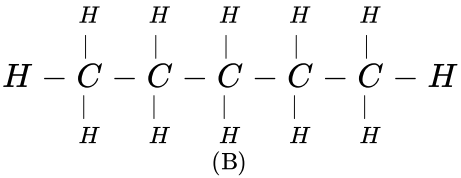
15. Name the components of cooking gas. Write their molecular formulae.

Watch Video Solution

16. Identify the carbon chain type for each of the following compounds.



(B)

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17. Complete the following reactions.

$$CH_3CH_2Oh \xrightarrow[H_2SO_4]{\text{Hot conc.}} \_\_\_\_\_ + \_\_\_\_\_$$

$2CH_3CH_2OH + 2Na \rightarrow$ _____ + _____

$CH_3COOH + NaOH \rightarrow$ _____ + _____

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18. Select the appropriate option and complete the following paragraph.

(single, double, hydrocarbons, $C_2H_4, C_2H_6, CHCl_3, CH_3Cl,$ methane, ethane)

Carbon compounds contain carbon and hydrogen as the only two elements are called _____. The smallest hydrocarbon is _____. Another hydrocarbon is _____with molecular formula _____. In both these hydrocarbons, the valencies of all the atoms are satisfied by the _____ bonds. If one hydrogen atom of methane is replaced by another monovalent element chlorine, then a new carbon compound is formed. The molecular formula of this compound is _____.

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19. Draw all the possible structural formulae having molecular formula C_6H_{14}. Give names to all the isomers.

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20. What are esters? Explain the preparation of ethyl ethanoate with the help of neat labelled diagram.

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Chapter Assessment Give Scientific Reasons

1. Carbon is a tetravalent.

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2. Propene undergoes addition reaction.

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3. Carbon is a tetravalent.

Watch Video Solution

4. Propene undergoes addition reaction.

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