CHEMISTRY

BOOKS - OSWAL PUBLICATION

CARBON COMPOUNDS

Stand Alone Mcqs

1. Which of the following is not observed in a homologous series? Give reason for your choice.

A. Change in chemical properties

B. Difference in- CH^2 , and 14u molecular mass

C. Gradation in physical properties

D. Same functional group

Answer: A

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2. Ethane, with the molecular formula C_2H_6 has

A. 6 covalent bonds

B. 7 covalent bonds

C. 8 covalent bonds

D. 9 covalent bonds

Answer: B

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3. 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

A. helium

B. neon

C. argon

D. krypton

Answer: B

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4. The correct electron dot structure of a water molecule is

A. $H.\ddot{O}.H$

B. $H:\ddot{O}.H$

C. $H:\ddot{O}:H$

D. $H:O:H$

Answer: C

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5. Oils on treating with hydrogen in the presence of palladium or nickel catalyst from fats. This is an example of (ऑयल को जब हाईड्रोजन से क्रिया करवाते है उत्प्रेरक की उपस्थिति मे तो यह किस का उदाहरण है)

A. Addition reaction

B. Substitution reaction

C. Displacement reaction

D. Oxidation reaction

Answer: A

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6. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved ?

(i) It turns lime water milky

(ii) It extinguishes a burning splinter

(iii) It dossolves in a solution of of sodium hydroxide

(iv) It has a pungent odour

A. (a) and (b) only

B. (b) and (d) only

C. (a), (c) and (d)

D. (a), (b) and (d)

Answer: D

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7. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that

A. the food is not cooked completely

B. the fuel is not burning completely.

C. the fuel is wet.

D. the fuel is burning completely

Answer: B

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Assertion And Reason Based Mcqs

1. Assertion (A): In a homologous series of alcohols, the formula for the second member is C_2H_5OH and the third member is C_3H_7OH.

Reason (R): The difference between the molecular masses of the two consecutive members of a homologous series is 14u.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: C

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2. Assertion (A): Following are the members of a homologous series $CH_3OH, CH_3, CH_2, OH, CH_3, CH_2, CH_2OH$

Reason (R): A series of compounds with same functional group but differing by-CH_2, - unit is called a homologous series.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A

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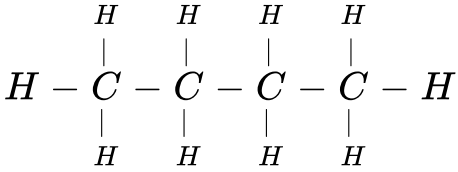
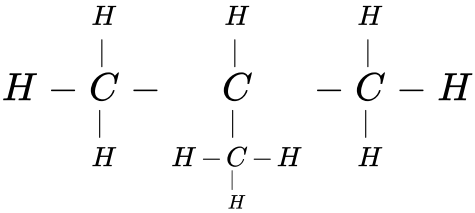
3. Assertion (A): Following are the structural isomers of boutane.





Reason (R): Structural isomers have the same molecular formula but they differ in their structures.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A

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4. Assertion (A): Third member of alkane is propane (C_3H_8)

Reason (R): It is obtained from general formula C_nH_{2n+2}

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A

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5. Assertion (A): CH_3CI is obtained from CH_4 by the action of Cl_2, in the presence of sunlight.

Reason (R): It is obtained by addition reaction.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: C

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6. Assertion (A): Most of the carbon compounds are good conductors of electricity.

Reason (R): They do not dissociate to form ions and remain as molecules.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: D

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Case Based Mcqs

1. A homologous series is a series of organic compounds which belong to the same family (i.e. possess same functional group) and show similar chemical properties. The members of this series are called homologous and differ from each other by the number of CH_2, units in the main carbon chain The chemical properties of which of the following compounds is similar to the butane?

A. Butyne

B. Propene

C. Propyne

D. Pentane

Answer: D

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2. A homologous series is a series of organic compounds which belong to the same family (i.e. possess same functional group) and show similar chemical properties. The members of this series are called homologous and differ from each other by the number of CH_2, units in the main carbon chain The difference between two consecutive members in a homologous series in alkanes in terms of molecular mass and number of atoms of elements is:

A. 14 a.m.u and CH_2, respectively

B. 12 a.m.u and CH_3, respectively

C. 14 a.m.u and CH, respectively

D. 12 a.m.u and CH_4, respectively

Answer: A

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3. A homologous series is a series of organic compounds which belong to the same family (i.e. possess same functional group) and show similar chemical properties. The members of this series are called homologous and differ from each other by the number of CH_2, units in the main carbon chain The name and structure of a saturated compound in which 6 carbon atoms are arranged in a ring is :

A. Hexane

B. Cyclohexane

C. Pentane

D. cyclopentane

Answer: B

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4. A homologous series is a series of organic compounds which belong to the same family (i.e. possess same functional group) and show similar chemical properties. The members of this series are called homologous and differ from each other by the number of CH_2, units in the main carbon chain Which of the following is not the property of a homologous series?

A. They show similar chemical properties.

B. They differ by 14 units by mass.

C. They all contain double bond

D. They can be represented by a general formula.

Answer: C

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5. A homologous series is a series of organic compounds which belong to the same family (i.e. possess same functional group) and show similar chemical properties. The members of this series are called homologous and differ from each other by the number of CH_2, units in the main carbon chain Which of the following represent the name and formula of the 2^{nd} member of homologous series having general formula C_nH_{2n+2} ?

A. Methane CH_4

B. Ethane C_2H_6

C. Ethane C_2H_4

D. Ethyne C_2H_6

Answer: B

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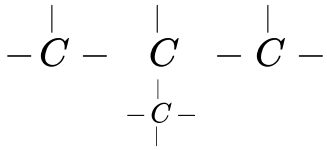
6. Carbon has the unique property to form bonds with other atoms of carbon.



Name the characteristic property of carbon as depicted in the fig. A

A. Catenation

B. Polymerisation

C. Isomerisation

D. None of the above

Answer: A

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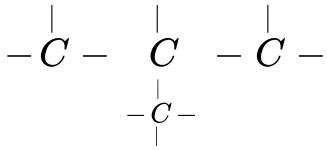
7. Carbon has the unique property to form bonds with other atoms of carbon.



Carbon forms large number of compounds due to:

A. Catenation only

B. Tetravalency only

C. Both catenation and tetravalency

D. None of the above

Answer: C

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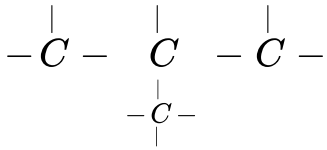
8. Carbon has the unique property to form bonds with other atoms of carbon.



Write the name and structure of a saturated compound in which 6 carbon atoms are arranged in a ring.

A. Hexane

B. Cyclohexane

C. Pentane

D. cyclopentane

Answer: B

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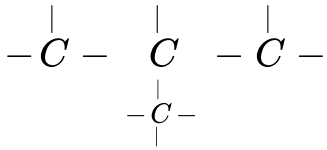
9. Carbon has the unique property to form bonds with other atoms of carbon.



Give the number of single bonds present in C_6H_{12} compound.

A. 16

B. 14

C. 6

D. 18

Answer: D

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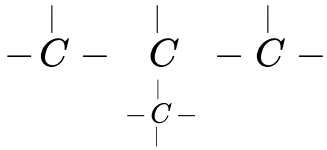
10. Carbon has the unique property to form bonds with other atoms of carbon.



Carbon is:

A. Divalent

B. Monovalent

C. tetravalent

D. Trivalent

Answer: C

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11. An organic compound A of molecular formula C_2H_4, on reduction gives another compound B of molecular formula C_2H_6 .B on reaction with chlorine in the presence of sunlight gives C of molecular formula C_2H_5CI .

The compounds A, B and Care:

A. A: ethene B: ethane C: chloroethane

B. A: ethane B: ethyne C: chloromethane

C. A: ethyne B: ethane C: chloroethane

D. A: ethene B: ethyne C: chloroethane

Answer: A

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12. An organic compound A of molecular formula C_2H_4, on reduction gives another compound B of molecular formula C_2H_6 .B on reaction with chlorine in the presence of sunlight gives C of molecular formula C_2H_5CI .

Unsaturated hydrocarbons undergo_____ reaction

A. Substitution

B. Halogenation

C. Addition

D. All of the above

Answer: C

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13. An organic compound A of molecular formula C_2H_4, on reduction gives another compound B of molecular formula C_2H_6 .B on reaction with chlorine in the presence of sunlight gives C of molecular formula C_2H_5CI .

Which of these statements is correct regarding addition reaction?

A. Addition of hydrogen does not require catalyst.

B. Multiple bonds (double and triple bonds) must be present between carbon atoms in the chain of hydrocarbon.

C. Multiple bonds are not required for the reaction to take place.

D. None of the above.

Answer: B

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14. An organic compound A of molecular formula C_2H_4, on reduction gives another compound B of molecular formula C_2H_6. B on reaction with chlorine in the presence of sunlight gives C of molecular formula C_2H_5CI.

The general formula for alkene is:

A. C_nH_{2n}

B. C_nH_{2n+2}

C. C_nH_{2n-2}

D. C_nH_{2n+1}

Answer: A

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15. An organic compound A of molecular formula C_2H_4, on reduction gives another compound B of molecular formula C_2H_6 .B on reaction with chlorine in the presence of sunlight gives C of molecular formula C_2H_5CI .

Choose the correct condition for conversion of ethene to ethane:

A. Dehydrogenation at 450° C

B. Hydrogenation in presence of catalyst like nickel or platinum

C. Photolytic decomposition

D. All of the above

Answer: B

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Self Assessment Objective Type Questions A Multiple Choice Questions

1. Which of the following is not a characteristic of homologous series ?

A. They have different general formula .

B. The successive compounds differ by $-CH_2$ unit.

C. Molecular mass increases down the series.

D. Members of homologous series show similar chemical properties.

Answer:

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2. Write the name and structure of an alcohol with three carbon atoms in its molecule.

A. Methanol

B. Ethanol

C. Propanol

D. Butanol

Answer:

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3. Which of these will contain covalent double bond between its atoms ?

A. H_2

B. O_2

C. Cl_2

D. $NaCl$

Answer:

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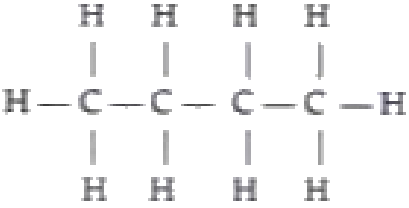
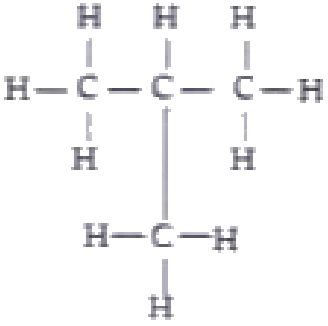
Self Assessment Objective Type Questions Questions C Assertopm And Reason Type Questions

1. Assertion : Following are the structural isomers of butane.





Reason : Structural isomers have the same molecular formula but they differ in their structures.

A. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C. Assertion (A) is true but reason (R) is false.

D. Assertion (A) is false but reason (R) is true.

Answer:

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2. Assertion : Third member of alkane is propane (C_3H_8)

Reason : It is obtained from general formula C_nH_{2n+2}

A. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C. Assertion (A) is true but reason (R) is false.

D. Assertion (A) is false but reason (R) is true.

Answer:

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Self Assessment Objective Type Questions Questions C Very Short Answer Type Questions

1. Assertion : The most of carbon compounds are good conductors of electricity.

Reason : They do not dissociate to form ions and remain as molecules.

A. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

B. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

C. Assertion (A) is true but reason (R) is false.

D. Assertion (A) is false but reason (R) is true.

Answer:

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Self Assessment Objective Type Questions Questions D Very Short Answer Type Questions

1. Define catenation.

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2. The molecular formula of 'A' is $C_{10}H_{18}$ and B is $C_{18}H_{36}$ .Name the homologous series to which they belong.

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3. Select the saturated hydrocarbons from the following

$C_3H_6, C_5H_{10}, C_4H_{10}, C_6H_{14}, C_2H_4$

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4. Write the molecular formula of the following : (i) Hexane , (ii) Benzene.

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Self Assessment Objective Type Questions Questions D Short Answer Type Questions

1. What are isomers ? Isomers of the first three members of alkane series are not possible. why?

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Self Assessment Objective Type Questions Questions D Long Answer Type Questions

1. The formula of four organic compounds are given below :

A	B	C	D
C_2H_4	CH_3COOH	C_2H_5OH	C_3H_8

Which one of these compounds A,B,C or D is a saturated hydrocarbon ?

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2. The formula of four organic compounds are given below :

A	B	C	D
C_2H_4	CH_3COOH	C_2H_5OH	C_3H_8

Identify the organic acid and give its structural formula.

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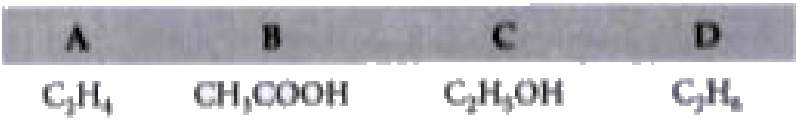
3. The formula of four organic compounds are given below :



Which of the above compounds when heated at 443 K in the presence of concentrated H_2SO_4 forms ethene as the major product ? What is the role played by concentrated H_2SO_4 in this reaction ? Also ,write the chemical equation involved.

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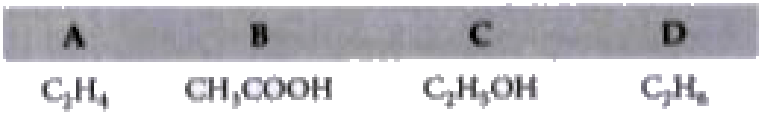
4. The formula of four organic compounds are given below :



Give a chemical equation when B and C react with each other

in presence of concentrated H_2SO_4. Name the major product formed and mention one of its important use.

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Ncert Corner Intext Questions

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

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2. What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur? (Hint –

the eight atoms of sulphur are joined together in the form of a ring.)

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3. How many structural isomers can you draw for pentane?

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4. What are the two properties of carbon which lead to the huge number of carbon compounds we see around us?

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5. What will be the formula and electron dot structure of cyclopentane?

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6. Draw the structures of the following compounds:

Ethanoic acid

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7. Draw the structures for the following compounds.

Bromopentane

Are structural isomers possible for bromopentane

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8. Draw the structures of the following compounds:

Butanone

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9. Draw the structure for the following compound:

Hexanal.

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10. How would you name the following compounds?

$CH_3 - CH_2 - Br$

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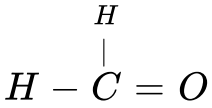
11. How would you name the following compounds?



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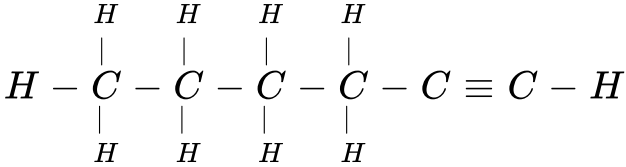
12. How would you name the following compounds ?



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13. Why is the conversion of ethanol to ethanoic acid an oxidation reaction?

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14. 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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15. How would you distinguish experimentally between an alcohol and a carboxylic acid?

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16. What are oxidising agents?

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17. Would you be able to check if water is hard by using a detergent?

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18. People use a variety of methods to wash clothes. Usually after adding the soap, they 'beat' the clothes on a stone, or beat it with a paddle, scrub with a brush or the mixture is agitated in a washing machine. Why is agitation necessary to get clean clothes?

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Ncert Corner Exercise Questions

1. Ethane, with the molecular formula C_2H_6 has

A. 6 covalent bonds

B. 7 covalent bonds

C. 8 covalent bonds

D. 9 covalent bonds

Answer: B

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2. Butanone is a four-carbon compound with the functional group

A. carboxylic acid

B. aldehyde

C. ketone

D. alcohol

Answer: C

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3. While cooking, if the bottom of the vessel is getting blackened on the outside, it means that

A. the food is not cooked completely.

B. the fuel is not burning completely.

C. the fuel is wet.

D. the fuel is burning completely.

Answer: B

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4. Explain the nature of the covalent bond using the bond formation in CH_3Cl.

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5. Draw the electron dot structures for

Ethanoic acid

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6. Draw the electron dot structures for

H_2S

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7. Draw the electron dot structures for :

propanone.

Watch Video Solution

8. Draw the electron dot structures for

F_2

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9. What is a homologous series ? Explain with an example.

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10. How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties ?

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11. Why does micelle formation take place when soap is added to water? Will a micelle be formed in other solvents such as ethanol also?

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12. Why are carbon and its compounds used as fuels for most applications?

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13. Explain the formation of scum when hard water is treated with soap.

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14. What change will you observe if you test soap with litmus paper (red and blue)?

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15. What is hydrogenation? What is its industrial application?

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16. Which of the following hydrocarbons undergo addition reactions: $C_2H_6, C_3H_8, C_3H_6, C_2H_2$ and CH_4.

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17. Give a test that can be used to differentiate chemically between butter and cooking oil.

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18. Explain the mechanism of the cleaning action of soaps.

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Ncert Exemplar Multiple Choice Questions

1. Carbon exists in the atmosphere in the from of

A. carbon monoxide only.

B. carbon monoxide in traces and carbon dioxide.

C. carbon dioxide only .

D. coal.

Answer: B

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2. Which of the following statements are usually correct for carbon compounds ? These

are good conductors of electricity.

are poor conductors of electricity.

have strong forces of attraction between their molecules.

do not have strong forces of attraction between their molecules.

A. (i) and (iii)

B. (ii) and (iii)

C. (i) and (iv)0

D. (ii) and (iv)

Answer: D

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3. A molecule of ammonia (NH_3) has (अमोनिया अणु है)

A. only single bonds

B. only double bonds

C. only triple bonds

D. two double bonds and one single bonds

Answer: A

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4. Buckminster fullerene is an allotropic form of

A. phosphorus

B. sulphur

C. carbon

D. tin

Answer: C

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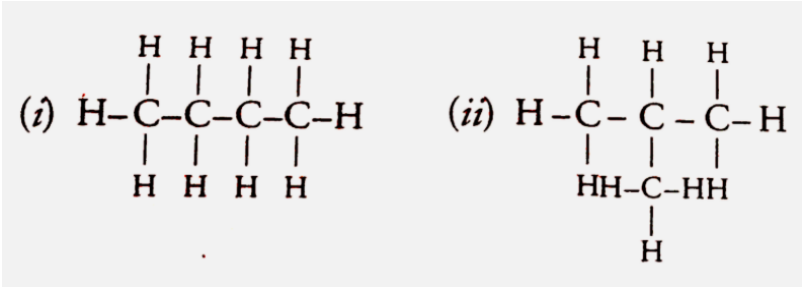
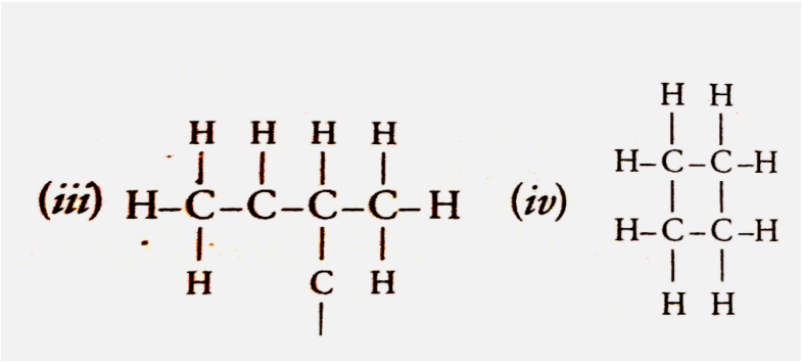
5. Which of the following are correct chain isomers of butane

?

(i)





A. (i) and (iii)

B. (ii) and (iv)

C. (i) and (ii)

D. (iii) and (iv)

Answer: C

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6. $CH_3 - CH_2 - OH \xrightarrow{\text{Alkaline} KMnO_4 + \text{Heat}} CH_3 - COOH$

In the above given reaction, alkaline $KMnO_4$ acts as

A. reducing agent

B. oxidising agent

C. catalyst

D. dehydrating agent

Answer: B

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7. Oils on treating with hydrogen in the presence of palladium or nickel catalyst from fats. This is an example of (ऑयल को जब हाईड्रोजन से क्रिया करवाते है उत्प्रेरक की उपस्थिति मे तो यह किस का उदाहरण है)

A. Addition reaction

B. Substitution reaction

C. Displacement reaction

D. Oxidation reaction

Answer: A

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8. 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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9. The soap molecule has a

A. hydrophilic head and a hydrophobic tail

B. hydrophobic head and a hydrogphobic tail

C. hydrophoice head and a hydrophilic tail

D. hydrophobic head and a hydrophobic tail

Answer: A

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10. Which of the following is the correct representation of electon dot structure of nitrogen ?

A. 

B. 

C. 

D. 

Answer: D

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11. Structural formula of ethyne is

A. $H - C \equiv C - H$

B. $H_3 - C \equiv C - H$

C. 

D. 

Answer: A

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12. Indentify 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)

Answer: D

Watch Video Solution

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

Answer: B

Watch Video Solution

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 innic 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.

Answer: A

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15. Pentane has the molecular formula C_5H_{12}. It has

A. 5 convalent bonds

B. 12 covalent bonds

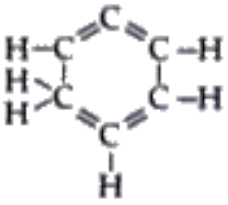
C. 16 covalent bonds

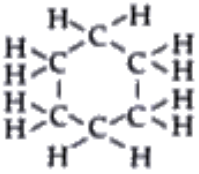
D. 17 covalent bonds

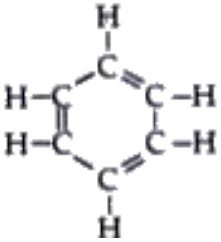
Answer: C

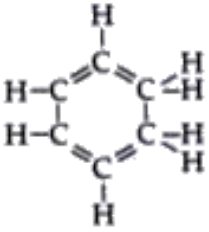
Watch Video Solution

16. Structural formula of benzene is

A. 

B. 

C. 

D. 

Answer: C

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17. Ethanol reacts with sodium and forms two products. These are

A. sodium ethanoate and hydrogen

B. sodium ethanoate and hydrogen

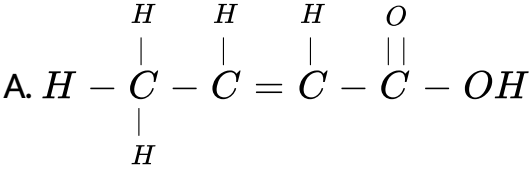
C. sodium ethoxide and hydrogen

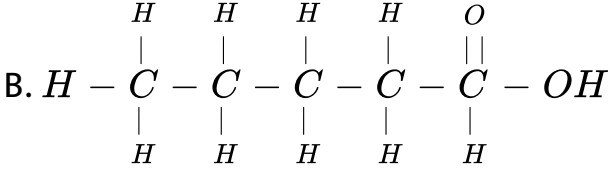
D. sodium ethoxide and oxygen

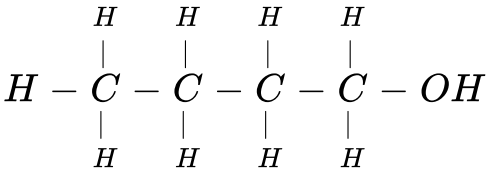
Answer: C

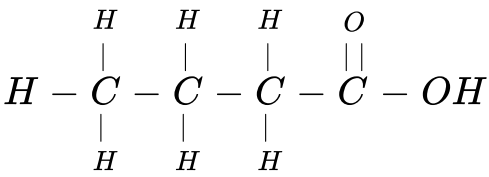
Watch Video Solution

18. The correct structural formula of butanoic acid is

A. 

B. 

C. 

D. 

Answer: D

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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

Answer: C

Watch Video Solution

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)

Answer: A

Watch Video Solution

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

A. helium

B. neon

C. argon

D. krypton

Answer: B

Watch Video Solution

22. The correct electron dot structure of a water molecule is

A. 

B. 

C. 

D. 

Answer: C

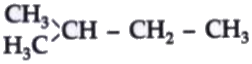
Watch Video Solution

23. Which of the following is not a straight chain hydrocarbon ?

A. $H_3C - CH_2 - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH_2}}$

B. $H_3C - CH_2 - CH_2 - CH_2 - CH_2 - CH_3$

C. $H_2\overset{\displaystyle CH_3}{\overset{|}{C}} - H_2C - H_2C - \underset{\displaystyle CH_3}{\underset{|}{CH_2}}$

D. 

Answer: D

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24. Which amond the following are unsaturated hydrocarbons ?

(i) $H_3C - CH_2 - CH_2 - CH_3$

(ii) $H_3C - C \equiv C - CH_3$

(iii) $H_3C - \underset{\underset{CH_3}{|}}{CH} - CH_3$

(iv) $H_3C - \underset{\underset{CH_3}{|}}{C} = CH_2$

A. (i) and (iii)

B. (ii) and (iii)

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C

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25. Which of the following does not belong to the same homologous series ?

A. CH_4

B. C_{2H_6}

C. C_3H_8

D. C_4H_8

Answer: D

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26. The name of the compound $CH_3 - CH_2 - CHO$ is

A. Propanal

B. Propanone

C. Ethanol

D. Ethanal

Answer: A

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27. The heteroatoms present in

$CH_3 - CH_2 - O - CH_2 - CH_2Cl$

(i) oxygen, (ii) carbon

(iii) hydrogen, (iv) chlorine

A. (i) and (ii)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (iv)

Answer: D

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28. Which of the following represents saponification reaction ?

A. $CH_3COONa + NaOH \xrightarrow{CaO} CH_4 + Na_2CO_3$

B.

$$CH_3COOH + C_2H_5OH \xrightarrow{H_2SO_4} CH_3COOC_2H_5 + H_2O$$

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

D.

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

Answer: D

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29. The first member of alkyne homologous series is

A. ethyne

B. ethene

C. propyne

D. methane

Answer: A

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Ncert Exemplar Short Answer Questions

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

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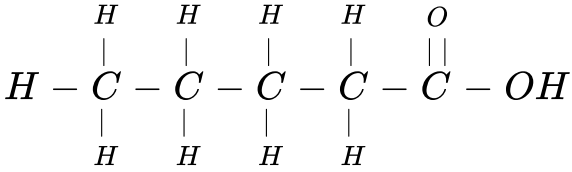
2. Write the names of the following compounds :



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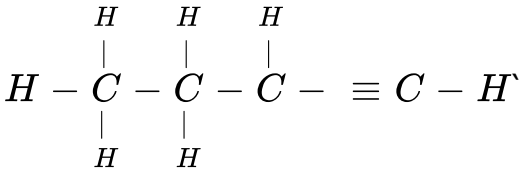
3. Write the names of the following compounds :



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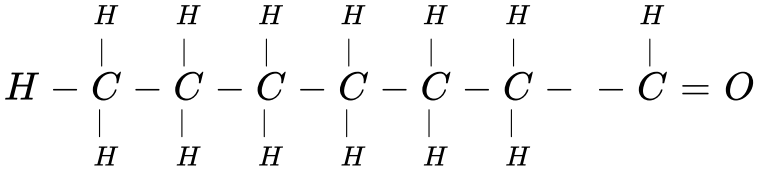
4. Write the IUPAC names of the following compounds :



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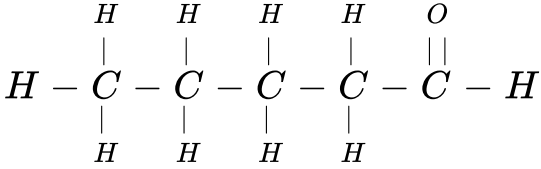
5. Write the names of the following compounds :



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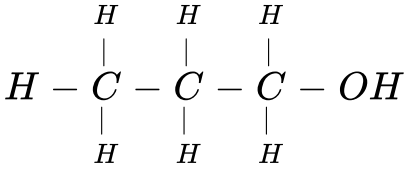
6. Identify and name the functional groups present in the following compounds.



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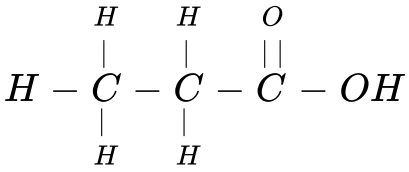
7. Identify and name the functional groups present in the following compounds.



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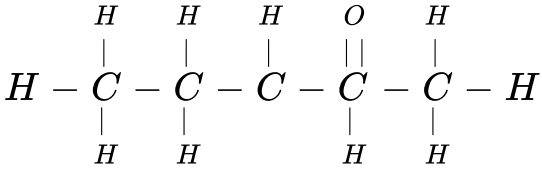
8. Identify and name the functional groups present in the follwing compounds.



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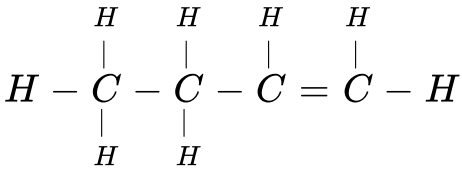
9. Identify and name the functional groups present in the following compounds.



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10. A compounds X is fromed by the reaction of a carboxylic acid $C_2H_4O_2$ and an alcohol in the presence of a few drops of H_2SO_4. The alcohol on oxidation with alkalne $KMnO_4$ followed by acidification gives the same carboxylic 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.

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11. A compound X is formed by the reaction of a carboxylic acid $C_2H_4O_2$ and an alcohol in the 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 :

Alcohol

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12. A compound X is formed by the reaction of a carboxylic acid $C_2H_4O_2$ and an alcohol in the 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 :

The compound X. Also write the reaction.

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13. Why detergents are better cleansing agents than soaps ? Explain.

Watch Video Solution

14. Name the functional groups present in the following compounds.

$CH_3COCH_2CH_2CH_2CH_3$

Watch Video Solution

15. Name the functional groups present in the following compounds :

$CH_3CH_2CH_2COOH$

Watch Video Solution

16. Name the functional groups present in the following compounds.

$CH_3CH_2CH_2CH_2CHO$

Watch Video Solution

17. Name the functional groups present in the following compounds.

CH_3CH_2OH

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18. How is ethane prepared from ethanol ? Give the reaction involved in it .

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19. Intake of small quantity of methanol can be lethal. Comment.

Watch Video Solution

20. A gas is evolved when ethanol reacts with sodium. Name the gas evolved and also write the balanced chemical equation of the reaction involved.

Watch Video Solution

21. Ethene is formed when ethanol at 443 K is heated with excess of concentrated sulphuric acid. What is the role of

acid in the this reaction ? Write the balanced chemical equation of this reaction.

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22. Carbon ,group (14) element in the periodic table ,is known to form compounds with many elements. Write an example of a compound formed with

Chlorine (group 17 of periodic table)

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23. Carbon ,group (14) element in the periodic table ,is known to form compounds with many elements. Write an example of a compound formed with

Oxygen (group 16 of periodic table)

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24. In electron dot structure ,the valence shell electrons represented by crosses or dots.

The atomic number of chlorine is 17. Write its electronic configuration.

Watch Video Solution

25. In electron dot structure ,the valence shell electrons represented by crosses or dots.

Draw the electron dot structure of chlorine molecule.

Watch Video Solution

26. 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.

Watch Video Solution

27. Unsaturated hydrocarbons contain multiple bonds between the two C-atoms and show addition reaction. Give the test to distinguish ethane from ethene.

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28. Match the reaction given in Coloumn (A) with the names given in column (B).

Column (A)	Column (B)
(a) $CH_3OH + CH_3COOH \xrightarrow{H^+} CH_3COOCH_3 + H_2O$	(i) Addition reaction
(b) $CH_2 = CH_2 + H_2 \xrightarrow{Ni} CH_3 - CH_3$	(ii) Substitution reaction
(c) $CH_4 + Cl_2 \xrightarrow{\text{Sunlight}} CH_3Cl + HCl$	(iii) Neutralization reaction
(d) $CH_3COOH + NaOH \longrightarrow CH_3COONa + H_2O$	(iv) Esterification reaction

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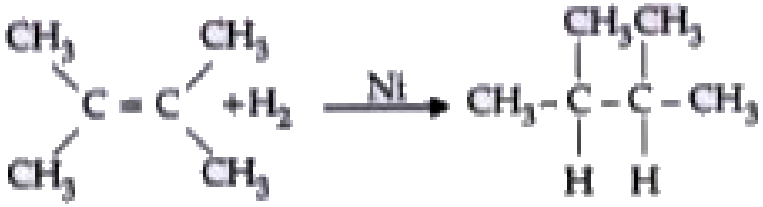
29. Write the structural formulae of all isomers of hexane.

Watch Video Solution

30. What is the role of metal or reagents written on arrows in the given chemical reactions?



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

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

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

$$CH_3CH_2OH \xrightarrow{KMnO_4} CH_3COOH$$

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Ncert Exemplar Long Answer Questions

1. A salt X is formed and a gas is evolved when ethanoic acid reacts with sodium hydrogen carbonate. 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 the chemical equation of the reaction involved.

Watch Video Solution

2. What are hydrocarbons? Give examples

Watch Video Solution

3. Give the structural differences between saturated and unsaturated hydrocarbons with two examples

Watch Video Solution

4. What is a functional group? Give examples of four different functional groups.

Watch Video Solution

5. Name the reaction which is commonly used in the conversion of vegetable oil to fats. Explain the reaction involved in detail.

Watch Video Solution

6. Write the formula and draw electron dot structure of carbon tetrachloride.

Watch Video Solution

7. What is saponification? Write the reaction involved in this process.

Watch Video Solution

8. 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 labelled diagram.

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9. A compound C (molecular formula, $C_2H_4O_2$) reacts with Na metal to form a compounds R and evolves a gas which burns with a pop sound. Compound C on treatment with an alcohol A in the presence of an acid form a sweet smelling compound S (molecular formula, $C_3H_6O_2$). 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.

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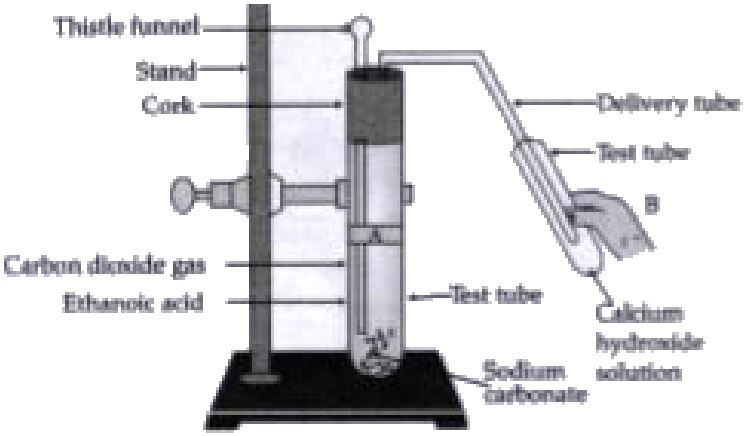
10. Look at figure and answer the following questions:



What change would you observe in the calcium hydroxide solution taken in tube B?

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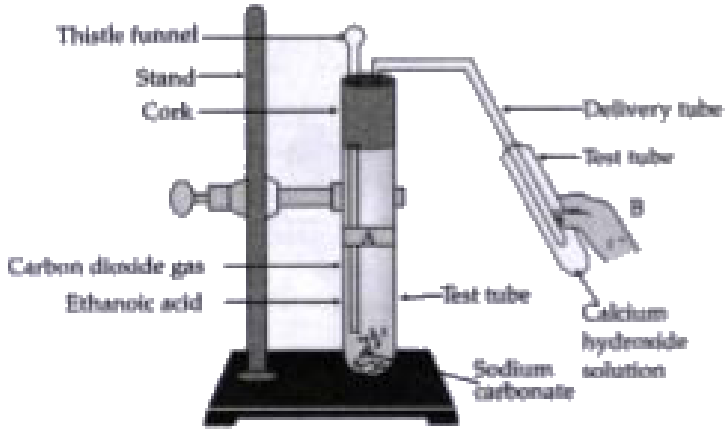
11. Look at figure and answer the following questions:



Write the reaction involved in test tubes A and B respectively

.

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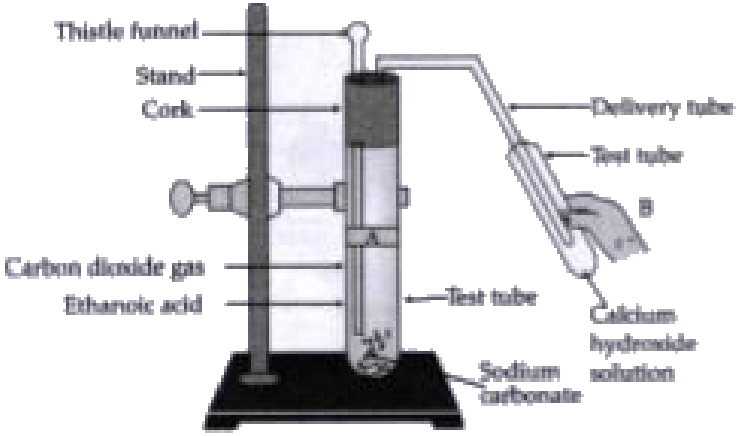
12. Look at figure and answer the following questions:



If ethanol is given instead of ethanoic acid ,would you expect the same change?

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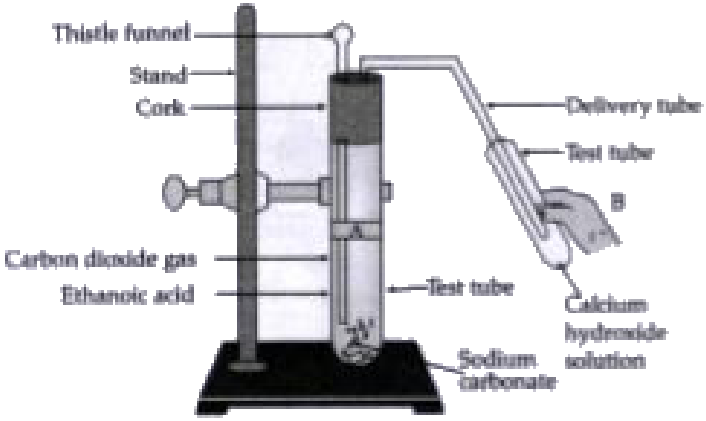
13. Look at figure and answer the following questions:



How can a solution of lim water be prepared in the laboratory?

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14. How would bring about the following conversions ? Name the process and write the reaction involved.

ethanol to ethene.

Watch Video Solution

15. How would bring about the following conversions ? Name the process and write the reaction involved.

propanol to propanoic acid. Write the reactions.

Watch Video Solution

16. Draw the possible isomers of the compound with molecular formula C_3H_6O and also give their electron dot structures.

Watch Video Solution

17. Explain the given reaction with the examples :

Hydrogenation reaction

Watch Video Solution

18. Explain the following reactions with examples :

Oxidation reaction

Watch Video Solution

19. Explain the given reaction with the examples :

Substitution reaction

Watch Video Solution

20. Explain the given reaction with the examples :

Saponification reaction

Watch Video Solution

21. Explain the following reactions with examples :

Combustion reaction

Watch Video Solution

22. 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 compounds C. One mole od compound C on combustion form two moles of CO_2 and three moles of H_2O. Identify the compounds A,B and C write the chemical equation of the reactions involved.

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Board Corner Very Short Answer Type Questions

1. Write the molecular formula of first two members of homologous series having functional group-CI.

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2. Write the molecular formula of first two members of homologous series having functional group-Br.

Watch Video Solution

3. Write the molecular formula of first two members of homologous series having functional group - OH .

Watch Video Solution

4. Write the molecular formula of the 2^{nd} and the 3^{rd} member of the homologous series whose first member is methane.

Watch Video Solution

5. Write the molecular formula of the 2^{nd} and 3^{rd} member of the homologous series whose first member is ethene.

Watch Video Solution

Board Corner Short Answer Type Questions

1. What is a homologous series of carbon compounds? Give an example and list its three characteristics.

Watch Video Solution

2. Which compounds are called (i) alkanes , (ii) alkenes and (iii) alkynes ? C_4H_{10} belongs to which of these ? Draw twi structural isomers of this compound.

Watch Video Solution

3. A compound 'X' on heating with excess conc. Sulphuric acid at 443 K gives an unsaturated compound 'Y' . 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X','Y' and 'Z'. Write the equation of th chemical reaction of

formation of 'Y' and also write the role of sulphuric acid in the reaction.

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4. Why are most carbon compounds poor conductors of electricity?

Watch Video Solution

5. Write the name and structure of a saturated compound in which the carbon atoms are arranged in a ring .Give the number of single bonds present in this compound .

Watch Video Solution

6. Complete the following equations :

$CH_3COOC_2H_5 + NaOH \rightarrow$

Watch Video Solution

7. Complete the following equations :

$CH_3COOH + NaOH \rightarrow$

Watch Video Solution

8. Complete the following chemical equations :

$C_2H_5OH + CH_3COOH \xrightarrow{\text{Conc}H_2SO_4}$

Watch Video Solution

9. Two carbon compound X and Y have the molecular formula C_3H_6 and C_3H_8 respectively which one is most likely to show addition reaction? Justify your answer, also give the chemical equation to explain the process of addition reaction in this case.

Watch Video Solution

10. Complete the following equations :

$CH_3COOH + Na_2CO_3 \rightarrow$

Watch Video Solution

11. Complete the following equations :

$CH_4 + O_2 \rightarrow$

Watch Video Solution

12. Complete the following equations :

$C_2H_5OH + Na \rightarrow$

Watch Video Solution

13. Two carbon compound X and Y have the molecular formula C_3H_6 and C_3H_8 respectively which one is most likely to show addition reaction? Justify your answer, also give the chemical equation to explain the process of addition reaction in this case.

Watch Video Solution

14. Complete the following chemical equations:

$C_2H_5OH + O_2 \rightarrow$

Watch Video Solution

15. Complete the following chemical equations :

$C_2H_5OH \xrightarrow[443K]{\text{Conc}H_2SO_4}$

Watch Video Solution

16. Complete the following chemical equations :

$CH_3COON + NaHCO_3 \rightarrow$

Watch Video Solution

17. Two carbon compound X and Y have the molecular formula C_3H_6 and C_3H_8 respectively which one is most likely to show addition reaction? Justify your answer, also give the chemical equation to explain the process of addition reaction in this case.

Watch Video Solution

18. Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 acid at 443 K? Write the chemical equation for the reaction, stating the role of conc. H_2SO_4 acid in this reaction.

Watch Video Solution

19. Distinguish between esterification and saponification reactions of organic compounds with the help of the chemical equation for each. Write one use of (i) esters and (ii) saponification process?

Watch Video Solution

20. What happens when ethanol is burnt in air ?

Watch Video Solution

21. What happens when (write chemical equation in each case)

ethanol is heated with excess conc . H_2SO_4 at 443 K?

Watch Video Solution

Watch Video Solution

22. What happens when a small piece of sodium is dropped into ethanol?

Watch Video Solution

23. Explain esterfication reaction with the help of a chemical equation .Describe an activity to show esterification.

Watch Video Solution

Board Corner Long Answer Type Questions

1. Write the chemical formula and name of the compound which is the active ingredient of

all alcoholic drinks. List its two uses. Write chemical equation and name of the product

formed when this compound reacts with-

(i) sodium metal

(ii) hot concentrated sulphuric acid

Watch Video Solution

2. What is methane? Draw its electron dot structure. Name the type of bonds formed in this

compound. Why are such compounds:

(i) poor conductors of electricity? and

(ii) have low melting and boiling points? What happens when

this compound burns in

oxygen.

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3. Both soap and detergent are some type of salts. What is the difference between them?

Describe in brief the cleansing action of soap. Why do soaps not form lather in head water?

List two problems that arise due to the use of detergents instead of soaps .

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4. Why are certain compounds called hydrocarbons? Write the general formula for homologous series of alkenes and

alkynes and also draw the structure of the first member of each series. Write the name of the reaction that converts alkenes into alkanes and also write a chemical equation to show the necessary conditions for the reaction to occur.

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