10th Science Lesson 11 Questions in English

11] Carbon And Its Compounds

1. In which of the following carbon element is incorporated?

1) Food we eat
2) Medicines we take when ill
3) Domestic and automobile fuels
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Carbon is an inseparable element in human life as we use innumerable number of carbon compounds in our day-to-day life. Because**, the food we eat, medicines we take when ill, clothes we wear; domestic and automobile fuels, paint, cosmetics, automobile parts**, etc., that we use contain carbon compounds.

2. Which of the following is not a unique feature of carbon?

1) Catenation
2) Tetravalency
3) Multiple bonding
    a) 1, 2
    b) 2, 3
    c) 1 alone
    d) None

Explanation

The unique nature of carbon, such as **catenation, tetravalency and multiple bonding**, enables it to combine with itself or other elements like hydrogen, oxygen, nitrogen, sulphur etc., and hence form large number of compounds. All these compounds are made of covalent bonds. These compounds are called organic compounds.

3. Assertion(A): The number of carbon compounds found in nature and man-made, is much higher than that of any other element in the periodic table

Reason(R): In-fact there are more than 5 million compounds of carbon.

a) Both (A) and (R) are correct, but (R) does not explain (A)

b) Both (A) and (R) are wrong

c) Both (A) and (R) are correct and (R) explains (A)

d) (A) is Correct and (R) is wrong

Explanation

The number of carbon compounds found in nature and man-made, is much higher than that of any other element in the periodic table. In-fact **there are more than 5 million compounds of carbon**.

4. Which of the following are the characteristics of Organic compounds?

1) Organic compounds have a high molecular weight and a complex structure
2) They are highly inflammable in nature
3) They are non-volatile in nature.

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Organic compounds have a high molecular weight and a complex structure. They are **highly inflammable** in nature. **They are volatile in nature**. Organic compounds can be prepared in the laboratory.

5. Assertion(A): The reactions involving organic compounds proceed at slower rates

Reason(R): Organic compounds are less reactive compared to inorganic compounds

a) Both (A) and (R) are correct, but (R) does not explain (A)

b) Both (A) and (R) are wrong

c) Both (A) and (R) are correct and (R) explains (A)

d) (A) is Correct and (R) is wrong

Explanation

Organic compounds are **less reactive compared to inorganic compounds**. Hence, the reactions involving organic compounds proceed at slower rates.

6. In which of the following organic compounds are insoluble?

a) Water
b) Toluene
c) Ether

d) carbon tetrachloride

Explanation

Organic compounds are mostly insoluble in water, but soluble in organic solvents such as ether, carbon tetrachloride, toluene, etc.

7. Which of the following statement is correct about isomerism?

a) A single molecular formula represents several organic compounds that differ in their physical and chemical properties
b) A single molecular formula represents several organic compounds that differ in their physical property alone
c) A single molecular formula represents several organic compounds that differ in their chemical properties alone
d) None

Explanation

Organic compounds exhibit the phenomenon of **isomerism, in which a single molecular formula represents several organic compounds that differ in their physical and chemical properties**. They have lower melting point and boiling point when compared to inorganic compounds.

8. Which of the following statement is correct?

1) There are millions of organic compounds known and many new organic compounds are discovered every year in nature or synthesized in laboratory
2) In early days, chemists recognised that compounds having similar structural features have identical chemical properties
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

There are millions of organic compounds known and many new organic compounds are discovered every year in nature or synthesized in laboratory. This may mystify organic chemistry to a large extent. However, a unique molecular structure can be assigned to each compound and it can be listed by using systematic methods of classification and eventually named on the basis of its structural arrangements. **In early days, chemists recognised that compounds having similar structural features have identical chemical properties**. So, they began to classify compounds based on the common structural arrangements found among them.

9. Which of the following statement is correct?

1) Organic chemistry is the chemistry of catenated carbon compounds.
2) The carbon atoms present in organic compounds are linked with each other through inter-molecular force and thus exist as chains.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Organic chemistry is the chemistry of **catenated carbon compounds**. The carbon atoms present in **organic compounds are linked with each other through covalent bonds** and thus exist as chains.

10. A compound have triple bonds between them, then it is_____

a) Unsaturated
b) Saturated
c) Partially saturated
d) None

Explanation

If one or more double bonds or triple bonds exist between the carbon atoms, then the compound is said to unsaturated.

11. In Open chain compounds Carbon atoms are linked in a_____

a) Cyclic pattern
b) Linear pattern
c) Rectangular pattern
d) Square pattern

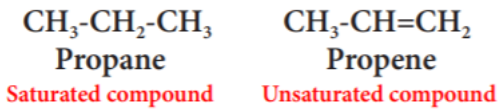
Explanation

Acyclic or Open chain compounds: These are the compounds in which the carbon atoms are linked in a **linear pattern to form the chain**. If all the carbon atoms in the chain are connected by single bonds, the compound is called as saturated.

12. CH3-CH=CH2, what is the name of the compound?

a) Propane
b) Propene
c) Propyne
d) None

Explanation



13. Which of the following is a carbocyclic compound?

a) Cyclo-butanol
b) Furanol
c) Benzene
d) Benzenol

Explanation

Organic compounds in which the chain of carbon atoms is closed or cyclic are called cyclic compounds. If the chain contains only carbon atoms, such compounds are called carbocyclic compounds. e.g. Benzene, Furan.

14. Which of the following compounds presence makes heterocyclic compounds?

1) Oxygen
2) Nitrogen
3) Sulphur
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

If the chain contains carbon and other atoms **like oxygen, nitrogen, sulphur**, etc., these compounds are called heterocyclic compounds.

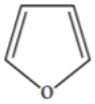
15. Which of the following statement is correct?

1) Carbocyclic compounds are further subdivided into alicyclic and aromatic compounds.
2) Alicyclic compounds contain one or more carbocyclic rings which may be saturated or unsaturated
3) Aromatic compounds contain one or more benzene rings
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

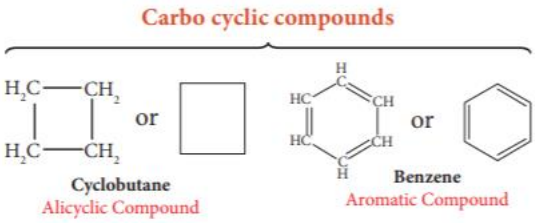
Carbocyclic compounds are further **subdivided into alicyclic and aromatic compounds**. Alicyclic compounds contain one or more carbocyclic rings which may be saturated or unsaturated whereas **aromatic compounds contain one or more benzene rings** (ring containing alternate double bonds between carbon atoms).

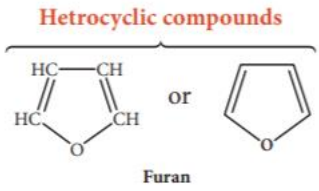
16. Match the following:

I.		1. Furan
II.		2. Cyclo-butane
III.		3. Benzene

a) 2, 1, 3
b) 2, 3, 1
c) 1, 3, 2
d) 3, 1, 2

Explanation





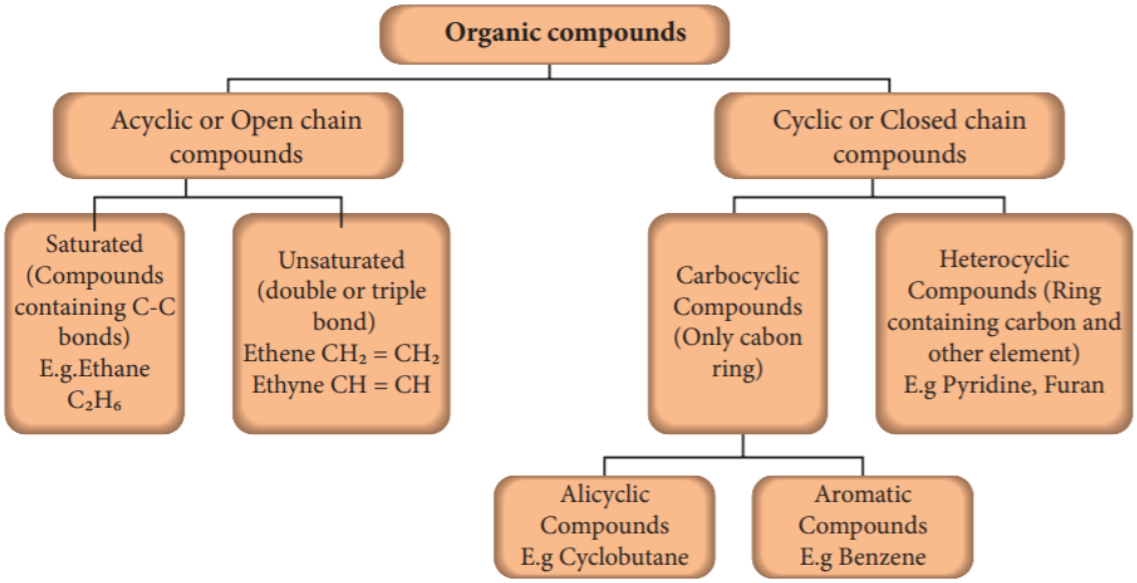
17. Match the following:

I.	Saturated carbon atom	1. Cyclo-butane
II.	Unsaturated Compound	2. Ethene
III.	Heterocyclic Compound	3. Ethane
IV.	Alicyclic Compounds	4. Pyridine

a) 2, 1, 3, 4
b) 3, 2, 4, 1
c) 2, 1, 3, 4

d) 1, 2, 4, 3

Explanation



18. The organic compounds that are composed of only carbon and hydrogen atoms are called_____

a) Carbo-Hydroxide
b) Hydro-carbon
c) Methyl Carbide
d) None

Explanation

Other than carbon, organic compounds contain atoms like hydrogen, oxygen, nitrogen, etc., bonded to the carbon. **The organic compounds that are composed of only carbon and hydrogen atoms are called hydrocarbons**.

19. Which of the following statement is correct?

1) The carbon atoms join together to form the framework of the compounds.
2) These are regarded as the parent organic compounds and all other compounds are considered to be derived from hydrocarbons by replacing one or more hydrogen atoms with other atoms or group of atoms
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

The carbon atoms join together to form the framework of the compounds. These are regarded as **the parent organic compounds** and all other compounds are considered to be derived from hydrocarbons by replacing one or more hydrogen atoms with other atoms or group of atoms.

20. Which of the following statement is correct?

1) Alkanes are hydrocarbons, which contain only single bonds
2) The simplest alkane (for n=1) is methane (CH4).
3) They are represented by the general formula Cn H2n
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Alkanes are hydrocarbons, which contain only single bonds. They are represented by the general formula **CnH2n + 2** (where n = 1,2, 3, ...). **The simplest alkane (for n=1) is methane (CH4).** Since, all are single bonds in alkanes, they are saturated compounds.

21. Which of the following statement is correct?

1) The hydrocarbons, which contain one or more C=C bonds are called alkenes
2) These are unsaturated compounds
3) They are represented by the general formula CnH2n
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

The hydrocarbons, which contain one or more C=C bonds are called alkenes. These are unsaturated compounds. They are represented by the general formula **CnH2n**. The simplest alkene contains two carbon atoms (n=2) and is called ethylene (C2H4).

22. _____is the simplest alkyne, which contains two carbon atoms

a) Ethane
b) Ethene
c) Acetylene
d) None

Explanation

The hydrocarbons containing c to c triple bond are called alkynes. They are also unsaturated as they contain triple bond between carbon atoms. They have the general formula CnH2n – 2. **Acetylene (C2H2) is the simplest alkyne**, which contains two carbon atoms.

23. Match the following

I.	Ethane	1. C5H8
II.	Propene	2. C3H6
III.	Propyne	3. C3H4
IV.	Pentyne	4. C2H6

a) 1, 3, 2, 4
b) 2, 1, 3, 4
c) 4, 2, 3, 1
d) 4, 1, 3, 2

Explanation

No. of carbon atoms	Alkane (C_nH_{2n+2})	Alkene (C_nH_{2n})	Alkyne (C_nH_{2n-2})
1	Methane (CH_4)	-	-
2	Ethane (C_2H_6)	Ethene (C_2H_4)	Ethyne (C_2H_2)
3	Propane (C_3H_8)	Propene (C_3H_6)	Propyne (C_3H_4)
4	Butane (C_4H_{10})	Butene (C_4H_8)	Butyne (C_4H_6)
5	Pentane (C_5H_{12})	Pentene (C_5H_{10})	Pentyne (C_5H_8)

24. Which of the following are Characteristics of hydrocarbons?

1) They are colourless and odourless
2) They undergo combustion reaction with oxygen to form CO2 and water.
3) They are soluble in water

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Characteristics of hydrocarbons:

- They are colourless and odourless

- They undergo combustion reaction with oxygen to form CO2 and water.
- Alkanes are saturated whereas alkenes and alkynes are unsaturated.
- They are **insoluble in water**.

25. The boiling point of hydrocarbons_____

a) Increases with an increase in the number of carbon atoms
b) Increases with a decrease in the number of carbon atoms
c) Decreases with an increase in the number of carbon atoms
d) No changes

Explanation

The boiling point of hydrocarbons **increases with an increase in the number of carbon atoms**. They undergo combustion reaction with oxygen to form CO2 and water.

26. Which of the following are gases at room temperature?

a) Methane
b) Ethane
c) Octane
d) Both 1 and 2

Explanation

Lower hydrocarbons are gases at room temperature e.g methane, ethane are gases. Alkynes are the most reactive due to the presence of the triple bond.

27. Which of the following is a test to identify saturated and unsaturated compounds?

a) Blue litmus
b) Red litmus
c) Bromine water test
d) Saline water test

Explanation

Identify saturated and unsaturated compounds:

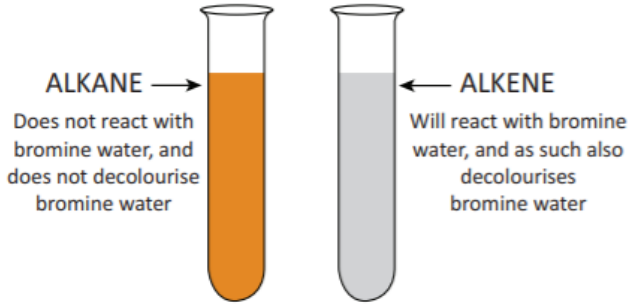
- Take the given sample solution in a test tube
- Add a few drops of bromine water and observe any characteristic change in colour
- If the given compound is unsaturated, it will decolourise bromine water.
- **Saturated compounds do not decolourise bromine**

28. Which of the following does not decolourise bromine water?

a) Alkane

b) Alkyne
c) Alkene
d) All the above

Explanation



ADDITION OF BROMINE WATER TO ALKANES AND ALKENES

29. Which of the following statement is correct?

1) The structural frameworks of organic compounds are made of carbon and hydrogen, which are relatively less reactive
2) The presence of some other atoms or group of atoms makes the compounds more reactive and thus determines the chemical properties of the compound.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

The structural frameworks of organic compounds are made of carbon and hydrogen, which are relatively less reactive. But, the **presence of some other atoms or group of atoms makes the compounds more reactive and thus determines the chemical properties of the compound**. These groups are called functional groups.

30. Which of the following statement is correct?

1) The chemical properties of an organic compound depend on its functional group
2) The physical properties rely on remaining part of the structure
3) For example, ethane is a hydrocarbon having molecular formula C2H6. If one of its hydrogen is replaced by –OH group, you will get an alcohol.
    a) 1, 2
    b) 1, 3
    c) 2, 3

d) All the above

Explanation

The chemical properties of an organic compound depend on its functional group whereas its physical properties rely on remaining part of the structure. Carbon to carbon multiple bonds (C=C, C C) also are considered as functional groups as many of the properties are influenced by these bonds. Other functional groups include atoms of halogens, –OH, –CHO, –COOH, etc. **For example, ethane is a hydrocarbon having molecular formula C2H6. If one of its hydrogen is replaced by –OH group, you will get an alcohol**.

31. A series of compounds containing the same functional group is called a_____

a) Group of organic compounds
b) Class of organic compounds
c) Order of organic compounds
d) None

Explanation

A series of compounds containing the same functional group is called a class of organic compounds. Leaving the functional group, the rest of the structure is represented by 'R'. Thus, an alcohol is represented by 'R-OH'.

32. Match the following:

I.	–OH	1. Ether
II.	$-\overset{\overset{O}{\|}}{C}-H$	2. Alcohol
III.	$-\overset{\overset{O}{\|}}{C}-OH$	3. Carboxylic acids
IV.	–O–R	4. Aldehydes

a) 2, 3, 4, 1
b) 2, 4, 3, 1
c) 1, 3, 4, 2
d) 1, 4, 3, 2

Explanation

Class of the compound	Functional group
Alcohols	–OH
Aldehydes	O ‖ –C–H
Ketones	O ‖ –C–
Carboxylic acids	O ‖ –C–OH
Ester	O ‖ –C–OR
Ether	–O–R

33. Match the following:

I.	Acetaldehyde	1. CH3COCH3
II.	Acetone	2. CH3CHO
III.	Methyl acetate	3. CH3OCH3
IV.	Dimethyl ether	4. CH3COOCH3

a) 2, 4, 3, 1
b) 2, 4, 3, 1
c) 2, 3, 4, 1
d) 3, 1, 4, 2

Explanation

Ethanol, CH_3CH_2OH
Acetaldehyde, CH_3CHO
Acetone, CH_3COCH_3
Acetic acid, CH_3COOH
Methyl acetate, CH_3COOCH_3
Dimethyl ether, CH_3OCH_3

34. Which of the following statement is correct?

1) Homologous series is a group or a class of organic compounds having same general formula
2) They have similar chemical properties in which the successive members differ by a - CH2 group
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Homologous series **is a group or a class of organic compounds having same general formula and similar chemical properties in which the successive members differ by a - CH2 group**

35. Match the following:

I.	Methane	1. CH3(CH2)3CH3
II.	Propane	2. CH4
III.	Pentane	3. CH3(CH2)2CH3
IV.	Butane	4. CH3CH2CH3

    a) 2, 3, 4, 1
    b) 2, 4, 3, 1
    c) 2, 1, 3, 4
    d) 1, 2, 3, 4

Explanation

Methane - CH_4

Ethane - CH_3CH_3

Propane - $CH_3CH_2CH_3$

Butane - $CH_3(CH_2)_2CH_3$

Pentane - $CH_3(CH_2)_3CH_3$

36. What is the difference in molecular mass of preceding or succeeding member by one methylene group?

a) 24 amu
b) 14 amu
c) 10 amu
d) 9 amu

Explanation

Each member of the homologous series differs from the **preceding or succeeding member by one methylene group** (–CH2) and hence by a **molecular mass of 14 amu**.

37. Which of the following statement about homologous series is correct?

1) All members of a homologous series contain the same elements and functional group
2) Chemical properties of the members of a homologous series are similar.
3) All the members can be prepared by a common method.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

- All members of a **homologous series contain the same elements and functional group**.
- They are represented by a general molecular formula. e.g. Alkanes, CnH2n + 2.
- The members in each homologous series show a regular gradation in their physical properties with respect to their increase in molecular mass.
- **Chemical properties of the members of a homologous series are similar**
- **All the members can be prepared by a common method.**

38. What is the Latin name of the red ant?

a) Erica
b) Formica
c) Calcite
d) Formalin

Explanation

In ancient days, the names of organic compounds were related to the natural things from which they were obtained. For example, the formic acid was initially obtained by distillation of 'red ants'. **Latin name of the red ant is 'Formica'**. So, the name of the formic acid was derived from the Latin name of its source Later, the organic compounds were synthesized from sources other than the natural sources.

39. What is the full-form of IUPAC?

a) International Union of Physical and Applied Chemistry
b) International Union of Pure and Organic Chemistry
c) International Union of Pure and Applied Chemistry
d) International Union of Physical and Applied Physics

Explanation

Scientists framed a systematic method for naming the organic compounds based on their structures. Hence, a set of rules was formulated by **IUPAC (International Union of Pure and Applied Chemistry)** for the nomenclature of chemical compounds.

40. The IUPAC name of the any organic compound consists of_____ parts

a) 5
b) 3
c) 6
d) 2

Explanation

The IUPAC name of the any organic compound consists of three parts:

i. Root word

ii. Prefix

iii. Suffix

These parts are combined as per the following sequence to get the IUPAC name of the compound:

41. Which of the following statement about Root word is correct?

1) It is the basic unit, which describes the carbon skeleton.
2) Based on the number of carbon atoms present in the carbon skeleton, most of the names are derived from Greek numerals(except first four)
3) It gives the number of carbon atoms present in the parent chain of the compound and the pattern of their arrangement
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Root word: It is the **basic unit**, which describes the carbon skeleton. It gives the **number of carbon atoms present in the parent chain of the compound and the pattern of their arrangement**. Based on the number of carbon atoms present in the carbon skeleton, most of the names are derived from Greek numerals (except the first four).

42. Match the following:

I.	Hept-	1. Four
II.	But-	2. Nine
III.	Pent-	3. Seven
IV.	Non-	4. Five

a) 3, 1, 4, 2
b) 4, 2, 1, 3
c) 2, 1, 3, 4
d) 1, 2, 4, 3

Explanation

No. of carbon atoms	Root word
1	Meth-
2	Eth-
3	Prop-
4	But-
5	Pent-
6	Hex-
7	Hept-
8	Oct-
9	Non-
10	Dec-

43. Atoms or group of atoms, other than hydrogen, attached to carbon of the parent chain are called_____

a) Substituents
b) Presituent
c) Super sonone
d) Sub sonene

Explanation

The prefix represents the substituents or branch present in the parent chain. **Atoms or group of atoms, other than hydrogen, attached to carbon of the parent chain are called substituents**.

44. Match the following:

I.	Amino	1. -I
II.	Bromo	2. -Br
III.	Ethyl	3. -NH2
IV.	Iodo	4. -CH2CH3

a) 2, 1, 3, 4
b) 2, 1, 4, 3

c) 3, 2, 4, 1
d) 1, 4, 2, 3

Explanation

Substituent	Prefix used
-F	Fluoro
-Cl	Chloro
-Br	Bromo
-I	Iodo
$-NH_2$	Amino
$-CH_3$	Methyl
$-CH_2CH_3$	Ethyl

45. Which of the following statement is correct?

1) The suffix forms the end of the name. It is divided into two parts such as (a) Primary suffix and (b) Secondary suffix.
2) Suffix 'ene' and 'yne' are used for the compounds containing double and triple bonds respectively
3) The secondary suffix describes the functional group of the compound
   a) 1, 2
   b) 1, 3
   c) 2, 3
   d) All the above

Explanation

The suffix forms the end of the name. It is divided into two parts such as (a) Primary suffix and (b) Secondary suffix. The primary suffix comes after the root word. It represents the nature in carbon to carbon bonding of the parent chain. If all the bonds between the carbon atoms of the parent chain are single, then suffix 'ane' has to be used. **Suffix 'ene' and 'yne' are used for the compounds containing double and triple bonds respectively**. The secondary suffix describes the functional group of the compound.

46. Match the following:

I.	Alcohols	1. -oic acid
II.	Aldehydes	2. -one
III.	Ketones	3. -al
IV.	Carboxylic acids	4. -ol

a) 4, 3, 2, 1
b) 4, 1, 2, 3
c) 1, 3, 2, 4

d) 3, 1, 2, 4

Explanation

Class of the Compound	Functional group	Suffix used
Alcohols	–OH	-ol
Aldehydes	–CHO	-al
Ketones	O ‖ –C–	-one
Carboxylic acids	–COOH	-oic acid

47. Which of the following is not one of the rules for IUPAC naming organic compounds?

a) Identify the longest chain of carbon atoms to get the parent name (root word)
b) Identify the substituent and use a number followed by a dash and a prefix to specify its location and identity.
c) When the primary and secondary suffixes are joined, the terminal 'e' of the primary suffix is removed.
d) None

Explanation

IUPAC rules for naming organic compounds:

Rule1: **Identify the longest chain of carbon atoms to get the parent name (root word)**.

Rule 2: Number the carbon atoms of the parent chain, beginning at the closest end of the substituent or functional group. These are called locant numbers. If both functional group and substituent are present, then the priority will be given to the functional group.

Rule 3: In case of alkenes and alkynes, locate the double bond or triple bond and use its locant number followed by a dash and a primary suffix. The carbon chain is numbered in such a way that the multiple bonds have the lowest possible locant number

Rule 4: If the compound contains functional group, locate it and use its locant number followed by a dash and a secondary suffix

Rule 5: **When the primary and secondary suffixes are joined, the terminal 'e' of the primary suffix is removed**

Rule 6: **Identify the substituent and use a number followed by a dash and a prefix to specify its location and identity**

48. CH3-CH2-CH2-CH2-CH3, What is the IUPAC name?

a) **Pentane**
b) Butane
c) Propane
d) Hexane

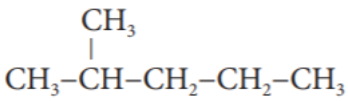
Explanation

CH3-CH2-CH2-CH2-CH3

Step 1: It is a five- carbon chain and hence the root word is 'Pent'. (Rule 1)

Step 2: All the bonds between carbon atoms are single bonds, and thus the suffix is 'ane'. So, its name is Pent + ane = **Pentane**

49. What is the IUPAC name of the following compound?

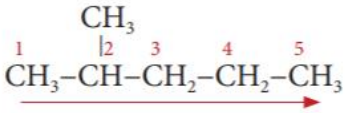


a) **2-Methylpentane**
b) 2-Ethylpentane
c) 2-Methylpropane
d) 2-ethylpropane

Explanation

Step 1: The longest chain contains five carbon atoms and hence the root word is 'Pent'.

Step 2: There is a substituent. So, the carbon chain is numbered from the left end, which is closest to the substituent. (Rule 2)



Step 2: All are single bonds between the carbon atoms and thus the suffix is 'ane'.

Step 3: The substituent is a methyl group and it is located at second carbon atom. So, its locant number is 2. Thus the prefix is '2-Methyl'. (Rule 6).

The name of the compound is

2-Methyl + pent +ane = 2-Methylpentane

50. What is the IUPAC name of the following: CH3-CH2-CH2-CH=CH2

a) Pentane
b) Pent-1-yne
c) Pent-1-ene
d) Pent-2-ene

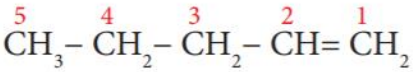
Explanation

Example 4: CH_3-CH_2-CH_2-CH=CH_2

Step 1: It is a 'five- carbon atoms chain' and hence the root word is 'Pent'. (Rule 1)

Step 2: There is a carbon to carbon double bond. The suffix is 'ene'.

Step 3: The carbon chain is numbered from the end such that double bond has the lowest locant number as shown below: (Rule 3):



Step 4: The locant number of the double bond is 1 and thus the suffix is '-1-ene'.

So, the name of the compound is

Pent + (-1-ene) = Pent-1-ene

51. What is the IUPAC name of the following?

CH3-CH2-CH2-OH

a) **Propan-1-ol**
b) Propan-2-ol
c) Propan-1-al
d) Propan-2-al

Explanation

Step1: The parent chain consists of 3 carbon atoms. The root word is 'Prop'.

Step 2: There are single bonds between the carbon atoms of the chain. So, the **primary suffix** is 'ane'.

Step 3: Since, the compound contains –OH group, it is an alcohol. The carbon chain is numbered from the end which is closest to –OH group. (Rule 3)

$$\overset{3}{CH_3}-\overset{2}{CH_2}-\overset{1}{CH_2}-OH$$

Step 4: The locant number of –OH group is 1 and thus the secondary suffix is '1-ol'.

The name of the compound is **Prop + ane + (1-ol) = Propan-1-ol**

52. What is the IUPAC name of the following compound?

CH3COOH

a) **Ethanoic acid**
b) Methanoic acid
c) Propanoic acid
d) Methyl ethyl ether

Explanation

Example 2: CH_3COOH

Step1: The parent chain consists of 2 carbon atoms. The root word is 'Eth'.

Step 2: All are single bonds between the carbon atoms of the chain. So the primary suffix is 'ane'.

Step 3: Since the compound contains the–COOH group, it is a carboxylic acid. The secondary suffix is 'oic acid'

The name of the compound is **Eth + ane + oic acid) = Ethanoic acid**

53. Match the following

I.	Propanol	1. CH3CH2CH2CH2 COOH
II.	Propanal	2. CH3CH2CH2OH
III.	Pentanone	3. CH3COCH2CH2 CH3
IV.	Pentanoic acid	4. CH3CH2CHO

a) 2, 1, 3, 4
b) 2, 4, 3, 1
c) 2, 4, 1, 3
d) 1, 2, 3, 4

Explanation

No. of carbons atoms	IUPAC Name			
	Alcohols	Aldehydes	Ketones	Carboxylic acid
1	Methanol (CH_3OH)	Methanal ($HCHO$)	-	Methanoic acid ($HCOOH$)
2	Ethanol (CH_3CH_2OH)	Ethanal (CH_3CHO)	-	Ethanoic acid (CH_3COOH)
3	Propanol ($CH_3CH_2CH_2OH$)	Propanal (CH_3CH_2CHO)	Propanone (CH_3COCH_3)	Propanoic acid (CH_3CH_2COOH)
4	Butanol ($CH_3CH_2CH_2CH_2OH$)	Butanal ($CH_3CH_2CH_2CHO$)	Butanone ($CH_3COCH_2CH_3$)	Butanoic acid ($CH_3CH_2CH_2COOH$)
5	Pentanol ($CH_3CH_2CH_2CH_2CH_2OH$)	Pentanal ($CH_3CH_2CH_2CH_2CHO$)	Pentanone ($CH_3COCH_2CH_2CH_3$)	Pentanoic acid ($CH_3CH_2CH_2CH_2COOH$)

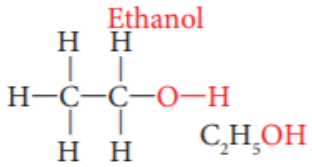
54. Which of the following statement is correct?

1) Ethanol is commonly known as alcohol
2) Its molecular formula is C2H5OH.
3) All alcoholic beverages and some cough syrups contain ethanol.

a) 1, 2
b) 2, 3
c) 1, 3
d) All the above

Explanation

Ethanol is commonly known as alcohol. All alcoholic beverages and some cough syrups contain ethanol. Its molecular formula is **C2H5OH**. Its structural formula is



55. Which of the following statement is correct?

1) Ethanol is manufactured in industries by the fermentation of molasses
2) Molasses is a by-product obtained during the manufacture of sugar from sugarcane

a) 1 alone
b) 2 alone
c) 1, 2
d) None

Explanation

Ethanol is manufactured in industries by **the fermentation of molasses**, which is a by-product obtained during the manufacture of sugar from sugarcane.

56. Molasses contain about _____% of sucrose

a) 25
b) 30
c) 75
d) 65

Explanation

Molasses is a dark coloured syrupy liquid left after the crystallization of sugar from the concentrated sugarcane juice. **Molasses contain about 30% of sucrose, which cannot be separated by crystallization.**

57. Dilution of molasses is done to bring down the concentration of sugar to about____ percent.

a) 6 to 9

b) 8 to 10
c) 3 to 4
d) 1 to 5

Explanation

Dilution of molasses: Molasses is first diluted with water to bring down the concentration of sugar to about **8 to 10 percent**.

58. Which of the following can be added to increase the nitrogen content of the molasses?

1) Ammonium sulphate
2) Ammonium phosphate
3) Nitrous oxide

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Molasses usually contains enough nitrogenous matter to act as food for yeast during the fermentation process. **If the nitrogen content of the molasses is poor, it may be fortified by the addition of ammonium sulphate or ammonium phosphate**.

59. What is the temperature required in the fermentation tank?

a) 100 degree C
b) 303 K
c) 423 K
d) 321 K

Explanation

The solution obtained after the addition of nitrogen source is collected in large 'fermentation tanks' and yeast is added to it. The **mixture is kept at about 303K for a few days**.

60. The fermented liquid is technically called_____

a) Rectified spirit
b) Wash
c) Soap
d) None

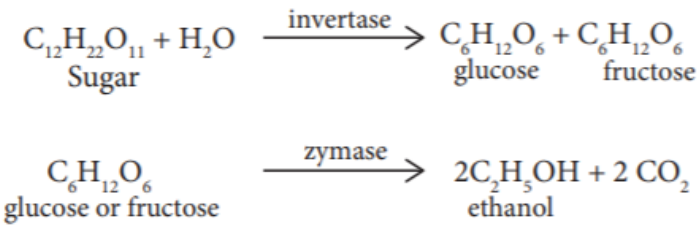
Explanation

During fermentation period, the enzymes invertase and zymase present in yeast, bring about the conversion of sucrose into ethanol. **The fermented liquid is technically called wash.**

61. Which of the following converts sugar into glucose and fructose?

a) Melatonin
b) Invertase
c) Zymase
d) All the above

Explanation



62. What % of alcohol is contained in wash?

a) 15 to 18 %
b) 12 to 18 %
c) 30 to 60 %
d) 25 to 35 %

Explanation

The fermented liquid **that is wash, containing 15 to 18 percent alcohol**, is now subjected to fractional distillation.

63. What is the water ethanol percentage composition is rectified spirit?

a) 95.5%, 4.5%
b) 4.5%, 95.5%
c) 92%, 8%
d) 85%, 15%

Explanation

The main fraction drawn is an aqueous solution of ethanol which contains **95.5% of ethanol and 4.5% of water**. This is called rectified spirit.

64. Rectified spirit can be converted to absolute alcohol by____

a) Caustic potash
b) Quicklime

c) Caustic soda
d) Slaked lime

Explanation

Rectified spirit mixture is then refluxed over **quicklime** for about 5 to 6 hours and then allowed to stand for 12 hours. On distillation of this mixture, pure alcohol (100%) is obtained. This is called absolute alcohol.

65. Yeast belongs to which of the following class?

a) Virus
b) Fungi
c) Bacteria
d) All the above

Explanation

Yeasts are single–celled microorganisms, belonging to the class of fungi. The enzymes present in yeasts catalyse many complex organic reactions. Fermentation is conversion of complex organic molecules into simpler molecules by the action of enzymes. E.g. Curdling of milk

66. Which of the following property about ethanol is correct?

1) Ethanol is a colourless liquid, having a pleasant smell and a burning taste.
2) Its boiling point is 78 degree C which is less than ethane
3) It is completely miscible with water in all proportions.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Physical properties of Ethanol:

- Ethanol is a colourless liquid, having a pleasant smell and a burning taste
- It is a volatile liquid. Its **boiling point is 780 C (351K), which is much higher than that of its corresponding alkane, i.e. ethane** (Boiling Point = 184 K).
- It is completely miscible with water in all proportions.

67. At which temperature ethanol is heated with con H2SO4 gets dehydrated?

a) 500K
b) 443K
c) 343K
d) 243K

Explanation

When ethanol is heated with con H2SO4 at 443K, it loses a water molecule i.e. dehydrated to form ethene.

$$\underset{\text{Ethanol}}{CH_3CH_2OH} \xrightarrow[443K]{Conc.H_2SO_4} \underset{\text{Ethene}}{CH_2=CH_2} + H_2O$$

68. What happens when ethanol is heated with Sodium?

a) O2 is liberated
b) O2 is absorbed
c) H2 is liberated
d) H2 is absorbed

Explanation

Ethanol reacts with sodium metal to form sodium ethoxide and hydrogen gas.

$$2C_2H_5OH + 2Na \longrightarrow \underset{\text{sodium ethoxide}}{2C_2H_5ONa} + H_2 \uparrow$$

69. During oxidation of Ethanol, the colour of alkaline KMnO4 or acidified K2Cr2O7___

a) Changes from orange to green
b) Changes from green to orange
c) Changes from red to blue
d) Changes from blue to red

Explanation

Ethanol is oxidized to ethanoic acid with alkaline KMnO4 or acidified K2Cr2O7. During this reaction, the **orange colour of K2Cr2O7 changes to green**. Therefore, this reaction can be used for the identification of alcohols.

70. The reaction of an alcohol with a carboxylic acid gives a compound having____ odour

a) Pungent
b) Fruity
c) Fungai
d) Smoky

Explanation

The reaction of an alcohol with a carboxylic acid gives a compound having fruity odour. This compound is called an ester and the reaction is called esterification. Ethanol reacts with ethanoic acid in the presence of conc. H2SO4 to form ethyl ethanoate, an ester.

$$\underset{\text{Ethanol}}{C_2H_5OH} + \underset{\text{Ethanoic acid}}{CH_3COOH} \xrightarrow{\text{conc.}H_2SO_4} \underset{\text{Ethyl ethanoate}}{CH_3COOC_2H_5} + H_2O$$

71. What is used as catalyst dehydrogenation of ethanol?

a) Iron
b) Cu
c) Bromine
d) Nickel

Explanation

When the vapour of ethanol is passed over heated copper, used as a catalyst at 573 K, it is dehydrogenated to acetaldehyde.

$$\underset{\text{Ethanol}}{CH_3CH_2OH} \xrightarrow[573K]{Cu} \underset{\text{Acetadehyde}}{CH_3CHO} + H_2\uparrow$$

72. Ethanol burns to give_____

a) Hydrogen
b) Carbon dioxide
c) Nitrogen
d) Sulphur

Explanation

Ethanol is highly inflammable liquid. It burns with oxygen to form carbon dioxide and water.

$$\underset{\text{Ethanol}}{C_2H_5OH} + 3O_2 \longrightarrow \underset{\text{Carbon dioxide}}{2CO_2} + 3H_2O$$

73. Which of the following statement about ethanol is correct?

1) It in medical wipes, as an antiseptic
2) It is used for effectively killing micro-organisms like bacteria, fungi, etc., by including it in many hand sanitizers.
3) It is used as a solvent for drugs, oils, fats, perfumes, dyes, etc.
    a) 1, 2

b) 2, 3
c) 1, 3
d) All the above

Explanation

Uses of ethanol:

Ethanol is used

- **in medical wipes, as an antiseptic.**
- as an anti-freeze in automobile radiators
- for effectively killing micro-organisms like bacteria, fungi, etc., by including it in many hand sanitizers.
- **as an antiseptic to sterilize wounds in hospitals**
- **as a solvent for drugs, oils, fats, perfumes, dyes, etc**
- to enhance the flavour of food extracts, for example vanilla extract; a common food flavour, which is made by processing vanilla beans in a solution of ethanol and water.

74. What is the percentage of ethanol and methanol in methylated spirit?

a) 95, 5
b) 91, 9
c) 96, 4
d) 87, 13

Explanation

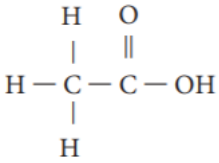
Ethanol is used in the preparation of methylated spirit (mixture of 95% of ethanol and 5% of methanol) rectified spirit (mixture of 95.5% of ethanol and 4.5% of water), power alcohol (mixture of petrol and ethanol) and denatured spirit (ethanol mixed with pyridine).

75. Which of the following is the molecular formula of acetic acid?

a) C2H4O2
b) C2H4O4
c) C4H4O2
d) C2H3O2

Explanation

Ethanoic acid or acetic acid is one of the most important members of the carboxylic acid family. Its **molecular formula is C2H4O2**. Its structural formula is

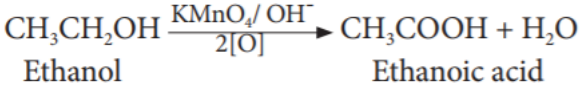


76. Which of the following is used as catalyst to prepare ethanoic acid in large scale?

a) **Alkaline potassium permanganate**
b) Acidified potassium permanganate
c) Alkaline potassium dichromate
d) All the above

Explanation

Ethanoic acid is prepared in large scale, by the oxidation of ethanol in the **presence of alkaline potassium permanganate or acidified potassium dichromate**.



77. Which of the following are the features of ethanoic acid?

1) Ethanoic acid is a colourless liquid having an unpleasant odour
2) It is sour in taste
3) It is miscible with water in all proportions

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Physical Properties of ethanoic acid:

- Ethanoic acid is a colourless liquid having an unpleasant odour.
- It is **sour in taste**
- It is **miscible with water in all proportions**.

78. Assertion(A): Ethanoic acid is also known as glacial acetic acid

Reason(R): On cooling, pure ethanoic acid is frozen to form ice like flakes

a) Both (A) and (R) are correct, but (R) does not explain (A)

b) Both (A) and (R) are wrong

c) Both (A) and (R) are correct and (R) explains (A)

d) (A) is Correct and (R) is wrong

Explanation

On **cooling, pure ethanoic acid is frozen to form ice like flakes**. They look like glaciers, so it is called glacial acetic acid. Its boiling point is higher than the corresponding alcohols, aldehydes and ketones.

79. What happens when Ethanoic acid reacts with metals?

a) Oxygen is liberated
b) Hydrogen is liberated
c) Carbon dioxide is liberated
d) Oxygen is absorbed

Explanation

Ethanoic acid reacts with active metals like Na, Zn, etc., to **liberate hydrogen** and form sodium ethanoate.

$2CH_3COOH + Zn \rightarrow (CH_3COO)_2 Zn + H_2 \uparrow$

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

80. What happens when Ethanoic acid reacts with sodium carbonate and sodium bicarbonate?

a) Oxygen is liberated
b) Hydrogen is liberated
c) Carbon dioxide is liberated
d) Oxygen is absorbed

Explanation

Ethanoic acid reacts with sodium carbonate and sodium bicarbonate, which are weaker bases and **liberates CO_2**, with brisk effervescence.

$2CH_3COOH + Na_2CO_3 \rightarrow 2CH_3COONa + CO_2\uparrow + H_2O$

$CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + CO_2\uparrow + H_2O$

81. What happens when Ethanoic acid reacts with sodium hydroxide?

a) Water is formed
b) Hydroxylic acid is formed
c) Sodium hydroxide is formed
d) Oxygen is absorbed

Explanation

Ethanoic acid reacts with sodium hydroxide to **form sodium ethanoate and water**.

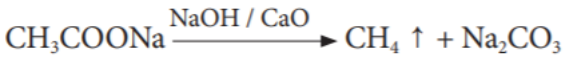
CH3COOH + NaOH → CH3COONa + H2O

82. Soda lime_____

a) 3 parts of NaOH, 1 part of CaO
b) 1 part of NaOH, 3 parts of CaO
c) 4 parts of NaOH, 1 part of CaO
d) 3 parts of NaOH, 2 parts of CaO

Explanation

When a sodium salt of ethanoic acid is heated with soda lime (**solid mixure of 3 parts of NaOH and 1 part of CaO**), methane gas is formed.



83. Which of the following are the uses of Acetic acid?

1) Acetic acid, in lower concentration, is used as a food additive
2) In the manufacture of plastic
3) For coagulating rubber from latex.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Acetic acid, in lower concentration, is used as a food additive, a flavoring agent and a preservative.

Ethanoic acid is used:

- in the **manufacture of plastic**.
- in making dyes, pigments and paint
- in printing on fabrics.
- as a laboratory reagent.
- for **coagulating rubber from latex**
- in the production of pharmaceuticals.

84. Which of the following are the uses of Hydrocarbons?

1) As a solvent and an antiseptic agent

2) Fuels like LPG, Petrol, Kerosene.
3) Polymeric materials like tyre, plastic containers
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Organic compounds are inseparable in human life. They are used by mankind or associated at all stages of life right from one's birth to death. Various classes of organic compounds and their uses in our daily life as follows:

Hydrocarbons

- **Fuels like LPG, Petrol, Kerosene**.
- Raw materials for various important synthetic materials.
- Polymeric materials like **tyre, plastic containers**

85. Match the following:

I.	Alcohols	1. Pain Killer
II.	Aldehydes	2. Antiseptic agent
III.	Ketones	3. Raw materials for synthetic materials
IV.	Ethers	4. Stain Remover

    a) 1, 4, 2, 3
    b) 2, 3, 1, 4
    c) 2, 3, 4, 1
    d) 1, 2, 3, 4

Explanation

Alcohols

- As a solvent and an antiseptic agent.
- Raw materials for various important synthetic materials.

Aldehydes

- Formaldehyde as a disinfectant
- Raw materials for synthetic materials

Ketones

- As a solvent
- Stain Remover

Ethers

- Anaesthetic agents.
- Pain Killer

Esters

- All the cooking oils and lipids contain esters.

86. Which of the following statement is correct?

1) Soaps and the Detergents are materials that are used by us for cleaning purposes because pure water alone cannot remove all types of dirt or any oily substance from our body or clothes.
2) They perform their cleaning actions in certain specific conditions.
3) They contain 'surfactants', which are compounds with molecules that line up around water to break the 'surface tension'
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Soaps and the Detergents are materials that are used by us for cleaning purposes because pure water alone cannot remove all types of dirt or any oily substance from our body or clothes. They contain **'surfactants'**, which are compounds with molecules that line up around water to break the 'surface tension'. Both of them having a different chemical nature. They perform their cleaning actions in certain specific conditions.

87. _____ is a cleaning agent that is composed of one or more salts of fatty acids.

a) Salts
b) Detergent
c) Soap
d) Both b and c

Explanation

Soap is a cleaning agent that is composed of one or more salts of fatty acids. Detergent is a chemical compound or a mixture of chemical compounds, which is used as a cleaning agent, also.

88.Which of the following statement is correct?

1) Soaps are sodium or potassium salts of some long chain carboxylic acids, called fatty acids.
2) A potassium-based soap creates a more water-soluble product than a sodium-based soap
3) Soap requires two major raw materials fat and acid

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Soaps are sodium or potassium salts of some long chain carboxylic acids, called fatty acids. **Soap requires two major raw materials: i) fat and ii) alkali**. The alkali, most commonly used in the preparation of soap is sodium hydroxide. Potassium hydroxide can also be used. A potassium-based soap creates a more water-soluble product than a sodium-based soap

89. Which of the following is used in the preparation of hard soaps?

a) NaOH
b) CaOH
c) CaO
d) Ca(OH)2

Explanation

Soaps, which are prepared by the saponification of oils or fats with **caustic soda (sodium hydroxide), are known as hard soaps**. They are usually used for washing purpose

90. Which of the following is used in the preparation of hard soaps?

a) Potassium salts
b) Magnesium salts
c) Sodium salts
d) All the above

Explanation

Soaps, which are prepared by the saponification of oils or fats with **potassium salts**, are known as **soft soaps**. They are used for cleansing the body.

91. Which of the following process is used to produce manufacturing of soap?

a) Haber's process
b) Bayer's process
c) Kettle process
d) None

Explanation

Kettle process is the oldest method. But, it is still widely used in the small scale preparation of soap. There are mainly, two steps to be followed in this process.

92. Which of the following statement is correct about Saponification process?

1) The oil, which is used in this process, is taken in an iron tank (kettle)
2) The alkaline solution (10%) is added into the kettle, a little in excess
3) The alkaline solution (10%) is added into the kettle, a little in excess
    a) 1, 2
    b) 2, 3
    c) 1, 3
    d) All the above

Explanation

The oil, which is used in this process, is taken in an iron tank (kettle). The alkaline solution (10%) is added into the kettle, a little in excess. The **mixture is boiled by passing steam through it**. The oil gets hydrolysed after several hours of boiling. This process is called Saponification.

93. Which of the following are contained in hard water?

1) Calcium ions
2) Sodium ions
3) Magnesium ions
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Hard water contains calcium and magnesium ions (Ca2+ and Mg2+) that limit the cleaning action of soap. Ordinary soaps when treated with hard water, precipitate as salts of calcium and magnesium. They appear at the surface of the cloth as sticky grey scum. Thus, the soaps cannot be used conveniently in hard water.

94. What happens is formed when hard water reacts with soap?

a) Scrum
b) Scum
c) Drum
d) Dump

Explanation

When combined with soap, **hard water develops a thin layer (precipitates of the metal ions) called 'scum', which leaves a deposit on the clothes or skin** and does not easily rinse away. Over time, this can lead to the deterioration of the fabric and eventually ruin the clothes. On the other hand, detergents are made with chemicals that are not affected by hard water.

95. Which of the following statement about synthetic detergents is correct?

1) Development of synthetic detergents is a big achievement in the field of cleansing.
2) These soaps possess the desirable properties of ordinary soaps and also can be used with hard water and in acidic solutions
3) The detergents do not form precipitates with Ca2+ and Mg2+ present in hard water.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Development of synthetic detergents is a big achievement in the field of cleansing. These soaps possess the desirable properties of ordinary soaps and also can be used with hard water and in acidic solutions. **These are salts of sulphonic acids or alkyl hydrogen sulphates in comparison to soap, which are salts of carboxylic acids**. The detergents do not form precipitates with Ca2+ and Mg2+ present in hard water. So, the cleansing action of detergents is better than that of soaps.

96. Which of the following statement is correct?

1) Detergents are prepared by adding sulphuric acid to the processed hydrocarbon obtained from petroleum
2) This chemical reaction result in the formation of molecules similar to the fatty acid in soap.
3) An alkali is added to the mixture to produce the 'surfactant molecules', which do not bond with the minerals present in the hard water, thus preventing the formation of their precipitates
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Detergents are prepared by adding sulphuric acid to the processed hydrocarbon obtained from petroleum. This chemical reaction result in the formation of molecules similar to the fatty acid in soap. **Then, an alkali is added to the mixture to produce the 'surfactant molecules'**, which do not bond with the minerals present in the hard water, thus preventing the formation of their precipitates.

97. Which of the following enable the removal of certain stains from the cloth?

a) Sodium chloride
b) Sodium perborate
c) Sodium Per-oxide

d) Sodium hydroxide

Explanation

Oxygen bleaches, such as 'sodium perborate', enable the removal of certain stains from the cloth. Sodium sulphate is added to prevent the caking of the detergent powder. Enzymes are added to break down some stains caused by biological substances like blood and vegetable juice.

98. Which of the following in 'surfactant' prevent corrosion in washing machine?

a) Sodium chloride
b) Sodium perborate
c) Sodium silicate
d) Sodium hydroxide

Explanation

Sodium silicate, which prevents the corrosion and ensures that the detergent does not damage the washing machine. Fluorescent whitening agents that give a glow to the clothes.

99. Which of the following statement is incorrect?

1) A soap molecule contains two chemically distinct parts that interact differently with water
2) Non-polar end, which is a short head with a carboxylate group (–COONa)
3) Polar end having the long tail made of the hydrocarbon chain

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

A soap molecule contains two chemically distinct parts that interact differently with water**. It has one polar end, which is a short head with a carboxylate group (–COONa) and one non-polar end having the long tail made of the hydrocarbon chain**.

100. Which of the following statement is incorrect?

1) The polar end is hydrophilic in nature and this end is attracted towards water.
2) The non-polar end is hydrophobic in nature

a) 1 alone
b) 2 alone
c) 1, 2
d) None

Explanation

The **polar end is hydrophilic (Water loving) in nature** and this end is attracted towards water. The **non-polar end is hydrophobic (Water hating) in nature** and it is attracted towards dirt or oil on the cloth, but not attracted towards water. Thus, the hydrophobic part of the soap molecule traps the dirt and the hydrophilic part makes the entire molecule soluble in water.

101. Which of the following statement is correct?

1) When a soap or detergent is dissolved in water, the molecules join together as clusters called 'micelles'
2) Their long hydrocarbon chains attach themselves to the oil and dirt.
3) The dirt is thus surrounded by the non-polar end of the soap molecules
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

When a soap or detergent is dissolved in water, the molecules join together as clusters called 'micelles'. Their long hydrocarbon chains attach themselves to the oil and dirt. The dirt is thus surrounded by the non-polar end of the soap molecules. The charged carboxylate end of the soap molecules makes the micelles soluble in water. Thus, the dirt is washed away with the soap.

102. Which of the following statement about advantages of detergents over soaps is correct?

a) They can be used in both hard and soft water and can clean more effectively in hard water than soap.
b) Do not leave any soap scum on the tub or clothes.
c) They can be used for washing woollen garments, whereas soap cannot be used.
d) All the above

Explanation

Detergents are better than soaps because they:

- **can be used in both hard and soft water and can clean more effectively in hard water than soap**.
- can also be **used in saline and acidic water**
- do not leave any soap scum on the tub or clothes.
- dissolve freely even in cool water and rinse freely in hard water.
- can be used for washing woollen garments, whereas soap cannot be used.
- have a linear hydrocarbon chain, which is biodegradable.
- **are active emulsifiers of motor grease**.

103. Which of the following statement about soap is correct?

1) It is prepared from animal fats or vegetable oils
2) It has rich foaming capacity.
3) Soaps are biodegradable
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Soap
It is a sodium salt of long chain fatty acids.
The ionic part of a soap is $-COO^{-}Na^{+}$.
It is prepared from animal fats or vegetable oils.
Its effectiveness is reduced when used in hard water.
It forms a scum in hard water.
It has poor foaming capacity.
Soaps are biodegradable.

104. Which of the following statement about detergent is correct?

1) It is sodium salts of sulphonic acids.
2) It has rich foaming capacity
3) It is prepared from hydrocarbons obtained from crude oil.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Detergent
It is sodium salts of sulphonic acids.
The ionic part in a detergent is $-SO^{-}_{3}Na^{+}$.
It is prepared from hydrocarbons obtained from crude oil.
It is effective even in hard water.
Does not form a scum in hard water.
It has rich foaming capacity.
Most of the detergents are non-biodegradable.

105. Which of the following statement about TFM of soap is correct?

1) TFM means TOTAL FATTY MATTER
2) It is the one of the important factors to be considered to assess the quality of soap
3) A soap, which has lower TFM, is a good bathing soap

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

TFM means TOTAL FATTY MATTER. It is the one of the important factors to be considered to assess the quality of soap. **A soap, which has higher TFM, is a good bathing soap.**