



## CHEMISTRY

### BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

#### ORGANIC CHEMISTRY

#### Example

1. Write the name of  $CH_3 - CH_2 - CH_3$  .



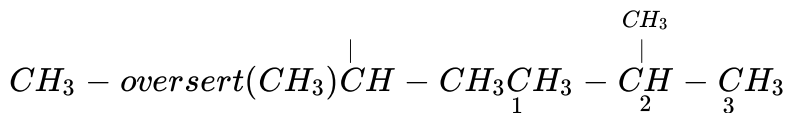
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2. Write the name of the compound having the following formula:



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3. Write the name of the compound having the following formula:



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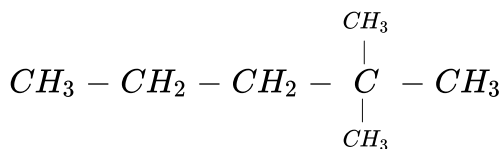
4. What is the molecular formula of the compound?

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5. From your answers write the need of learning IUPAC name and structural formula of compounds.

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6. Name the compound having the formula



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7. What is the formula of the next homologue of propene ( $C_3H_6$ )?

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8. Justify that  $C_2H_4$  and  $C_3H_6$  are homologues of one another.

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9. The general formula for alkane is \_\_\_

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10. General formula of alkenes is

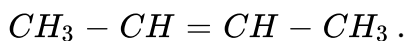
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11. Write IUPAC name of the compound having the formula



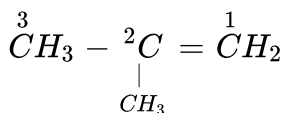
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12. Write the IUPAC name of the compound having the formula



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13. Write the IUPAC name of the compound having formula



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14. Write the formula of but-1-ene

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15. Write the IUPAC name of the compound  $CH_3 - C \equiv CH$ .

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16. Write the IUPAC name of the compound  $CH_3 - CH_2 - C \equiv CH$

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17. Write the IUPAC name of the compound  $CH_3 - C \equiv C - CH_3$ .

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18. Write the IUPAC name of the compound  $CH_3 - CH_2 - CH_2 - CH_2OH$ .

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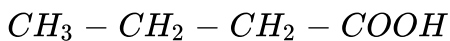
19. Write the IUPAC name of the compound  $CH_3CH_2 - \underset{\substack{| \\ OH}}{C}H - CH_3$

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20. Write the IUPAC name of the compound  $CH_3CH_2 - \underset{\substack{| \\ OH}}{C}H - CH_3$

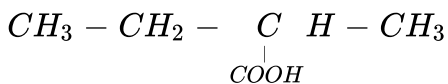
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21. Write the IUPAC name of the compound



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22. Write the IUPAC name of the compound



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1. Almost 90% of all known compounds are organic in nature. Give reason.

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2. Give the IUPAC name of the isomer  $C_4H_{10}$  which has a branched chain.

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3. Draw the structural formulae of two isomers of butane. Give the correct IUPAC name of each isomer.

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4. Write balanced chemical equation for the preparation of methane from iodomethane

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5. What happens when methane is burnt in an insufficient supply of oxygen

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6. A compound X consists of 4.8% carbon and 95.2% bromine by mass. Determine the empirical formula of this compound working correct to one decimal place (C = 12, Br = 80)

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7. A compound X consists of 4.8% carbon and 95.2% bromine by mass. If the vapour density of the compound is 252, what is the molecular formula of the compound?

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8. A compound X consists of 4.8% carbon and 95.2% bromine by mass.

Determine the empirical formula of this compound working correct to one decimal place (C = 12, Br = 80)

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9. Explain the bonding in methane molecule using electron dot notation.

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10. Write the equation for the preparation of carbon tetrachloride from methane.

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11. The number of C-H bonds in ethane molecule are :

A. Four

B. Six

C. Eight

D. Ten

**Answer:**

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12. Which compound should be treated with soda lime to obtain ethane gas in the laboratory ?

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13. Write the equation for the combustion of ethane

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14. Write a balance equation for the complete combustion of ethene



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15. The formation of 1,2-dibromoethane from ethene and bromine is an example of :

- A. Substitution
- B. Dehydration
- C. Dehydrohalogenation
- D. Addition

**Answer:**



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16. Fill in the blanks with the correct words from the brackets :

Alkene active

(i) ..... (analogous/homologus). Series of



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17. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is  $CH_2Br - CH_2Br$ .

What is your observation

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18. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is  $CH_2Br - CH_2Br$ .

What is your observation

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19. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is  $CH_2Br - CH_2Br$ .

What is your observation

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20. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is  $CH_2Br - CH_2Br$ .

What is your observation

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21. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is  $CH_2Br - CH_2Br$ . What is the compound A? Write its name.

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22. Name a solid which can be used instead of concentrated sulphuric acid to prepare ethylene by the dehydration of ethanol.

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23. Name a reagent which can be used to distinguish between ethane and ethene.

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24. Ethene forms an addition product with chlorine. Name this addition product and write its structural formula.

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25. Identify the statement which does not describe the properties of alkenes

- A. (A) They are unsaturated hydrocarbons.
- B. (B) They decolourise bromine water.
- C. (C) They can undergo addition as well as substitution reactions.

D. (D) They undergo combustion with oxygen, forming carbon dioxide and water.

**Answer:**

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**26.** Write balanced equation for the following:

(i) Preparation of ethane from sodium propionate.

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**27.** Give a balanced chemical equation for the following:

Action of alcoholic KOH on bromoethane.

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**28.** Draw the structural formula of ethyne.



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29. The IUPAC name of acetylene is :

A. propane

B. acetone

C. ethyne

D. ethene

Answer:



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30. Write balanced equation for the following:

(i) Preparation of ethane from sodium propionate.



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31. Write the equation for the ethene from iodoethane

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32. Write the equation for the ethyne from calcium carbide

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33. A compound has the following percentage composition by mass: carbon 14.4%, hydrogen 1.2% and chlorine 84.5%. Determine the empirical formula of this compound. Work correct to 1 decimal place. (H = 1, C = 12, Cl = 35.5)

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34. A compound has the following percentage composition by mass: carbon 14.4%, hydrogen 1.2% and chlorine 84.5%. Determine the empirical

formula of this compound. Work correct to 1 decimal place. (H = 1, C = 12, Cl = 35.5)

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35. By what type of reaction could a compound containing C, H and Cl – be obtained from ethyne?

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36. Write one use of acetylene (ethyne)

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37. Choose from the following list of substances, as to what matches the description given below : [Acetylene gas, aqua fortis, coke, brass, barium chloride, bronze, platinum]

A gaseous hydrocarbon commonly used for welding purposes

An aqueous salt solution used for testing sulphate radical.

A black, powdery substance used for the reduction of zinc oxide during its extraction.

A catalyst used in the manufacture of nitric acid by Ostwald's process.

The substance is an alloy of zinc, copper and tin.

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**38.** The unsaturated hydrocarbons undergo :

A. a substitution reaction

B. an oxidation reaction

C. an addition reaction

D. none of the above

**Answer:**

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39. An organic compound undergoes addition reactions and gives a red precipitate with ammoniacal cuprous chloride. Therefore, the organic compound could be:

A. ethane

B. ethene

C. ethyne

D. ethanol

**Answer:**

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40. Copy and complete the following table which relates to three homologous series of hydrocarbons:



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**41.** Give chemical equation for:

The laboratory preparation of methane from sodium acetate.

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**42.** Give chemical equation for the reaction of one mole of ethene with one mole of chlorine gas.

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**43.** Give chemical equation for the preparation of ethyne from 1,2-dibromomethane.

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**44.** Distinguish between the saturated hydrocarbon ethane and the unsaturated hydrocarbon ethene by drawing their structural formulae.

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45. Addition reactions and substitution reactions are types of organic reactions. Which type of reaction is shown by ethane

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46. Addition reactions and substitution reactions are types of organic reactions. Which type of reaction is shown by ethene?

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47. The general formula of a homologous series of carbon compounds is  $C_nH_{2n+1}OH$ . Write the molecular formula of the fourth and the fifth members of the series.

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48. Write the molecular formula of the third member of the homologous series of an organic compound with general formula  $C_nH_{2n+1}OH$

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49. What is observed in addition of ethyl alcohol to acetic acid in the presence of concentrated sulphuric acid ?

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50. The organic compound mixed with ethanol to make it spurious is:

- A. Methanal
- B. Methanoic acid
- C. Methanol
- D. Ethanoic acid

**Answer: C**



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51. The functional group present in acetic acid is :

- A. ketonic
- B. hydroxyl
- C. aldehydic
- D. carboxylic

**Answer:**



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52. An organic weak acid is

- A. Formic acid
- B. sulphuric acid
- C. hydrochloric acid

D. nitric acid

**Answer:**

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**53.** Ethane, ethene, ethanoic acid, ethyne, ethanol, select the following:

The compound with -OH as the part of its structure.

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**54.** Ethane, ethene, ethanoic acid, ethyne, ethanol, select the following:

The compound with -COOH as the part of its structure.

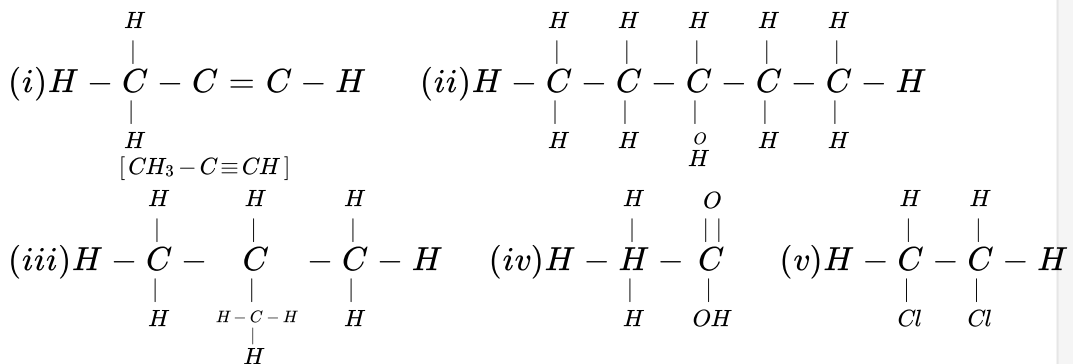
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**55.** Ethane, ethene, ethanoic acid, ethyne, ethanol, select the following:

The compound with general formula  $C_nH_{2n}$

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56. Give the IUPAC names of the compounds numbered (i) to (v)



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57. Copy & complete the table which relates to three homologous series of Hydrocarbons:-



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58. Name the type of reaction by which X [compound of C & Br] can be prepared from ethane.

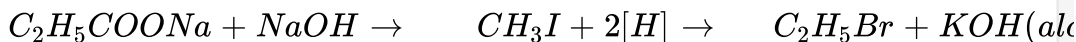
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59. The formation of 1, 2 dibromoethane from ethene and bromine is an example of:

A Substitution B Dehydration C Dehydrohalogenation D Addition

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60. Name the organic compound prepared by each of the following reactions:



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61. Write the equation for the following: i] Calcium carbide & water. ii] Ethene and water (steam). iii] Bromoethane and an aqueous solution of sodium hydroxide.

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62. Distinguish between ethane [saturated] & ethene [unsaturated] by drawing their structural formulae.

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63. Addition reaction and substitution reactions are types of organic reactions. Which type of reaction is shown by : (i) Ethane (ii) Ethene

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64. Write the equation for the combustion of ethane





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65. Name the alcohol, aldehyde & acid formed when ethane is oxidized.

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66. Why is pure acetic acid known as glacial acetic acid?

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67. What type of compound is formed by the reaction between acetic acid and an alcohol?

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68. By what type of reaction could a compound containing C, H and Cl – be obtained from ethyne?

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69. State the term for the reaction in which the hydrogen of an alkane is replaced by chlorine.



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70. (i) Which of the following statements is wrong about alkanes ?

- (A) They are all saturated hydrocarbon.
  - (B) They can undergo addition as well as substitution reaction.
  - (C) They are almost non polar in nature.
  - (D) On complete combustion give out carbon dioxide and water.
- 
- A. They are all saturated hydrocarbons
  - B. They can undergo addition as well as substitution reactions
  - C. They are almost non polar in nature.
  - D. On complete combustion give out  $CO_2$  & water.

**Answer:**

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**71.** Write chemical equations of the reactions of ethanoic acid with Ethanol in the presence of conc.  $H_2SO_4$

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**72.** Find the odd one out in each case and explain your choice

i]  $C_3H_8$ ,  $C_5H_{10}$ ,  $C_2H_6$ ,  $CH_4$  ii] Formic acid, Nitric acid, Acetic acid, Propanoic acid.

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**73.** Identify 'S': Reddish brown liquid 'S' is dissolved in water. When ethyne is passed through it, turns colourless.

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74. Fill in the blanks with the correct words from the brackets:

Generally ionic compounds exist in [i]..... [solid / liquid / gas] state.

Melting and boiling points of covalent compounds are generally [ii] .....

[low/high].The general formula for alkanes is [iii].....

[ $C_nH_{2n}$  /  $C_nH_{2n-2}$  /  $C_nH_{2n+2}$ ]. For alkynes the general formula is [iv] .....

[ $C_nH_{2n}$  /  $C_nH_{2n-2}$  /  $C_nH_{2n+2}$ ]



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75. Give chemical equations for:

i] The laboratory preparation of methane from sodium acetate.

ii] The reaction of one mole of ethene with one mole of chlorine gas.

iii] The preparation of ethyne from 1,2-dibromoethane.



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76. State how the following conversions can be carried out:

(i) Ethyl chloride to Ethyl alcohol.

(ii) Ethyl chloride to Ethene.

(iii) Ethene to Ethyl alcohol.

(iv) Ethyl alcohol to Ethene.



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77. Give the IUPAC name of the isomer  $C_4H_{10}$  which has a branched chain.



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78. An organic compound undergoes addition reactions and gives a red precipitate with ammoniacal cuprous chloride. Therefore, the organic compound could be:

A. Ethane

B. Ethene

C. Ethyne

D. Ethanol.

**Answer:**

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**79.** The organic compound mixed with ethanol to make it spurious is:

A. Methanol

B. Methanoic acid

C. Methanal

D. Ethanoic acid.

**Answer:**

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80. Draw the structural formula of - i] Ethanoic acid ii] But-2-yne

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81. Compound 'X' is bubbled through bromine dissolved in  $CCl_4$  & the product formed is  $CH_2Br - CH_2Br$ .

i] Draw the structural formula of 'X' and state what type of reaction 'X' has undergone.

ii] State your observation for the above reaction.

iii] Name the compound formed when steam reacts with 'X' in the presence of an acid, eg. phosphoric acid.

iv] What is the procedure for converting the product formed in iii] above, back to 'X'?

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82. Name a gaseous hydrocarbon commonly used for welding purposes.

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83. Gives reasons as to why :

- (i) almost 90 % of all known compounds are organic in nature.
- (ii) it is dangerous to burn methane in an insufficient supply of air.

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84. The functional group present in acetic acid is :

- A. Ketonic  $C = O$
- B. Hydroxyl -  $OH$
- C. Aldehydic - $CHO$
- D. Carboxyl -  $COOH$

Answer:

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85. The unsaturated hydrocarbons undergo

- A. substitution
- B. oxidation
- C. addition
- D. none of the above - reactions

**Answer:**



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86. The number of C-H bonds in ethane molecule are :

- A. Four
- B. Six
- C. Eight
- D. Ten

**Answer:**

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**87.** The catalyst used for conversion of ethene to ethane is commonly \_\_\_\_\_ (nickel/ iron/cobalt)

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**88.** When acetaldehyde is oxidised with acidified potassium dichromate, it forms \_\_\_\_\_ (ester/ethanol/acetic acid)

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**89.** Choose the correct word/phrase from within the brackets to complete the following sentences :

Ethanoic acid reacts with ethanol in presence of concentrated  $H_2SO_4$ , so

as to form a compound and water. The chemical reaction which takes place is called.... (dehydration / hydrogenation / esterification)

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**90.** Write balanced chemical equations for the following:

- i] Reaction between 1, 2 - dibromoethane & alcoholic potassium, hydroxide.
- ii] Monochloro ethane is hydrolysed with aqueous KOH.
- iii] A mixture of sodalime and sodium acetate is heated:
- iv] Ethanol under high pressure & low temperature is treated with 'acidified potassium dichromate,
- v] Water is added to calcium carbide.
- vi] Ethanol reacts with sodium at room temperature.

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**91.** State one observation for the following: Bromine vapours are passed into a solution of ethyne in carbon tetrachloride.



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**92.** From the following organic compounds given below, choose one compound in each case which relates to the description

[i] to [iv] : [Ethyne, ethanol, acetic acid, ethene, methanol]

(i) An unsaturated hydrocarbon used for welding purposes.

(ii) An organic compound whose functional group is carboxyl.

(iii) A hydrocarbon which on catalytic hydrogenation gives a saturated hydrocarbon. (iv) An organic compound used as a thermometric liquid.



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**93.** (i) Why is pure acetic acid known as glacial acetic acid? (ii) Give a chemical equation for the reaction between ethyl alcohol and acetic acid.



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**94.** Some word/words are missing in the following statements. You are required to rewrite the statements in the correct form using the appropriate word/words: Ethyl alcohol is dehydrated by sulphuric acid at a temperature of about  $170^{\circ}C$ .

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**95.** Give the structural formula for:

i] Methanoic acid, ii] Ethanal, iii] Ethyne, iv] Acetone, v] 2-methyl propane.

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**96.** Identify the gas evolved in the following reaction when :

sodium propionate is heated with soda lime

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97. Give suitable chemical terms for the following: A reaction in which hydrogen of an alkane is replaced by a halogen.

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98. Give one chemical test to distinguish between the Ethane and ethene

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99. Choose the most appropriate answer from the following options :

Identify the statement that is incorrect about alkanes

- A. They are hydrocarbons.
- B. There is a single covalent bond between carbon and hydrogen
- C. They can undergo both substitution as well as addition reactions
- D. On complete combustion they produce carbon dioxide and water.

**Answer:**



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**100.** Give balanced equations for the laboratory preparations of. i] A saturated hydrocarbon from iodomethane.

ii] An unsaturated hydrocarbon from an alcohol.

iii] An unsaturated hydrocarbon from calcium carbide.

iv] An alcohol from ethyl bromide.



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**101.** Give the structural formulae for the following

An isomer of n-butane.

(ii) 2-propanol.

(iii) Diethyl ether.



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**102.** Give reasons for the following :

- (i) Methane does not undergo addition reactions, but ethene does.
- (ii) Ethyne is more reactive than ethane.
- (iii) Hydrocarbons are excellent fuels.

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**103.** The IUPAC name of acetylene is :

- A. propane
- B. propyne
- C. ethene
- D. ethyne

**Answer:**

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**104.** Fill in the blanks from the choices given within brackets:

(i) The compound formed when ethanol reacts with sodium is .....

(sodium ethanoate, sodium ethoxide, sodium propanoate)

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**105.** Give one word or phrase for - hydrocarbons containing a -C- functional group .

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**106.** Write balanced equation for preparation of:

i] ethane from sodium propionate.

ii] ethanol from monochloroethane and aq. sodium hydroxide.

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**107.** Ethane and ethene (using alkaline potassium permanganate solution)

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**108.** State the conditions required for the following reactions to take place :

- (i) Catalytic hydrogenation of ethyne.
- (ii) Preparation of ethyne from ethylene dibromide.

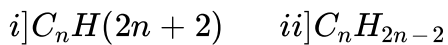
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**109.** Give the structural formula of the following:

- (i) ethanol.
- (ii) 1-propanal.
- (iii) ethanoic acid.
- (iv) 1, 2 dichloroethane.

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110. Match A & B with i] & ii] - A:alkynes B: alkane with



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111. Select from the list the gas that matches the description given in each case : (ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

(i) This gas is used for welding purposes.

(ii) This gas is also a saturated hydrocarbon.

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112. State which of the following statements does not describe the property of alkenes:

A. They are unsaturated hydrocarbons

- B. They decolorise bromine water
- C. They can undergo addition as well as substitution reactions
- D. They undergo combustion with oxygen forming carbon dioxide and water.

**Answer:**

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**113.** State one relevant observation for the following:

When the gaseous product obtained by dehydration of ethyl alcohol is passed through bromine water.

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**114.** Give balanced chemical equations for the following conversions :

(i) Ethanoic acid to ethyl ethanoate.

(ii) Calcium carbide to ethyne.

(iii) Sodium ethanoate to methane.

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**115.** Using their structural formulae identify the functional group by circling them :

(i) Dimethyl ether. (ii) Propanone.

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**116.** Name the following:

i] The process by which ethane is obtained from ethene.

ii] A hydrocarbon which contributes towards the greenhouse effect

iii] The distinctive reaction that takes place when ethanol is treated with acetic acid.

iv] The property of elements by virtue of which atoms of the element can link to each other in the form of a long chain or ring structure.

v] The reaction when an alkyl halide is treated with alcoholic potassium hydroxide.

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**117.** Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

The conversion of ethene to ethane is an example of \_\_\_\_\_ (hydration/hydrogenation)

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**118.** Write balanced chemical equations for the Preparation of ethanol from ethyl chloride.

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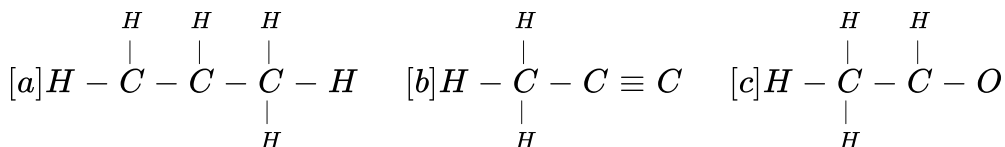
119. Identify the term/substance in each of the following:

(a) The catalyst used in the conversion of ethyne to ethane.

(b) The type of reactions alkenes undergo.

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120. Write the IUPAC names of :



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121. Write a balanced chemical equation for each of the following:

(i) Burning of ethane in plentiful supply of air.

(ii) Action of water on Calcium carbide.

(iii) Heating of Ethanol at 170°C in the presence of conc. Sulphuric acid.

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122. Give the structural formulae of each of the following:

(i) 2-methyl propane

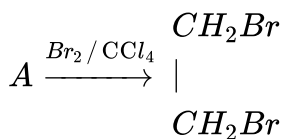
(ii) Ethanoic acid

(iii) Butan-2-ol



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123. Equation for the reaction when compound A is bubbled through bromine dissolved in carbontetrachloride is as follow:



(i) Draw the structure of A .

(ii) State your observation during this reaction.



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124. The compound formed when ethene reacts with hydrogen is \_\_\_\_

( $CH_4$ ,  $C_2H_6$ ,  $C_3H_8$ )



125. Choose the correct answer from the options given below : If the molecular formula of an organic compound is  $C_{10}H_{18}$  it is:

1. alkene
2. alkane
3. alkyne
4. not a hydrocarbon

A. Alkene

B. Alkane

C. Alkyne

D. Not a hydrocarbon

**Answer:**

**126.** Identify the substance underlined in the following case :

An organic compound containing - COOH functional group.

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**127.** Write balanced chemical equation for the preparation of methane from iodomethane

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**128.** Identify the term or substance based on the descriptions given below:

- (i) Ice like crystals formed on cooling an organic acid sufficiently.
- (ii) Hydrocarbon containing a triple bond used for welding purposes.
- (iii) The property by virtue of which the compound has the same molecular formula but different structural formulae.

(iv) The compound formed where two alkyl groups are linked by -C-group.

group are linked by  $-\overset{\text{O}}{\underset{\text{||}}{\text{C}}}-$  group.

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**129.** Give a balanced chemical equation for each of the following:

(i) Preparation of ethane from Sodium propionate

(ii) Action of alcoholic KOH on bromoethane.

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**130.** State one relevant observation for the following reaction:

Addition of ethyl alcohol to acetic acid in the presence of concentrated Sulphuric acid.

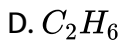
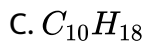
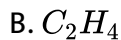
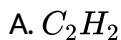
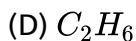
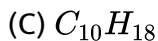
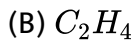
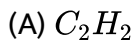
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131. Draw the structural formula for – i]2,3-dimethyl butane ii] Diethyl ether iii] Propanoic acid

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132. Choose the correct answer from the options given below :

(i) The organic compound which undergoes substitution reaction is :



**Answer:**



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**133.** Choose the correct answer from the options given below :

The IUPAC name of dimethyl ether is :

- (A) Ethoxy methane
- (B) Methoxy methane
- (C) Methoxy ethane
- (D) Ethoxy ethane

A. Ethoxy methane

B. Methoxy methane

C. Methoxy ethane

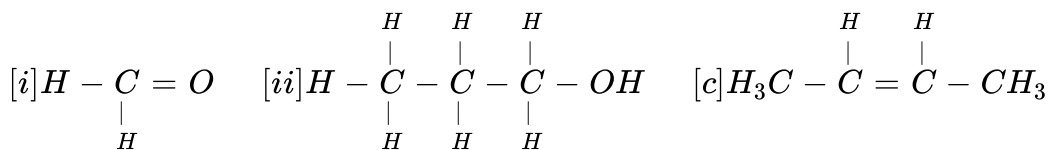
D. Ethoxy ethane

**Answer:**



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134. Give IUPAC names of:



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135. Draw the structural formulae of two isomers of butane. Give the correct IUPAC name of each isomer.

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136. Name the gas that is produced in the following case: Reaction of ethanol and sodium.

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**137.** Give the: i] IUPAC name of the homologous series ii] Characteristic bond type

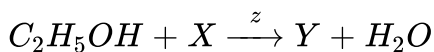
in each case i.e. a] & b] relating to the homologous series of hydrocarbons-whose general formula is-

a]  $C_2H_{2n-2}$  b]  $C_nH_{2n+2}$

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**138.** A compound X (having vinegar like smell) when treated with ethanol in the presence of the acid Z, gives a compound Y which has a fruity smell.

The reaction is :



- (i) Identify Y and Z.
- (ii) Write the structural formula of X.
- (iii) Name of the above reaction.

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**139.** Name of the following

A hydrocarbon which contributes towards the greenhouse effect.

A. Acetylene

B. Ethylene

C. Ethane

D. Methane

**Answer:**



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**140.** Fill in the blank with the choices given in brackets:

i] Conversion of ethanol to ethene' by the action of conc. sulphuric acid is an \_\_\_\_\_ example \_\_\_\_\_ of \_\_\_\_\_

[dehydration/dehydrogenation/dehydrohalogenation]

ii) Substitution reactions are characteristic reactions \_\_\_\_\_.

[alkynes/alkenes/alkanes]





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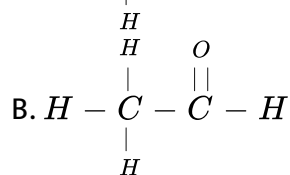
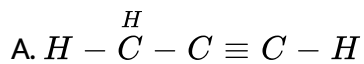
141. Write a balanced chemical equation for the following reaction:

Chlorine gas is reacted with ethene.



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142. i] Give the IUPAC name of the following organic compounds:



ii] What is the special feature of the structure of ethyne.

iii] Name the saturated hydrocarbon containing two carbon atoms.

iv] Give the structural formula of acetic acid.



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**143.** Arrange according to the instructions given in bracket:

Ethane, methane, ethene, ethyne. (In the increasing order of the molecular weight) [H = 1, C = 12]

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**144.** Give balanced chemical equations for the preparation of:

i] Ethene from bromoethane

ii] Ethyne using calcium carbide iii] Methane from sodium acetate

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**145.** Name the following organic compounds:

i]. The compound with 3 carbon atoms whose functional group is a carboxyl.

ii] The first homologue whose general formula is  $C_2H_{2n}$ .

iii) The compound that reacts with acetic acid to form ethyl ethanoate.

iv] The compound formed by complete chlorination of ethyne.



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146. Identify the substance italicised: The organic compound which when solidified, forms an ice like mass.



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147. Name the gas evolved: Ethene undergoes hydrogenation reaction.



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## Questions For Practice

1. Name the scientist whose experimental work shattered the vital force theory.



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2. Name the organic compound which was accidentally prepared by Wohler in his laboratory

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3. Name the main features of carbon which make it a unique element that it forms a large number of organic compounds.

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4. Name the functional group of each of  $CH_3OH$ ,  $CH_3COOH$  and  $CH_3CHO$

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5. Identify alcoholic group, aldehydic group and carboxylic group from -COOH, -OH and -CHO.

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6. Write the formulae of two homologues of ethane.

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7. Justify that  $\text{HCOOH}$  and  $\text{CH}_3\text{COOH}$  are homologues.

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8. Complete the given table :

|                   |      |        |     |      |      |
|-------------------|------|--------|-----|------|------|
| $F_2$             | $Cs$ | $Br_2$ | $K$ | $Na$ | $Cl$ |
| Size              |      |        |     |      |      |
| Valence electrons |      |        |     |      |      |
| REACTIVITY        |      |        |     |      |      |
| I.E.              |      |        |     |      |      |

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9. What are hydrocarbons?

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10. Give two examples of: Saturated hydrocarbons



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11. Give two examples of: Unsaturated hydrocarbons involving C=C bond

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12. Give two examples of: Unsaturated hydrocarbons involving  $C \equiv C$  bond

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13. Define saturated hydrocarbon and explain that  $C_2H_6$  is a saturated hydrocarbon.

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14. Write the general formula of alkanes.

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15. In a molecule of saturated hydrocarbon, the number of C atoms is 5. What is the number of H atoms and what is the formula of the compound?



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16. Write the number of C and H atoms in a molecule of the following:  
(a) Methane (b) Propane (c) Pentane (d) Decane



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17. In a molecule of saturated hydrocarbon, the number of H atoms is 16, what is the number of atoms and what is the name of this molecule?



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18. Write the formulae and names of the first four members of alkane family.

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19. Name the compound  $CH_3 - CH_2 - CH_2 - CH_3$

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20. Write the electron dot structural formula and graphic structural formula of methane

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21. Write the electron dot structural formula and graphic structural formula of ethane

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22. Write the reactions between methane and chlorine in the presence of diffused sunlight.

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23. Write the balanced chemical equation and name the products when one mole of methane reacts with two moles of  $Cl_2$ .

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24. Write the combustion reactions of methane

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25. Write the combustion reactions of ethane

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26. Methane is used as fuel. Give one reason.

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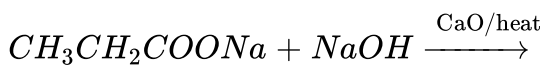
27. Ethane is used as fuel. Give one reason.

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28. Which one produces more heat on combustion-one mole methane or one mole ethane?

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29. Write the main products in the reaction



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**30.** Write the balanced chemical equation and name the products when one mole of ethane reacts with two moles of  $Cl_2$ .

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**31.** What happens when (write balanced chemical equations):

A mixture of methane and oxygen is passed through a copper tube at  $200^\circ C$  and 100 atm?

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**32.** What happens when (write balanced chemical equations):

A mixture of methane and oxygen is heated in the presence of a metallic oxide which acts as a catalyst?

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**33.** What happens when (write balanced chemical equations):

A mixture of methane and air is heated at  $400^{\circ}\text{C}$  and 130 atm?

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**34.** Write the equations for the conversion of ethane into:

Ethyl alcohol

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**35.** Write the equations for the conversion of ethane into:

Acetaldehyde

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**36.** Write the equations for the conversion of ethane into:

Acetic acid





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37. Compounds of carbon and hydrogen are called \_\_\_\_ (carbohydrates, hydrocarbons)



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38. The hydrocarbons involving only single bonds are called \_\_\_\_ . (alkenes, alkanes)



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39. Alkanes are \_\_\_\_ hydrocarbons. (saturated, unsaturated)



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40. The general formula  $C_n H_{(2n+2)}$  represents \_\_\_\_ . (alkanes, alkenes)



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41. Aliphatic hydrocarbons are classified as \_\_\_ alkenes and alkynes.

(alkanes, arenes)



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42. All types of hydrocarbons undergo\_\_\_\_\_giving  $CO_2$ ,  $H_2O$  and heat.

(chlorination, combustion, hydrogenation)



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43. When sodium ethanoate is heated with soda lime, the main product is

\_\_\_\_(methane/ethane)



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**44.** Identify a statement that is incorrect about alkanes.

(i) They are hydrocarbons. (ii) There is single covalent bond between carbon and hydrogen. (iii) They can undergo addition as well as substitution reactions. (iv) On complete combustion with oxygen, they produce carbon dioxide and water

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**45.** How do alkanes and alkenes with same number of C atoms differ with respect to the Number of H atoms

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**46.** How do alkanes and alkenes with same number of C atoms differ with respect to the Nature of bonds between carbon atoms

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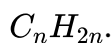


47. Write the molecular formula, electron dot structure and graphic structural formula of ethene



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48. The molecules of alkene family are represented by a general formula

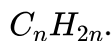


What do n and 2n signify?



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49. The molecules of alkene family are represented by a general formula

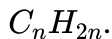


What is the lowest value which can be assigned to n?



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50. The molecules of alkene family are represented by a general formula

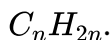


What is the molecular formula of the first member of the alkene family?



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51. The molecules of alkene family are represented by a general formula



What is the molecular formula and name of the alkene when  $n = 4$



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52. The molecules of alkene family are represented by a general formula

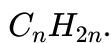


What is the molecular formula of the alkene if there are 6 H atoms in it?



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53. The molecules of alkene family are represented by a general formula



Write the molecular formulae of lower and higher homologues of an alkene which contains four carbon atoms.

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54. Write a balanced chemical equation of the reaction involved in the preparation of ethene in the laboratory.

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55. How would you obtain ethene from ethanol? Give equation.

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56. What happens when ethyl alcohol is heated with excess of sulphuric acid at  $170^\circ C$



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57. How is ethanol converted to ethene using a solid as dehydrating agent other than conc.  $H_2SO_4$ ? Give only balanced equations.



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58. Write the chlorination reactions of ethene



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59. Write the bromination reactions of ethene



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60. Write the hydrogenation reactions of ethene



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61. Write the reactions for the conversion of ethene to ethane

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62. Write the reactions for the conversion of ethene to dichloroethane

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63. What happens when (give balanced equations):

Ethene is burnt in excess of oxygen.

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64. What happens when (give balanced equations):

Ethene reacts with chlorine.

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65. What happens when (give balanced equations):

Ethene combines with hydrogen chloride.

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66. What happens when (give balanced equations):

A mixture of ethene and hydrogen is passed over nickel at  $159^{\circ}C$

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67. Name a single hydrocarbon which increases the rate of fruit ripening.

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68. Name a single hydrocarbon which is used to prepare polyvinyl chloride (PVC).

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69. Name a single hydrocarbon which along with oxygen is used in medicine as narcosis.

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70. A hydrocarbon decolourizes  $KMnO_4$  solution but does not form any precipitate with either ammoniacal  $AgNO_3$  or  $Cu_2Cl_2$ .

Is the hydrocarbon saturated or unsaturated?

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71. A hydrocarbon decolourizes  $KMnO_4$  solution but does not form any precipitate with either ammoniacal  $AgNO_3$  or  $Cu_2Cl_2$ .

What is the type of bonds between two C atoms-single, double or triple?

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72. A hydrocarbon decolourizes  $KMnO_4$  solution but does not form any precipitate with either ammoniacal  $AgNO_3$  or  $Cu_2Cl_2$ .

Does the hydrocarbon belong to alkane, alkene or alkyne family?

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73. A hydrocarbon decolourizes  $KMnO_5$  solution but does not form any precipitate with either ammoniacal  $AgNO_3$  or  $Cu_2Cl_2$ .

What will be the change on adding a few drops of bromine solution to a test tube filled with this hydrocarbon?

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74. Two unlabelled bottles contain ethane and ethene separately. Describe two chemical tests to identify the gases.

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75. A molecule of a vegetable oil (X) contains one C=C double bond. How many moles of  $H_2$  will be needed for the hydrogenation of one mole of the oil X?

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76. If a molecule Y contains two C = C double bonds, then how many moles of  $H_2$  are required for complete hydrogenation of one mole of Y?

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77. Which of the following organic compounds will undergo addition reactions?

(a)  $C_2H_6$  (b)  $C_2H_2$  (c)  $C_3H_8$  (d)  $C_3H_6$

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78. The compound containing 4 carbon and 8 hydrogen atoms is an \_\_\_\_\_. (alkane/ alkene)

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79. The hydrocarbons involving carbon to carbon double bonds are called \_\_\_\_\_. (alkenes/alkanes)

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80. Alkenes are \_\_\_\_\_ hydrocarbons. (saturated/unsaturated)

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81. The general formula \_\_\_\_\_ represents alkenes.

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82. Ethene decolourises\_\_\_\_\_ water. (bromine/distilled)

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83. One mole of\_\_\_\_\_ undergoes combustion giving 2 moles  $CO_2$ , 2 moles  $H_2O$  and heat. (ethane/ethene/ethyne)

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84. The next homologue of ethene is\_\_\_\_\_ (propene/butene)

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85. What are alkynes?

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86. Write the molecular formulae of the first two alkynes.

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87. Alkynes are unsaturated hydrocarbons. Justify this statement giving two reasons.

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88. Ethyne ( $C_2H_2$ ) is unsaturated hydrocarbon. Explain.

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89. What is the common name of ethyne ( $C_2H_2$ ) ?

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90. Write the general formula of alkynes.

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91. What do  $n$  and  $2n - 2$  signify in the general formula of alkynes?

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92. Write the number of H atoms in a molecule of alkyne if the number of C atoms is four. What is the formula of this molecule?

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93. Write the molecular formula, electron dot structural formula and structural formula of ethyne.

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94. Write the IUPAC name of acetylene.

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95. Ethyne undergoes addition reaction. State one reason.

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96. Write the reaction of chlorine with ethyne in the presence of light

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97. Write the reaction of chlorine with ethyne in the absence of light

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98. Write the equation for the conversion of ethyne to ethane.

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99. Name the property of ethyne which makes it useful for cutting and welding of steel.

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100. Write the equations for the reaction of ethyne with chlorine

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101. Write the equations for the reaction of ethyne with bromine

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102. Write the equations for the reaction of ethyne with hydrogen

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**103.** How is ethyne converted to ethene

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**104.** How is ethyne converted to ethane

 [Watch Video Solution](#)

**105.** How is ethyne converted to tetrabromoethane

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**106.** Write two chemical tests to distinguish ethyne from ethene

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107. Name a hydrocarbon which will form a red precipitate with ammoniacal solution of copper (I) chloride.

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108. The compound containing 4 carbon and 6 hydrogen atoms is an\_\_\_\_\_. (alkane/ alkene)

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109. The hydrocarbons involving carbon to carbon triple bonds are called \_\_\_ (alkenes/alkynes)

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110. Alkynes are \_\_\_\_ hydrocarbons.(saturated/unsaturated)

 [Watch Video Solution](#)

111. The general formula \_\_\_\_\_ represents alkynes.

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112. Ethyne gives \_\_\_\_ precipitate with ammoniacal solution of copper (I) chloride. (red/blue)

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113. One mole of ethyne undergoes combustion giving 2 moles  $CO_2$ , \_\_\_\_\_ moles  $H_2O$ . (one/four)

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114. The next homologue of ethyne is (propyne/butyne)

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115. Write the general formula of alcohols and prepare a homologous series of alcohols containing up to 5 carbon atoms.

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116. Write the molecular formula of the third member of the homologous series of an organic compound with general formula  $C_nH_{2n+1}OH$

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117. Write the structural formula of ethanol.

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118. How is ethanol obtained from ethene?

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**119.** Write the reaction between chloroethane and an aqueous solution of potassium hydroxide

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**120.** Write the chemical equation of the reaction which takes place on burning ethanol in oxygen.

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**121.** Write the formula and name of product in the Reaction of ethanol with sodium.

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**122.** Write the formula and name of product in the Reaction of acidified potassium dichromate with ethanol.





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123. Write the chemical equations to represent the oxidation of ethanol and name the reactants and products.



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124. Write the reactions between ethanol and conc.  $H_2SO_4$  at  $170^\circ C$ .



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125. What is denatured alcohol?



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126. The structural formula of an ester is  $CH_3CH_2COOC_2H_5$ . Write the formula of the acid and alcohol from which this ester is formed.





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**127.** An organic compound A of molecular formula  $C_2H_6O$  on oxidation gives a compound B which gives effervescence with baking soda solution.

What are the compounds A and B? Write their structures.



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**128.** Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

The conversion of ethanol to ethene is an example of \_\_\_\_ (dehydration / dehydrogenation)



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**129.** Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

Converting ethanol to ethene requires the use of \_\_\_\_\_(concentrated hydrochloric acid / concentrated nitric acid/concentrated sulphuric acid)

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**130.** Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

The conversion of ethene to ethane is an example of \_\_\_\_\_ (hydration/hydrogenation)

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**131.** Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

The catalyst used in the conversion of ethene to ethane is commonly - (iron/ nickel)

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**132.** An organic compound A of molecular formula  $C_2H_6O$  on oxidation with alkaline  $KMnO_4$  gives a compound B with the same number of carbon atoms as in the molecule of A. Compound A is often used for sterilization of skin by doctors. Name the compounds A and B. Write the chemical equation involved in the formation of B from A.

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**133.** What happens when A mixture of ethene and steam is passed over phosphoric acid on silica at  $300^{\circ}C$  and 70 atm.

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**134.** What happens when Ethyl alcohol is treated with potassium dichromate and sulphuric acid.

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**135.** What happens when A mixture of ethyl alcohol, acetic acid and conc.  $H_2SO_4$  is heated.

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**136.** Write the general formula of carboxylic acids.

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**137.** Write the formulae and names of the first three carboxylic acids.

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**138.** Write the formula and name of the lower homologue of ethanoic acid.

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**139.** Write the name and formula of the next homologue of methanoic acid. What is its common name?

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**140.** Write the condensed formula and structural formula of acetic acid. What is its IUPAC name?

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141. How is ethanoic acid prepared from ethanol?

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142. What is vinegar?

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143. Write two tests to demonstrate that  $CH_3COOH$  is an acid.

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144. Write chemical equations of the reactions of ethanoic acid with Ethanol in the presence of conc.  $H_2SO_4$

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**145.** Write chemical equations of the reactions of ethanoic acid with Sodium

 [Watch Video Solution](#)

**146.** Write chemical equations of the reactions of ethanoic acid with Sodium bicarbonate

 [Watch Video Solution](#)

**147.** Write chemical equations of the reactions of ethanoic acid with Ethanol in the presence of conc.  $H_2SO_4$

 [Watch Video Solution](#)

**148.** Write chemical equation of decarboxylation of ethanoic acid.

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149. Give any three uses of ethanoic acid.

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150. A carboxylic acid 'A' has the molecular formula  $C_2H_4O_2$ . On heating it with ethanol and conc.  $H_2SO_4$ , vapours with pleasant smell are given out. What is the name of the compound 'A'? Write the chemical equation to represent the reaction. Write the name of each reactant and product of the reaction.

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151. Why is pure acetic acid known as glacial acetic acid?

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**152.** What type of compound is formed by the reaction between acetic acid and an alcohol?

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**153.** Draw the structural formula for the Ethanoic acid

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**154.** Draw the structural formula for the But-2-yne

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**155.** Draw the structural formula for the 2, 3-dimethylbutane

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156. Draw the structural formula for the diethyl ether

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157. Draw the structural formula for the propanoic acid

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158. Identify the term or substance based on the descriptions given below:

Ice-like crystals formed on cooling an organic acid sufficiently.

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159. Identify the term or substance based on the descriptions given below:

Hydrocarbon containing a triple bond used for welding purposes.





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**160.** Identify the term or substance based on the descriptions given below:

The property by virtue of which the compound has the same molecular formula but different structural formulae.



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**161.** Identify the term or substance based on the descriptions given below:

The compound formed where two alkyl groups are linked by  $\overset{\text{O}}{\parallel}{\text{C}}$  group.



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**Important Questions For Revision**



1. The ability of carbon atom to link with other carbon atom is known as\_\_\_\_\_.

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2. The compounds of carbon and hydrogen are called\_\_\_\_\_.

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3. The hydrocarbons containing only single bonds are known as\_\_\_\_\_.

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4. Alkanes are \_\_\_\_\_ hydrocarbons.

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5. The general formula  $C_nH_{2n+2}$  represents\_\_\_\_\_.



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6. Aliphatic hydrocarbons have been classified as alkanes \_\_\_\_\_ and alkynes.



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7. \_\_\_\_\_ are characterised by the presence of only single covalent bonds between carbon atoms.



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8. The structural formula of ethyne is \_\_\_\_\_.



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9. \_\_\_\_\_ hydrocarbons undergo addition reactions.

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10. All hydrocarbons undergo- giving  $CO_2$ ,  $H_2O$  and produce heat.

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11. Isomers have same molecular formula but different \_\_\_\_ formula.

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12. The valency of carbon in  $C_2H_2$  is \_\_\_\_.

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13. The general formula of alkenes is  $C_nH_{2n}$  , therefore, the first stable member of this series is \_\_\_\_.

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14. Hydrocarbons having the general formula  $C_nH_{2n-2}$  are called \_\_\_.

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15. Ethene burns in air to form  $CO_2$  and \_\_\_\_\_.

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16. Hydrocarbons are insoluble in \_\_\_.

 [Watch Video Solution](#)

17. The next homologue of ethene is \_\_\_.

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18. Ethene and ethyne are examples of \_\_\_\_.

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19. Select the formulae of alkanes, alkenes and alkynes from the following:

$CH_4$ ,  $C_2H_4$ ,  $C_2H_6$ ,  $C_2H_2$ ,  $C_3H_8$ ,  $C_3H_4$ ,  $C_4H_{10}$ ,  $C_4H_8$ ,  $C_4H_6$ ,  $C_3H_6$

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20. Select odd one out in the  $CH_4$ ,  $C_3H_8$ ,  $C_2H_4$ ,  $C_2H_6$ ,  $C_4H_{10}$

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21. Select odd one out in the  $CH_4$ ,  $C_2H_4$ ,  $C_3H_6$ ,  $C_4H_8$

 [Watch Video Solution](#)

22. Select odd one out in the  $C_2H_2$ ,  $C_3H_4$ ,  $C_3H_8$ ,  $C_4H_6$

 [Watch Video Solution](#)

23. Give one chemical test to distinguish between the Ethane and ethene

 [Watch Video Solution](#)

24. Give one chemical test to distinguish between the Ethane and ethyne

 [Watch Video Solution](#)

25. Give one chemical test to distinguish between the Ethyne and ethene

 [Watch Video Solution](#)

26. (a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbon.

(b) Name the products formed when ethane burns in air. Write the balanced chemical equation for the reaction showing the types of energies liberated.

(c) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction ?

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27. Give one chemical test to distinguish between the Alkanes and alkenes

 [Watch Video Solution](#)

28. Give one chemical test to distinguish between the Alkenes and alkynes

 [Watch Video Solution](#)

29. Write the chemical equations for the Ethyne to ethene conversion

 [Watch Video Solution](#)

30. Write the chemical equations for the Ethene to ethane conversion

 [Watch Video Solution](#)

31. Write the chemical equations for the Ethyne to ethane conversion

 [Watch Video Solution](#)

32. How do alkanes, alkenes and alkynes differ from each other with respect to General formula

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**33.** How do alkanes, alkenes and alkynes differ from each other with respect to Nature of bonds between carbon atoms

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**34.** How do alkanes, alkenes and alkynes differ from each other with respect to Reaction with bromine water

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**35.** Write the changes observed on addition of the reagents (a) and (b) to the hydrocarbons (i), (ii) and (iii).

Reagents: (a) ammoniacal copper (I) chloride solution

(b) alkaline potassium permanganate solution

Hydrocarbons: (i) ethane (ii) ethene (iii) ethyne

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36. Write chemical equation and the final product for the Reaction between one mole of methane and one mole of chlorine

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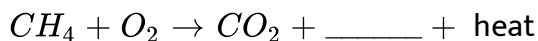
37. Write chemical equation and the final product for the Addition of hydrogen to ethene

 [Watch Video Solution](#)

38. Write chemical equation and the final product for the Addition of 2 moles of bromine to one mole of ethyne

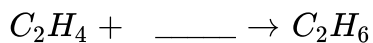
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39. Complete and balance the chemical equation:



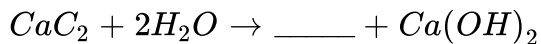
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40. Complete and balance the chemical equation:



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41. Complete and balance the chemical equation:



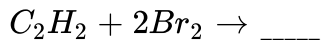
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42. Complete and balance the chemical equation:



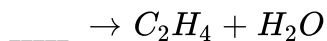
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43. Complete and balance the chemical equation:



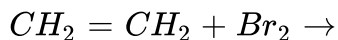
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44. Complete and balance the chemical equation:



 [Watch Video Solution](#)

45. Complete and balance the chemical equation:



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46. What happens when (give only balanced equations and write the names of the reactants and products )

A mixture of sodium acetate and soda lime is heated.

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47. What happens when (give only balanced equations and write the names of the reactants and products )

Methane is mixed with oxygen and passed through a hot copper tube.

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48. What happens when (give only balanced equations and write the names of the reactants and products )

Methane reacts with two moles of chlorine gas.

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49. What happens when (give only balanced equations and write the names of the reactants and products )

Ethyl alcohol is heated with conc.  $H_2SO_4$  at  $170^\circ C$

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50. What happens when (give only balanced equations and write the names of the reactants and products )

Ethene is allowed to combine with  $Cl_2$  gas.

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51. What happens when (give only balanced equations and write the names of the reactants and products )

Ethene gas is burnt in oxygen.

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52. What happens when (give only balanced equations and write the names of the reactants and products )

Water is added to calcium carbide.

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**53.** What happens when (give only balanced equations and write the names of the reactants and products )

Ethyne reacts with chlorine.

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**54.** What happens when (give only balanced equations and write the names of the reactants and products )

Ethyne reacts with excess of bromine.

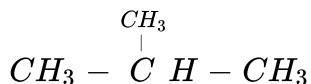
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**55.** What happens when (give only balanced equations and write the names of the reactants and products )

Ethyne and hydrogen combine in the presence of a catalyst.

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56. Write the IUPAC names of the following:



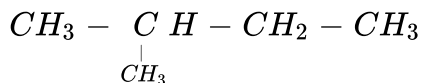
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57. Write the IUPAC names of the following:



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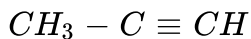
58. Write the IUPAC names of the following:



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59. Write the IUPAC names of the following:



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60. Name a reagent which can be used to distinguish between ethane and ethene.



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61. Ethene forms an addition product with chlorine. Name this addition product and write its structural formula.



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62. Name a solid which can be used instead of concentrated sulphuric acid to prepare ethylene by the dehydration of ethanol.



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63. Write the names and structural formulae of the following:

a saturated hydrocarbon



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64. Write the names and structural formulae of the following:

an unsaturated hydrocarbon with a double bond



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65. Copy and complete the following sentence:

A saturated hydrocarbon will undergo \_\_\_ reactions, whereas the typical reaction of an unsaturated hydrocarbon is \_\_\_.



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66. Write the equation for the laboratory preparation of ethyne (acetylene) from calcium carbide.

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67. What is the special feature of the structure of ethyne?

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68. What would you see when ethyne is bubbled through a solution of bromine in carbon tetrachloride?

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69. Choosing words from the following list, write down the appropriate words to fill in blanks (i) to (v) below.

Addition, carbohydrates,  $C_nH_{2n-2}$ ,  $C_nH_{2n+2}$ , electrochemical, homologous, hydrocarbons, saturated, substitution, unsaturated.

The alkanes form (i) \_\_\_\_\_ series with the general formula (ii) \_\_\_\_\_. The alkanes are (iii) \_\_\_\_\_ (iv) \_\_\_\_\_ which generally undergo (v) \_\_\_\_\_ reactions.

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70. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethene, name a compound

Formed by the dehydration of ethanol by concentrated sulphuric acid.

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71. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethane, name a compound

Which will give red precipitate with ammoniacal copper (I) chloride solution.

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72. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethane, name a compound

Which forms methanol on oxidation in the presence of copper at  $200^{\circ}C$ .

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73. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethene, name a compound

Which has vapour density 14 and turns alkaline potassium permanganate colourless.

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74. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethane, name a compound

Which forms chloroform on halogenation in the presence of sunlight

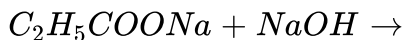
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75. From the list of the organic compounds ethanol, ethane, methanol, methane, ethyne and ethene, name a compound

Which decolourises bromine solution in carbon tetrachloride.

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76. Name the organic compound prepared by the following reactions:



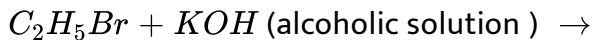
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77. Name the organic compound prepared by the following reactions:



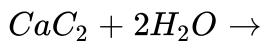
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78. Name the organic compound prepared by the following reactions:



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79. Name the organic compound prepared by the following reactions:



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## Important Questions For Revision True Or False

1. Explain How Carbon forms a large number of compounds because of catenation property.

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2. Only alkanes show isomerism.

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3. Methane and ethane are the two homologues of alkane family.

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4. Alkanes are also known as paraffins.

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5. Why Ethene decolourizes  $Br_2$  solution but ethane does not

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6. Ethene undergoes addition reaction.





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## Questions For Practice Paper On Examination Pattern Select The Correct Answer

1. What is the total number of covalent bonds in a molecule of ethane?

A. 2

B. 3

C. 5

D. 7

**Answer: D**



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2. The number of triple bonds between two C atoms in a molecule of ethyne is

A. three

B. two

C. one

D. zero

**Answer: C**

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3. Which one of the following will not decolourize bromine solution?

A.  $C_2H_6$

B.  $C_2H_4$

C.  $C_2H_2$

D.  $C_3H_6$

**Answer: A**

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4. Which one of the following is a saturated hydrocarbon?

A. Propene

B. Propyne

C. Ethene

D. Butane

**Answer: D**



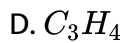
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5. The second member of alkyne family is

A.  $CH_4$

B.  $C_2H_4$

C.  $C_2H_2$

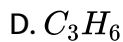
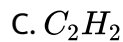
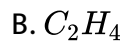
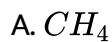


**Answer: D**



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6. The first member of alkene series is

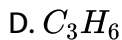
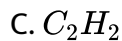
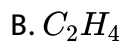


**Answer: B**



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7. The first member of alkane series is



**Answer: A**



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

(A) Propane

(B) Propanal

(C) Propanol

(D) Propanone

A. Propane

B. Propanal

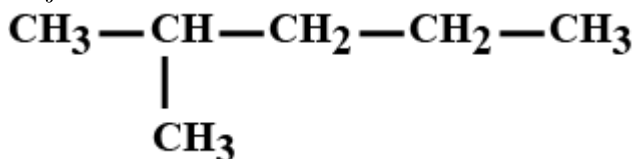
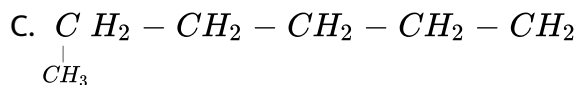
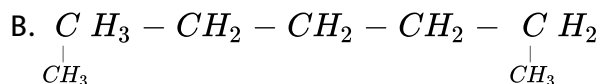
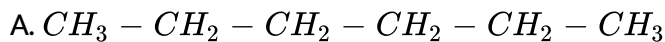
C. Propanol

## D. Propanone

Answer: C

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



D.

Answer: D

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10. Which one gives a red precipitate with ammoniacal solution of copper(I) chloride?

- (A) Ethane
- (B) Ethene
- (C) Ethyne
- (D) Propane

A. Ethane

B. Ethene

C. Ethyne

D. Propane

**Answer: C**



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

- A. Sodium hydroxide and hydrogen gas
- B. Sodium ethanoate and ethanoic acid
- C. Sodium ethoxide and hydrogen gas
- D. Sodium hydroxide and ethanoic acid

**Answer: C**

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**12.** The reaction between ethanol and ethanoic acid in the presence of conc. sulphuric acid is called

- A. neutralisation
- B. saponification
- C. dehydration
- D. esterification

**Answer: D**



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13. In the reaction  $C_2H_5OH \xrightarrow{KMnO_4} CH_3COOH$ ,  $KMnO_4$  acts as

- A. dehydrating agent
- B. reducing agent
- C. oxidising agent
- D. bleaching agent

**Answer: C**

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14. On combustion, one mole of a hydrocarbon gives 2 moles of carbon dioxide and two moles of water and a large quantity of heat is produced.

The hydrocarbon is

- A. methane

B. ethane

C. ethene

D. ethyne

**Answer: C**



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15. The name of the compound  $CH_3 - CH_2COOH$  is

A. butanoic acid

B. ethanoic acid

C. propanoic acid

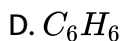
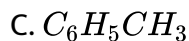
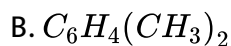
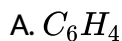
D. muratic acid

**Answer: C**



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16. Benzene is an aromatic compound and has a ring structure. Its molecular formula is



**Answer: D**



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17. Vinegar is a solution of

(A) 50% acetic acid in ethanol

(B) 10% of acetic acid in alcohol

(C) 6% acetic acid in water

(D) 50% acetic acid in water

- A. 50% acetic acid in ethanol
- B. 10% of acetic acid in alcohol
- C. 6% acetic acid in water
- D. 50% acetic acid in water

**Answer: C**

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**18. Which gas is formed on heating sodium propanoate with lime?**

- A. Methane
- B. Ethane
- C. Propane
- D. Butane

**Answer: B**

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19. (i) Which of the following statements is wrong about alkanes ?

- (A) They are all saturated hydrocarbon.
- (B) They can undergo addition as well as substitution reaction.
- (C) They are almost non polar in nature.
- (D) On complete combustion give out carbon dioxide and water.

A. They are all saturated hydrocarbon.

B. They can undergo addition as well as substitution reaction.

C. They are almost non-polar in nature.

D. On complete combustion give out carbon dioxide and water.

**Answer: B**



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20. If the molecular formula of an organic compound is  $C_{10}H_{18}$ . It is:

A. alkene

B. alkane

C. alkyne

D. Not a hydrocarbon

**Answer: A**

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## Questions For Practice Paper On Examination Pattern Fill In The Blanks

1. There is a large number of carbon compounds due to

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2. A hydrocarbon involving only single covalent bonds is called \_\_\_\_  
(unsaturated/saturated.)

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3. The reaction between ethanol and ethanoic acid in the presence of concentrated sulphuric acid is called \_\_\_\_ (esterification/neutralisation)

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4. In the oxidation of ethanol with acidified potassium dichromate, the final product is \_\_\_\_ (acetic acid/formic acid)

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5. Ethyne gives a white precipitate with ammoniacal solution of \_\_\_\_.  
( $AgNO_3 / NaCl$ )

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6. Bromine solution is decolourised by \_\_\_ (ethene only/ethyne only/both entences ethene and ethyne)

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7. The main constituent of vinegar is \_\_\_ (ethanol/ethanoic acid)

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8. Formation of ethanol from ethene is called \_\_\_ (hydration/dehydration).

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9. On heating a mixture of sodium propanoate and sodalime \_\_\_ is formed (propane/ethane)

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10. On heating ethanol with excess of concentrated sulphuric acid at  $170^{\circ}\text{C}$  \_\_\_\_ is obtained. (ethene/ester)

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11. On passing a mixture of ethane and oxygen through a hot copper tube is \_\_\_\_ formed (ethanol/ $\text{CO}_2$ )

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12. The catalyst used for conversion of ethene to ethane is commonly \_\_\_\_ (nickel/ iron/cobalt)

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13. When acetaldehyde is oxidised with acidified potassium dichromate, it forms \_\_\_\_ (ester/ethanol/acetic acid)

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14. Ethanoic acid reacts with ethanol in the presence of concentrated  $H_2SO_4$ , so as to form a compound and water. The chemical reaction which takes place is called \_\_\_\_\_.  
(dehydration/hydrogenation/esterification)

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15. The product formed when ethene gas reacts with water in the presence of sulphuric acid is \_\_\_\_ (ethanol/ethanal/ethanoic acid)

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16. The compound formed when ethene reacts with hydrogen is \_\_\_\_\_

( $CH_4$ ,  $C_2H_6$ ,  $C_3H_8$ )

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### Questions For Practice Paper On Examination Pattern Select Odd One

1. Select odd one out from the following list of compounds.

$CH_4$ ,  $C_2H_4$ ,  $C_2H_6$ ,  $C_3H_8$

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2. Select odd one out from the following list of compounds.

$CH_3COOH$ ,  $C_2H_5OH$ ,  $CH_3OH$ ,  $C_3H_7OH$

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3. Select odd one out from the following list of compounds.

$CH_3COOH$ ,  $C_2H_4$ ,  $C_3H_6$ ,  $C_4H_8$

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4. Select odd one out from the following list of compounds.

$C_3H_4$ ,  $C_2H_2$ ,  $C_2H_6$ ,  $C_4H_6$

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5. Select odd one out from the following list of compounds.

Formic acid, Nitric acid, Acetic acid, Propanoic acid.

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Questions For Practice Paper On Examination Pattern Answer The Questions

1. If the first member of alkanes is  $CH_4$ , what is the formula of the first member of alkynes?

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2. If the first member of alkenes is  $C_2H_4$ , what is the formula of the first member of alkanes?

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3. If the first member of alkynes is  $C_2H_2$ , what is the formula of the fifth member of this family?

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4. What is common name of methanoic acid?

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5. What is the IUPAC name of the acid in vinegar?

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6. What is the name of the carboxylic acid which is extracted from ants?

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7. What is the total number of covalent bonds in a molecule of ethane?

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8. What is the nature of C to C bond in  $C_2H_4$ ?

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9. What is the name of the compound formed by the reaction between ethanol and ethanoic acid in the presence of concentrated sulphuric acid?

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10. When an organic compound X is warmed with alkaline solution of  $KMnO_4$  a new compound Y is formed which smells of vinegar. On heating compounds X and Y with a few drops of concentrated sulphuric acid another compound Z is formed. Name the compound X and Y

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11. When an organic compound X is warmed with alkaline solution of  $KMnO_4$  a new compound Y is formed which smells of vinegar. On heating compounds X and Y with a few drops of concentrated sulphuric acid another compound Z is formed. Name the process of conversion of X to Y



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12. When an organic compound X is warmed with alkaline solution of  $KMnO_4$  a new compound Y is formed which smells of vinegar. On heating compounds X and Y with a few drops of concentrated sulphuric acid another compound Z is formed. Name the compound Z



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13. When an organic compound X is warmed with alkaline solution of  $KMnO_4$  a new compound Y is formed which smells of vinegar. On heating compounds X and Y with a few drops of concentrated sulphuric acid another compound Z is formed. Name the process of formation of Z



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14. What are the functional groups in the  $C_2H_5OH$



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15. What is the functional group present in the  $CH_3COOH$



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16. What are the functional groups in the  $CH_3CHO$



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17. An organic compound B has the molecular formula  $C_2H_4O_2$ . It reacts with sodium hydrogen carbonate to produce a gas, water and salt, the gas turns lime water milky.

What is the functional group in the compound B?



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18. An organic compound B has the molecular formula  $C_2H_4O_2$ . It reacts with sodium hydrogen carbonate to produce a gas and salt, the gas turns lime water milky.

Write its structural formula.

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19. An organic compound B has the molecular formula  $C_2H_4O_2$ . It reacts with sodium hydrogen carbonate to produce a gas and salt, the gas turns lime water milky.

What is the IUPAC name of B?

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20. Match the compounds (A) ethanol, (B) methane, (C) ethanoic acid, (D) ethyne and (E) ethene with the descriptions given below:

Ethene is formed when it is dehydrated by concentrated sulphuric acid.

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**21.** Match the compounds (A) ethanol, (B) methane, (C) ethanoic acid, (D) ethyne and (E) ethene with the descriptions given below:

It gives a red precipitate with ammoniacal solution of copper (I) chloride.

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**22.** Match the compounds (A) ethanol, (B) methane, (C) ethanoic acid, (D) ethyne and (E) ethene with the descriptions given below:

Its vapour density is 14 and it decolourizes alkaline solution of potassium permanganate.

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**23.** Match the compounds (A) ethanol, (B) methane, (C) ethanoic acid, (D) ethyne and (E) ethene with the descriptions given below:

It reacts with sodium bicarbonate and liberates a colourless gas which turns lime water milky.

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24. Match the compounds (A) ethanol, (B) methane, (C) ethanoic acid, (D) ethyne and (E) ethene with the descriptions given below:

It forms methanol on oxidation in the presence of copper at  $200^{\circ}C$ .

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25. Give one chemical test to distinguish between the Ethane and ethene

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26. Give one chemical test to distinguish between the Ethane and ethyne

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27. Give one chemical test to distinguish between the Ethyne and ethene

 [Watch Video Solution](#)

28. Give one chemical test to distinguish between the Ethanoic acid and ethanol

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29. Give one chemical test to distinguish between the Ethyne and ethanol

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30. State how the following conversions can be carried out:

Ethyl chloride to ethyl alcohol.

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**31.** State how the following conversions can be carried out:

Ethyl chloride to ethene.

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**32.** State how the following conversions can be carried out:

Ethene to ethyl alcohol.

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**33.** State how the following conversions can be carried out:

Ethyl alcohol to ethene.

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**34.** Draw the structural formula of a compound with two carbon atoms in the following cases:

An alkane with a carbon to carbon single bond.



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35. Draw the structural formula of a compound with two carbon atoms in the following cases:

An alcohol containing two carbon atoms.



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36. Draw the structural formula of a compound with two carbon atoms in the following cases:

An unsaturated hydrocarbon with a carbon to carbon triple bond.



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37. Give the IUPAC names of the  $H_3C - C \equiv CH$



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38. Give the IUPAC names of the  $\text{H}_3\text{C} - \text{CH}_2 - \text{C}(\text{OH})(\text{C})\text{H} - \text{CH}_2 - \text{CH}_3$

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39. Give the IUPAC names of the  $\text{H}_3\text{C} - (\text{CH}_3)(\text{C})\text{H} - \text{CH}_3$

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40. Give the IUPAC names of the  $\text{CH}_3 - \text{COOH}$

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41. Give the IUPAC names of the  $\text{H}_2\underset{\text{Cl}}{\text{C}} - \underset{\text{Cl}}{\text{C}}\text{H}_2$

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42. Give the IUPAC names of the  $CH_2 = CH - CH_3$

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43. Give the IUPAC names of the  $CH_3 - C \equiv C - CH_3$

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44. Give the IUPAC names of the  $CH_3 - \overset{H}{\underset{|}{C}} = O$

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## Questions For Practice Paper On Examination Pattern Answer The Questions

1. Write balanced chemical equations for the Monochloro ethane is hydrolysed with aqueous KOH.

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2. Write balanced chemical equations for the following:

A mixture of soda lime and sodium acetate is heated.

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3. Write balanced chemical equations for the Ethanol under high pressure and low temperature is treated with acidified potassium dichromate.

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4. Write balanced chemical equations for the Water is added to calcium carbide.

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5. Write balanced chemical equations for the Ethanol reacts with sodium at room temperature.

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6. Write balanced chemical equations for the reaction: 1,2-dibromoethane is allowed to react with alcoholic potassium hydroxide.

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7. Write balanced chemical equations for the Burning of ethane in potential supply of air.

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8. Write balanced chemical equations for the Action of water on calcium carbide.





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9. Write balanced chemical equations for the Heating of ethanol at  $170^{\circ}\text{C}$  in the presence of concentrated sulphuric acid.



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10. Write balanced chemical equations for the Preparation of ethanol from ethyl chloride.



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11. Give the structural formula of each of the 2-Methylpropane



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12. Give the structural formula of each of the Ethanoic acid



 [Watch Video Solution](#)

13. Give the structural formula of each of the Butan-2-ol

 [Watch Video Solution](#)

14. Give the structural formula of each of the Dimethyl ether

 [Watch Video Solution](#)

15. Give the structural formula of each of the Propanone

 [Watch Video Solution](#)

16. Give the structural formula of each of the An isomer of butane

 [Watch Video Solution](#)

17. Give the structural formula of each of the Propan-2-ol

 [Watch Video Solution](#)

18. Give the structural formula of each of the Diethyl ether

 [Watch Video Solution](#)

19. Give the structural formula of each of the Methanoic acid

 [Watch Video Solution](#)

20. Give the structural formula of each of the Ethanal

 [Watch Video Solution](#)

21. Give the structural formula of each of the Ethyne

 [Watch Video Solution](#)

 [Watch Video Solution](#)

22. Give the structural formula of each of the 2-Methylpropane

 [Watch Video Solution](#)

23. Give the balanced chemical equations for the Ethanoic acid to ethylethanoate.

 [Watch Video Solution](#)

24. Give the balanced chemical equations for the Calcium carbide to ethyne.

 [Watch Video Solution](#)

25. Give the balanced chemical equations for the Sodium ethanoate to methane.



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26. Write balanced chemical equations for the Monochloro ethane is hydrolysed with aqueous KOH.



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27. Give balanced chemical equation for the preparation of the following organic compounds.

A saturated hydrocarbon from iodomethane



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28. Give balanced chemical equation for the preparation of the following organic compounds.

A unsaturated hydrocarbon from an alcohol.



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29. Give the balanced chemical equations for the Calcium carbide to ethyne.

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30. Give balanced equations for the laboratory preparations of the following organic compounds:

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31. Ethanol can be converted to ethene which can then be changed to ethane.

Choose the correct word or phrase from the brackets to complete the following sentences:

The conversion of ethene to ethane is an example of \_\_\_\_\_ (hydration/hydrogenation)

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**32.** Name of the following

A hydrocarbon which contributes towards the greenhouse effect.

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**33.** Name of the following

Distinctive reaction that takes place when ethanol is treated with acetic acid.

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**34.** Name of the following

The property of elements by virtue of which atoms of the element can link to each other in the form of a long chain or ring structure

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**35.** Name of the following

Reaction when an alkyl halide is treated with alcoholic potassium hydroxide.

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**36.** Give suitable chemical terms for the following: A reaction in which hydrogen of an alkane is replaced by a halogen.

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**37.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An unsaturated hydrocarbon used for welding.

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**38.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An organic compound whose functional group is carboxyl.

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**39.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

A hydrocarbon which on catalytic hydrogenation gives a saturated hydrocarbon.

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**40.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An organic compound used as a thermometric liquid.

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## Worksheet 1

1. Compounds of carbon and hydrogen are called \_\_\_\_\_(carbohydrates, hydrocarbons)

- A. Hydrocarbons
- B. Organic compounds
- C. Catenated compounds
- D. None of above

**Answer:**

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2. Which of the following is an insecticide

A. CNG

B. PVC

C. TNT

D. DDT

**Answer:**



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3. Name the common fuel which is used in Delhi automobiles

A. LPG

B. CNG

C. Gasoline

D. Diesel

**Answer:**

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**4. Which of the following is an organic compound**

A. Bleaching powder

B. Washing soda

C. Urea

D. Baking powder

**Answer:**

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**5. Which of the following is an aromatic hydrocarbon**

A. Benzene

B. Cyclopropane

C. Cyclobutane

D. None of above

**Answer:**

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6. General formula of alkenes is

A.  $C_nH_{2n+2}$

B.  $C_nH_{2n}$

C.  $C_nH_{2n-2}$

D.  $C_nH_{2n+1}$

**Answer:**

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7. Which of the following is an unsaturated compound

- A. Ethane
- B. Ethene
- C. Propane
- D. None of above

**Answer:**



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8. Organic compounds containing closed ring of atoms are called

- (a) Aliphatic compounds
- (b) Acyclic compounds
- (c) Alicyclic compounds
- (d) None of the above

A. Aliphatic compounds

B. Acyclic compounds

C. Alicyclic compounds

D. None of the above

**Answer:**

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**9.** Triple bond is present in

A. Alkanes

B. Alkenes

C. Alkynes

D. Alkyls

**Answer:**

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10. Heptane contains .....carbon atoms in chain

- A. Six
- B. Seven
- C. Eight
- D. Nine

**Answer:**

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11. Organic compounds are generally ..... whereas inorganic compounds are non-inflammable.

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12. Organic compounds are ..... conductors of electricity.

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13. Organic compounds are ..... in polar solvents.

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14. Organic compounds have .....melting and boiling points.

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15. Polythene, PVC are .....

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16. Organic compounds undergo ..... reaction whereas inorganic compounds undergo ..... reactions.

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17. Open chain compounds are also known as ..... compounds.

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18. A saturated compound having six carbon atoms will be known as.....

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19. Molecular formula of butane is.....

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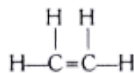
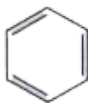
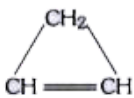
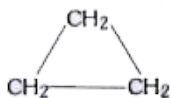
20. Ethene is an ..... hydrocarbon

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21. Write (I) Molecular formula (II) Condensed formula (III) Structural formula of butane.

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22. Name of the following



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23. Write word root for the following :

5

7

9

8

6

4

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24. Write the formula for  $n = 6$  for

1. alkane

2. alkene

3. alkyne

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25. What is the formula for fifth member of

1. alkane

2. alkene

3. alkyne

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## Worksheet 2 Fill In The Blanks

1. Two adjacent members of homologous series differ by ..... units and .....a.m.u.

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2. Homologous series helps in ..... study of organic compounds

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3. A carbon atom linked with two carbon atoms is known as .....

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4. The alkanes in which carbon atoms are not a continuous chain are called .....

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5. The name of alkene and alkyne structure depends upon the presence of a .....

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6. –  $COOH$  group represents an .....

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7. Ketones have .....group in them.

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8. Category of compounds containing -OH group are known as .....

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9. Amines owes its properties due to the functional group.....

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10.  $C_3H_7$  is named as ..... Radical.

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11. Complete the following table with respect to functional groups :

| S.No. | Class | Functional group | Structure  | prefix / suffix |
|-------|-------|------------------|--|-----------------|
| 1.    | Acid  |                  |  | oic acid        |
| 2.    |       | -CHO             | $\begin{array}{c} \text{O} \\ \parallel \\ -\text{C}-\text{H} \end{array}$ |                 |
| 3.    | Ether |                  | -OR  | alkoxy alkane   |
| 4.    | Amino |                  |  |                 |
| 5.    |       | -CO              |  | one             |

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12. Explain :

(1) Chain isomerism

(2) Position isomerism

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13. Write all isomers of pentane and write its IUPAC and common names.

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14. Following are the isomers of butane. Write both common and IUPAC names for it.

| S.No. | Isomers  | Common Names | IUPAC Names |
|-------|--|--------------|-------------|
| 1.    | $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CH}_3$                                      |              |             |
| 2.    | $\begin{array}{c} \text{H}_3\text{C—H}_2\text{C—CH}_3 \\   \\ \text{CH}_3 \end{array}$ |              |             |

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## Worksheet 3

1. Complete the following table :

| S.No. | Molecular formula                | Condensed formula | Structural formula | Common name |
|-------|----------------------------------|-------------------|--------------------|-------------|
| 1.    | HCHO                             |                   |                    |             |
| 2.    | CH <sub>3</sub> COOH             |                   |                    |             |
| 3.    | CH <sub>3</sub> OH               |                   |                    |             |
| 4.    | CH <sub>3</sub> CHO              |                   |                    |             |
| 5.    | C <sub>2</sub> H <sub>5</sub> OH |                   |                    |             |
| 6.    | C <sub>2</sub> H <sub>2</sub>    |                   |                    |             |

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2. Match the IUPAC with common names :

| IUPAC Name        | Common Name        |
|-------------------|--------------------|
| 1. Ethanal        | 1. Acetic acid     |
| 2. Methanoic acid | 2. Ethylene        |
| 3. Chloro methane | 3. Formaldehyde    |
| 4. Methanal       | 4. Acetaldehyde    |
| 5. Ethene         | 5. Formic acid     |
| 6. Ethanoic acid  | 6. Methyl chloride |

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3. Fill in the blanks with appropriate word :

An aldehyde contains ..... Functional group.

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4. Fill in the blanks with appropriate word :

An acid contains ..... Functional group .

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5. Fill in the blanks with appropriate word :

Hydroxyl (OH) group is present in .....

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6. Fill in the blanks with appropriate word :

Ethene and ethyne are ..... Hydrocarbons..





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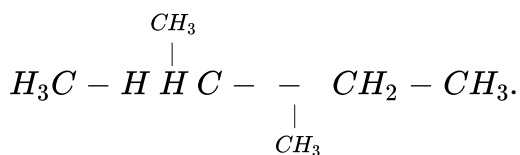
7. Fill in the blanks with appropriate word :

Vinegar is the commercial name of .....



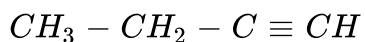
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8. Write IUPAC names of the following :



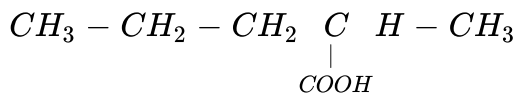
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9. Write IUPAC names of the following :



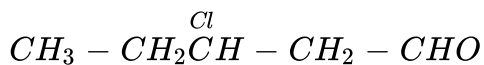
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10. Write IUPAC names of the following :



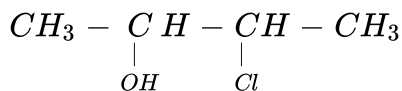
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11. Write IUPAC names of the following :



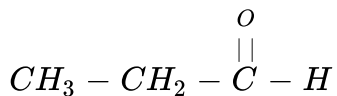
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12. Write IUPAC names of the following :



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13. Write the IUPAC name for the following:



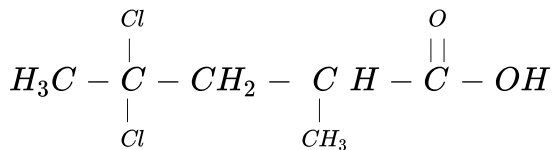
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14. Write IUPAC names of the following :



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15. Write IUPAC names of the following :



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1. Why is methane known as marsh gas ?

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2. Methane and ethane are saturated compounds. Explain

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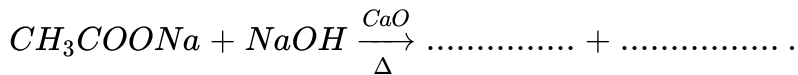
3. Why direct iodination of methane is not carried? Then how is it carried?

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4. Explain pyrolysis.

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5. Complete the following reactions :



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6. Complete the following reactions :



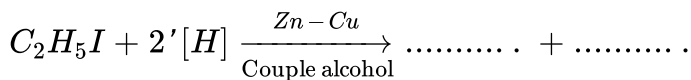
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7. Complete the following reactions :



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8. Complete the following reactions :







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9. Complete the following reactions :



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10. Bring about the following conversion :

Methane to chloroform



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11. Bring about the following conversion :

Methane to carbontetrachloride



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12. Bring about the following conversion :

Methane to carbon

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13. Bring about the following conversion :

Methane to methanoic acid

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14. Bring about the following conversion :

Methane to formalin

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15. Bring about the following conversion :

Ethane to ethanoic acid



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**16.** Bring about the following conversion :

Ethane to ethanal

 [Watch Video Solution](#)

**17.** Bring about the following conversion :

Ethane to ethanal

 [Watch Video Solution](#)

**18.** Give the following reactions :

A reaction catalysed by silica alumina.

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19. Give the following reactions :

A reaction in which  $MnO_2$  is used as a catalyst.

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20. Fill in the blanks :

To convert alkanes into alcohols use .....

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21. Fill in the blanks :

To convert alkanes into aldehydes use .....

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22. Fill in the blanks :

To convert alkanes into acids use.....





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23. Fill in the blanks :

.....is required for the reaction of ethane with chlorine



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24. Fill in the blanks :

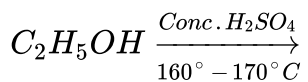
.....is used in the manufacture of printing ink and as filler in tyres.



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## Worksheet 5

1. Complete the following reactions :



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2. Complete the following reactions :



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3. Complete the following reactions :



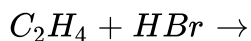
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4. Complete the following reactions :



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5. Complete the following reactions :

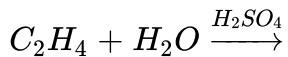






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6. Complete the following reactions :



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7. How would you convert :

Ethylene to 1,2 dibromoethane.



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8. How would you convert :

Ethylene to ethyl bromide .



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9. How would you convert :

Ethylene to polythene.

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10. How would you convert :

Ethylene to polythene.

 [Watch Video Solution](#)

11. How would you convert :

Ethylene to ethane.

 [Watch Video Solution](#)

12. How would you convert :

Ethylene to ethylene ozonide.





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13. How would you convert :

Ethylen to ethylene glycol.



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14. Explain Markownikoff's rule with respect to the addition of HCl

propene.



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15. What do you observe :

1. When bromine is passed through a solution of alkene.



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16. What do you observe :

When ethene is reacted with catalysed hydrogen .

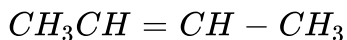
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17. What do you observe :

When ethene is reacted with alkaline potassium pemanganate.

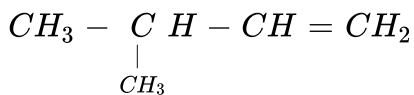
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18. Write IUPAC names for the following :



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19. Write IUPAC names for the following :





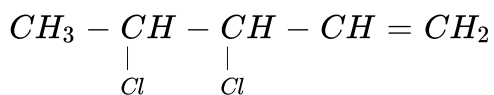
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20. Write IUPAC names for the following :



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21. Write IUPAC names for the following :



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22. Explain the following :

Ethene is insoluble in water but soluble in alcohol



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23. Explain the following :

Ethene is used in the preparation of polythene

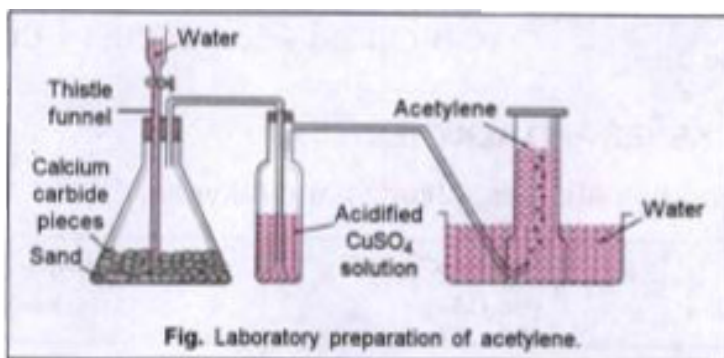
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24. Explain the following :

Orange colour of bromine disappears when ethene is passed through it

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## Worksheet 6



1. (a) What is the reaction which is taking place?

(b) Give the function of acidified copper sulphate solution.

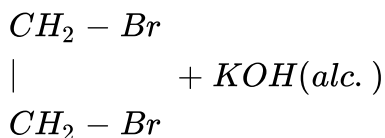
(c) Give a reaction in which acetylene gas is prepared by synthesis reaction.

(d) Compare the reaction of acetylene with bromine water and liquid bromine.

(e) What happens when acetylene is heated in copper tube at  $600^{\circ}C$  ?

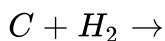
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2. Complete the following reactions :



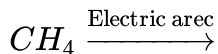
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3. Complete the following reactions :



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4. Complete the following reactions :



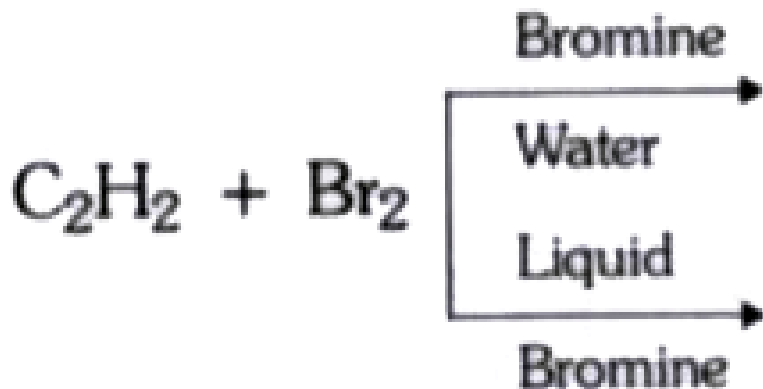
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5. Complete the following reactions :



 [Watch Video Solution](#)

6. Complete the following reactions :



 [Watch Video Solution](#)



7. Convert :

Methane to acetylene

 [Watch Video Solution](#)

8. Convert :

Carbon to acetylene

 [Watch Video Solution](#)

9. Convert :

Ethyne to oxalic acid

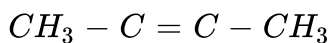
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10. Convert :

Ethyne to benzene

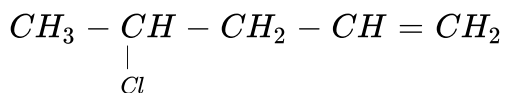
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11. Give the IUPAC names of the following



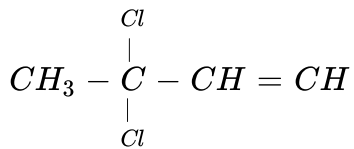
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12. Give the IUPAC names of the following



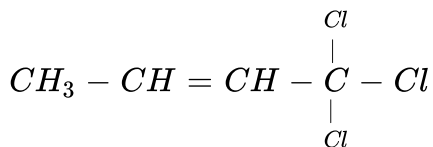
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13. Give the IUPAC names of the following



 [Watch Video Solution](#)

14. Give the IUPAC names of the following



 [Watch Video Solution](#)

## Worksheet 7

1. Answer the following questions :

What is spurious alcohol ?

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2. Answer the following questions :

Why is methyl alcohol known as wood alcohol ?

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3. Answer the following questions :

What is fermentation ?

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4. What is denatured alcohol ?

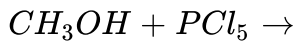
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5. Answer the following questions :

What is the difference between aqueous and alcoholic KOH ?

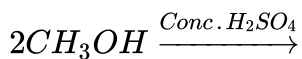
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6. Complete the following equations :



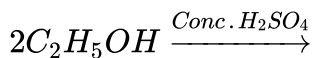
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7. Complete the following equations :



 [Watch Video Solution](#)

8. Complete the following equations :



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9. Complete the following blanks with respect to industrial preparation of alcohol.

Water gas ( $CO + H_2$ ) is mixed with ..... And passed over heated catalyst ..... And ..... At  $350^\circ C$  under a pressure of ..... atmosphere where ..... is produced.

$CO + H_2 + \dots\dots\dots \xrightarrow[200\text{atm}]{350^\circ C} \dots\dots\dots$

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10. Fill in the blanks with appropriate words :

ethyl alcohol reacts with ..... In the presence of conc.  $H_2SO_4$  to give an ester.

 [Watch Video Solution](#)

11. Fill in the blanks with appropriate words :

..... Is used for making ethyl alcohol unfit for drinking .

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[Watch Video Solution](#)

12. Fill in the blanks with appropriate words :

Fermentation is brought about by microorganism especially..... .

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13. Fill in the blanks with appropriate words :

Dehydration of ethyl alcohol gives..... .

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14. Fill in the blanks with appropriate words :

Aqueous KOH brings ..... Reactions , whereas alcoholic KOH brings ..... Reactions.

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15. Bring about the following conversion :

Ethanol to diethyl ether

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16. Bring about the following conversion :

Ethanol to acetic acid

 [Watch Video Solution](#)

17. Bring about the following conversion :

Methanol to formic acid

 [Watch Video Solution](#)

18. Bring about the following conversion :

Ethanol to ethene





 [Watch Video Solution](#)

19. Bring about the following conversion :

Methanol to dimethyl ether.

 [Watch Video Solution](#)

## Worksheet 8

1. Fill in the blanks with suitable words :

Aliphatic carboxylic acids are known as ..... acids

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2. Fill in the blanks with suitable words :

Pure acetic acid is called ..... acetic acid.

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3. Fill in the blanks with suitable words :

..... esters impart banana flavour.

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4. Fill in the blanks with suitable words :

..... is formed when acetic acid and ethyl alcohol react in the presence of conc.  $H_2SO_4$ .

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5. Fill in the blanks with suitable words :

When acetic acid is heated with phosphorus pentaoxide ..... is formed.

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6. Fill in the blanks with suitable words :

Old vinegar contains bacterium .....

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7. Fill in the blanks with suitable words :

Active metals react with carboxylic acid liberating ..... gas.

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8. Fill in the blanks with suitable words :

..... are sweet smelling compounds used in perfumes and flavoured drinks.

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9. Fill in the blanks with suitable words :

..... is used as a coagulating agent in rubber industry.

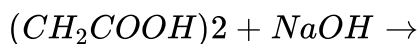
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10. Fill in the blanks with suitable words :

Acetic acid is used for making ..... which is used in making water proof fabric.

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11. Complete the following reactions :



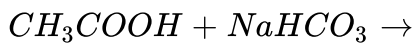
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12. Complete the following reactions :  $CO(g) + H_2(g)$



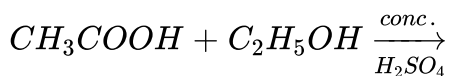
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13. Complete the following reactions :



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14. Complete the following reactions :



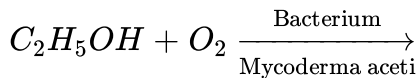
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15. Complete the following reactions :



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16. Complete the following reactions :



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17. Bring about the following conversions :

Ethanoic acid to acetic anhydride

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18. Bring about the following conversions :

Ethanoic acid to ethyl acetate.

 [Watch Video Solution](#)

19. Bring about the following conversions :

Acetic acid to sodium acetate.



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20. Bring about the following conversions :

Acetic acid to zinc acetate

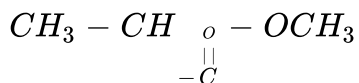
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21. Write IUPAC names for the following :



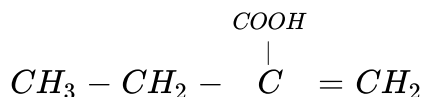
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22. Write IUPAC names for the following :



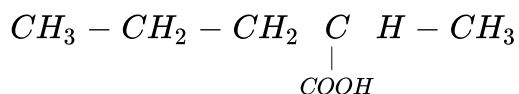
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23. Write IUPAC names for the following :



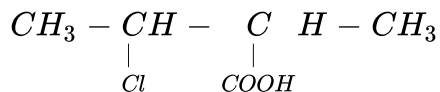
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24. Write IUPAC names of the following :



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25. Write IUPAC names for the following :



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[Additional Questions For Practice](#)



1. Give the molecular formula, condensed formula, and structural formula of the following hydrocarbons.

(i) Propane

(ii) n-Butene

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2. Name three major classes of aliphatic hydrocarbons.

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3. How do paraffins differ from unsaturated hydrocarbons ?

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4. With reference to butane, explain what do you understand by the following terms ? (i) Molecular formula (ii) Condensed formula (iii) Structural formula



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5. How does chlorine in excess react with (a) methane (b) ethane ?



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6. How is methane gas prepared in laboratory ?



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7. What do you understand by the term substitution reactions ?



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8. What do you understand by the term homologous series? Give first three members of homologous series of :

(i) Alkanols

(ii) Alkanoic acids.

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9. How will you bring about following conversions?

(i) Methane to methyl alcohol

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10. (a) What do you understand by the following terms?

(i) Organic chemistry

(ii) Organic compounds

(iii) Catenation.

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11. (b) Why are there very large number of organic compounds ?

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12. How will you prepare acetylene gas in laboratory? Support your answer by chemical equations.

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13. Give two uses of (i) Methane (ii) Ethane.

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14. How does ethylene react with (i) bromine (ii) alkaline potassium permanganate (iii) HCl gas?

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15. Starting from ethylene, how will you obtain acetic acid ?

 [Watch Video Solution](#)

16. State four industrial uses of alcohol.

 [Watch Video Solution](#)

17. What is spurious liquor ? What makes it harmful?

 [Watch Video Solution](#)

18. How will you distinguish between alkanes, alkenes and alkynes?

 [Watch Video Solution](#)

19. How does acetylene gas reacts with (i) chlorine (ii) ammoniacal cuprous chloride

 [Watch Video Solution](#)

20. How is acetylene gas prepared in laboratory?

 [Watch Video Solution](#)

21. State the method of preparation of ethanol :

(a) by hydrolysis of ethene

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22. State the method of preparation of ethanol :

(b) by hydrolysis of alkyl halide.

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23. Give the trival names and the IUPAC names of the following:



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24. Give the trival names and the IUPAC names of the following:



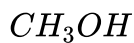
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25. Give the trival names and the IUPAC names of the following:



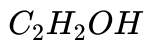
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26. Give the trival names and the IUPAC names of the following:



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27. Give the trival names and the IUPAC names of the following:



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28. Ethanol can be oxidised to ethanoic acid. Write the equation and name the oxidising agent.

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29. Name the products formed and give appropriate chemical equations for the following:

(a) Sodium reacting with ethyl alcohol.

(b) Ethanol oxidised by  $K_2Cr_2O_7$ .

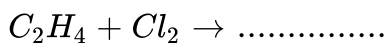
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30. How is ethanol prepared by fermentation ?

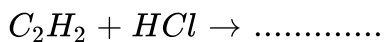
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31. Complete and balance the following equations. State the conditions wherever necessary.



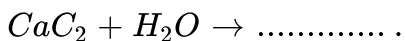
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32. Complete and balance the following equations. State the conditions wherever necessary.



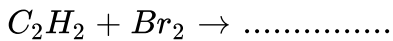
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**33.** Complete and balance the following equations. State the conditions wherever necessary.



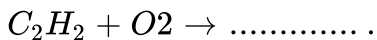
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**34.** Complete and balance the following equations. State the conditions wherever necessary.



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**35.** Complete and balance the following equations. State the conditions wherever necessary.



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**36.** Name a substance which is :

used for illuminating country houses

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**37.** Name an organic compound which is :

used for making a household plastic material.

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**38.** Name a substance which is :

called 'wood spirit.'

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**39.** Name a substance which is :

poisonous.

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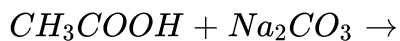
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44. Complete the given chemical equations :



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45. Complete the given chemical equations :



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46. What is the name of pure acetic acid ?

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47. How does ethanoic acid ionised in aqueous solution ?



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48. Give IUPAC names of the following compounds:



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49. Give IUPAC names of the following compounds:



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### Questions From Previous Icse Board Papers 2005

1. Under suitable conditions steam will react with ethene to produce ethanol

Draw structural formula of

(a) Ethene

(b) Ethanol

(ii) what type of organic reaction takes place between ethene and steam ?

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2. (i) Define isomerism.

(ii) Draw two possible isomeric structures of butane ,  $C_4H_{10}$

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3. Fill in the blanks by choosing appropriate words from the following list

:

List : addition, carbohydrates ,hydrocarbons,

$C_nH_{2n+2}$ , catenation,, homologus, substitution

(i) Alkanes generally undergo ..... Reactions.

(ii) Compunds containing carbon and hydrogen onhly are called . .....

(iii) The general formula for alkanes is.....

(iv) A family of organic compunds with the same general formula is known as a .....series.



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4. Draw the structural formula of a compound with two carbon atoms in the following cases:

An alkane with a carbon to carbon single bond.



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5. Ethane, Ethene, Ethanoic acid , ethyne, Ethynol From the above, name :

(i) The compounds with - OH as a part of its structure.

(iii) Homologue of Homologous series with general formula  $C_nH_{2n}$

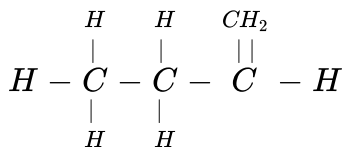


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Questions From Previous Icse Board Papers 2006

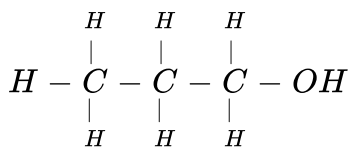


1. Give the correct IUPAC name and the functional group for each of the compounds whose structural formulae are given below :



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2. Give the correct IUPAC name and the functional group for each of the compounds whose structural formulae are given below :



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3. Write the equation for the preparation of carbon tetrachloride from methane.

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4. Draw the structural formula of ethyne.

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5. How is structural of alkyne, different from that of alkenes ?

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6. Fill in the blanks with the correct words from the brackets :

Alkene active

(i) ..... (analogous/homologus). Series of

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7. Fill in the blanks with the correct words from the brackets :

Alkene active

..... (saturated / unsaturated) hydrocarbon.

They differ from alkanes due to the presence of

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**8.** Fill in the blanks with the correct words from the brackets :

Alkene have

..... (double/single) bonds .

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**9.** Fill in the blanks with the correct words from the brackets :

Alkene active

..... (addition/substitution) reactions.

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**10.** Write balanced chemical equations for the following reactions :

(i) Ethane and oxygen in the presence of molybdenum oxide.

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**11.** Write balanced chemical equations for the following reactions :

Preparation of methane from anhydrous sodium ethanoate (sodium acetate).

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**12.** Write balanced chemical equations for the following reactions :

Heating ethanol at 443 K ( $130^{\circ}\text{C}$ ) in the presence of concentrated sulphuric acid.

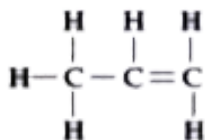
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1. Give the IUPAC names of the following compounds numbered (i) to (v) .

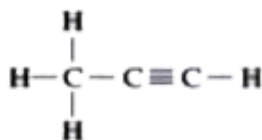
The IUPAC names of the compounds on the left are to guide you into

giving the correct IUPAC name of the compounds on the right .

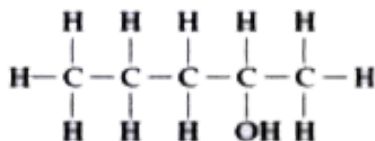
on the right.



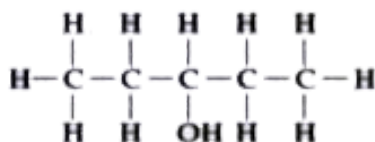
Propene



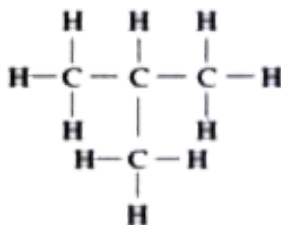
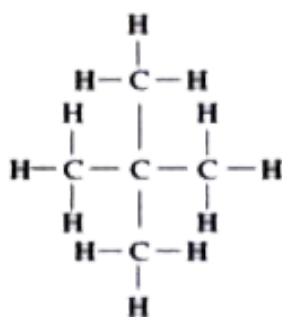
(i) .....



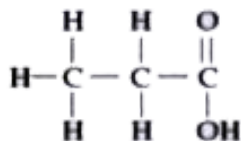
Pentan - 2 - ol



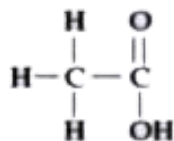
(ii) .....



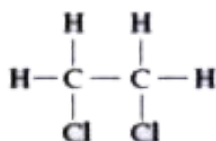
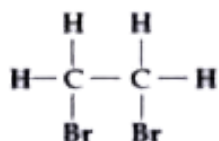
2, 2 - dimethylpropane (iii) .....



Propanoic acid



(iv) .....



1, 2 - dibromoethane (v) .....

2. Copy and complete the following table which relates to three homologous series of hydrocarbons.

| General Formula                              | $C_nH_{2n}$ | $C_nH_{2n-2}$ | $C_nH_{2n+2}$ |
|--|-------------|---------------|---------------|
| IUPAC name of the homologous series          |             |               |               |
| Characteristic bond type                     |             |               | Single bonds  |
| IUPAC name of the first member of the series |             |               |               |
| Type of reaction with chlorine               |             | Addition      |               |

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### Questions From Previous Icse Board Papers 2008

1. Distinguish between the saturated hydrocarbon ethane and the unsaturated hydrocarbon ethene by drawing their structural formulae.

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2. Addition reaction and substitution reactions are types of organic reactions. Which type of reaction is shown by : (i) Ethane (ii) Ethene

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3. (i) Write the equation for the complete combustion of Ethane.

(ii) Using appropriate catalysts Ethane can be oxidised to an alcohol and aldehyde and an acid. Name the alcohol aldehyde and acid formed when ethane is oxidised.

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4. (i) Why is pure acetic acid known as glacial acetic acid ?

(ii) What type of compound is formed by the reaction between acetic acid and an alcohol ?

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5. Write the equation for the following reactions

(i) Calcium carbide and water

(ii) Ethene and water (steam)

(iii) Bromo ethane and aqueous solution of sodium hydroxide.

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### Questions From Previous Icse Board Papers 2009

1. (i) Which of the following statements is wrong about alkanes ?

(A) They are all saturated hydrocarbon.

(B) They can undergo addition as well as substitution reaction.

(C) They are almost non polar in nature.

(D) On complete combustion give out carbon dioxide and water.

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2. The organic compound obtained as the end product of the fermentation of sugar solution is:

- (A) Methanol
- (B) Ethanol
- (C) Ethane
- (D) Methanoic acid.

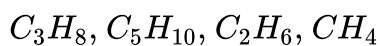
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3. Write a fully balanced equation for the following case :

Acetic acid is warmed with ethanol in the presence of concentrated sulphuric acid.

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4. Find the odd one out and explain your choice (note : valency is not a criterion)





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5. Methane is the first member of alkane, when it is treated with excess of chlorine in the presence of diffused sunlight forms carbon tetrachloride. Draw the appropriate structural formula of carbon tetrachloride and state the type of bond present in it.



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6. The general formula  $C_nH_{2n+2}$  represents\_\_\_\_\_.



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7. Give chemical equation for:

The laboratory preparation of methane from sodium acetate.



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**8.** Give chemical equation for:

The industrial preparation of methanol from water gas.

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**9.** Give chemical equation for the reaction of one mole of ethene with one mole of chlorine gas.

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**10.** Give chemical equation for the preparation of ethyne from 1,2-dibromomethane.

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**11.** State how the following conversions can be carried out:

(i) Ethyl chloride to Ethyl alcohol.

(ii) Ethyl chloride to Ethene.

(iii) Ethene to Ethyl alcohol.

(iv) Ethyl alcohol to Ethene.

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12. Define isomerism and give an example.

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13. Give the IUPAC name of the isomer  $C_4H_{10}$  which has a branched chain.

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### Questions From Previous Icse Board Papers 2010

1. An organic compound undergoes addition reactions and gives a red precipitate with ammoniacal cuprous chloride. Therefore, the organic compound could be:

A. Ethane

B. Ethene

C. Ethyne

D. Ethanol.

**Answer:**



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2. An organic weak acid is

A. Formic acid

B. Sulphuric acid

C. Nitric acid

D. Hydrochloric acid

**Answer:**



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3. The organic compound mixed with ethanol to make it spurious is:

- A. Methanol
- B. Methanoic acid
- C. Methanal
- D. Ethanoic acid.

**Answer:**



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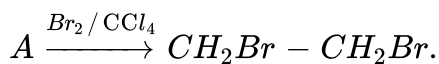
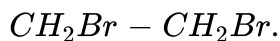
4. Draw the structural formula for each of the following:

- (i) Ethanoic acid
- (ii) But - 2 - yne



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5. Compound A is bubbled through bromine dissolved in carbon tetrachloride and the product is



- (i) (i) Draw the structural formula of A.
- (ii) What type of reaction has undergone ?
- (iii) What is your observation ?
- (iv) Name (not formula) the compound formed when steam reacts with A in the presence of phosphoric acid.
- (v) What is the procedure for converting the product of (iv) back to A?



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### Questions From Previous Icse Board Papers 2011

1. Choose from the following list of substances, as to what matches the description given below : [Acetylene gas, aqua fortis, coke, brass, barium chloride, bronze, platinum]



A gaseous hydrocarbon commonly used for welding purposes

An aqueous salt solution used for testing sulphate radical.

A black, powdery substance used for the reduction of zinc oxide during its extraction.

A catalyst used in the manufacture of nitric acid by Ostwald's process.

The substance is an alloy of zinc, copper and tin.

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2. Gives reasons as to why :

(i) almost 90 % of all known compounds are organic in nature.

(ii) it is dangerous to burn methane in an insufficient supply of air.

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3. The functional group present in acetic acid is :

A. Ketonic C = O

B. Hydroxyl -OH

C. Aldehydic -CHO

D. Carboxylic - COOH

**Answer: A::B::C**

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4. The unsaturated hydrocarbons undergo :

A. a substitution reaction

B. an oxidation reaction

C. an addition reaction

D. none of the above

**Answer:**

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5. The number of C-H bonds in ethane molecule are :

A. Four

B. Six

C. Eight

D. Ten

**Answer:**



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6. Choose the correct word/phrase from within the brackets to complete the following sentences :

The catalyst used for conversion of ethene to ethane is commonly .....

(nickel / iron / cobalt)



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7. When acetaldehyde is oxidised with acidified potassium dichromate, it forms \_\_\_\_ (ester/ethanol/acetic acid)

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8. Choose the correct word/phrase from within the brackets to complete the following sentences :

Ethanoic acid reacts with ethanol in presence of concentrated  $H_2SO_4$ , so as to form a compound and water. The chemical reaction which takes place is called.... (dehydration / hydrogenation / esterification)

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9. Choose the correct word/phrase from within the brackets to complete the following sentences :

Write the equation for the reaction taking place between 1, 2-dibromoethane and alcoholic potassium hydroxide.

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10. Choose the correct word/phrase from within the brackets to complete the following sentences :

The product formed when ethene gas reacts with water in the presence of sulphuric acid is ..... (ethanol / ethanal / ethanoic acid)

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11. Write balanced chemical equations for the following:

Monochloro ethane is hydrolysed with aqueous KOH

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12. Write balanced chemical equations for the following:

A mixture of soda lime and sodium acetate is heated.

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13. Write balanced chemical equations for the Ethanol under high pressure and low temperature is treated with acidified potassium dichromate.

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14. Write balanced chemical equations for the following:

Water is added to calcium carbide.

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15. Write balanced chemical equations for the following:

Ethanol reacts with sodium at room temperature.

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1. State one observation for the following :

Bromine vapours are passed into a solution of ethyne in carbon tetrachloride.

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2. Some word/words are missing in the following statements. You are required to rewrite the statements in the correct form using the appropriate word/words: Ethyl alcohol is dehydrated by sulphuric acid at a temperature of about  $170^{\circ}C$ .

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3. Give the structural formula for the following:

(i) Methanoic acid

(ii) Ethanal

(iii) Ethyne

(iv) Acetone

(v) 2-methyl propane.

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4. From the following organic compounds given below, choose one compound in each case which relates to the description

[i] to [iv] : [Ethyne, ethanol, acetic acid, ethene, methanol]

(i) An unsaturated hydrocarbon used for welding purposes.

(ii) An organic compound whose functional group is carboxyl.

(iii) A hydrocarbon which on catalytic hydrogenation gives a saturated hydrocarbon. (iv) An organic compound used as a thermometric liquid.

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5. (i) Why is pure acetic acid known as glacial acetic acid? (ii) Give a chemical equation for the reaction between ethyl alcohol and acetic acid.

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## Questions From Previous Icse Board Papers 2013

1. Identify the gas evolved in the following reaction when :

sodium propionate is heated with soda lime

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2. Give suitable chemical terms for the following: A reaction in which hydrogen of an alkane is replaced by a halogen.

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3. Give a chemical test to distinguish between the following pairs of compounds: Ethene gas and ethane gas.

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4. Choose the most appropriate answer from the following options :

Identify the statement that is incorrect about alkanes

- A. They are hydrocarbons
- B. There is a single covalent bond between carbon and hydrogens.
- C. They can undergo both substitution as well as addition reactions.
- D. On complete combustion they produce carbon dioxide and water.

**Answer:**



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5. Give balanced equations for the laboratory preparations of the following organic compounds:

- A. A saturated hydrocarbon from iodomethane
- B. An unsaturated hydrocarbon from an alcohol.
- C. An unsaturated hydrocarbon from calcium carbide

D. An alcohol from ethyl bromide.

**Answer:**

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**6.** Give the structural formulae for the following

An isomer of n-butane.

(ii) 2-propanol.

(iii) Diethyl ether.

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**7.** Give reasons for the following :

(i) Methane does not undergo addition reactions, but ethene does.

(ii) Ethyne is more reactive than ethane.

(iii) Hydrocarbons are excellent fuels.

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8. Identify the following substance which is underlined: An acid which is present in vinegar.



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### Questions From Previous Icse Board Papers 2014

1. The IUPAC name of acetylene is :

- A. propane
- B. propyne
- C. ethene
- D. ethyne

**Answer:**



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2. Fill in the blanks from the choices given within brackets:

(i) The compound formed when ethanol reacts with sodium is .....

(sodium ethanoate, sodium ethoxide, sodium propanoate)

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3. Give one word or phrase for the following:

Hydrocarbons containing a  $\overset{\text{O}}{\parallel} - \text{C} -$  functional group.

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4. Write balanced equation for the following:

(i) Preparation of ethane from sodium propionate.

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5. Ethane and ethene (using alkaline potassium permanganate solution)



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**6.** State the conditions required for the following reactions to take place :

- (i) Catalytic hydrogenation of ethyne.
- (ii) Preparation of ethyne from ethylene dibromide.



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**7.** Give balanced equations for the following:

- (i) Preparation of ethanol from monochloro ethane and aq. sodium hydroxide.



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**8.** Give the structural formula of the following:

- (i) ethanol.
- (ii) 1-propanal.

(iii) ethanoic acid.

(iv) 1, 2 dichloroethane.

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## Questions From Previous Icse Board Papers 2015

1. Select from the list the gas that matches the description given in each case : (ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

(i) This gas is used for welding purposes.

(ii) This gas is also a saturated hydrocarbon.

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2. Choose the most appropriate answer for each of the following: Identify the statement which does not describe the property of alkenes :

(A) They are unsaturated hydrocarbons

(B) They decolourise bromine water

(C) They can undergo addition as well as substitution reactions

(D) They undergo combustion with oxygen forming carbon dioxide and water.

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3. State one relevant observation for the following:

When the gaseous product obtained by dehydration of ethyl alcohol is passed through bromine water.

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4. Give balanced chemical equations for the following conversions :

(i) Ethanoic acid to ethyl ethanoate.

(ii) Calcium carbide to ethyne.

(iii) Sodium ethanoate to methane.

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5. Using their structural formulae identify the functional group by circling them :

(i) Dimethyl ether. (ii) Propanone.



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6. Name of the following

Process by which ethane is obtained from ethene.



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7. Name of the following

A hydrocarbon which contributes towards the greenhouse effect.



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8. Name of the following

Distinctive reaction that takes place when ethanol is treated with acetic

acid.

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**9.** Name of the following

The property of elements by virtue of which atoms of the element can link to each other in the form of a long chain or ring structure

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**10.** Name of the following

Reaction when an alkyl halide is treated with alcoholic potassium hydroxide.

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1. Fill in the blank with the choices given in bracket: Conversion of ethene to ethane is an example of.....(hydration/hydrogenation).

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2. Write balanced chemical equation for the following:

Preparation of ethanol from Ethyl Chloride.

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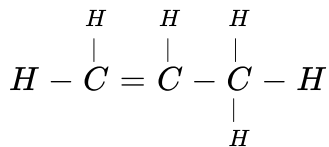
3. Identify the term/substance in each of the following:

(a) The catalyst used in the conversion of ethyne to ethane.

(b) The type of reactions alkenes undergo.

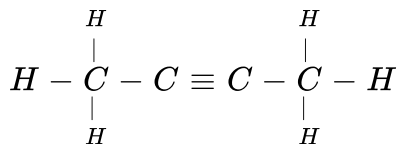
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4. Write the IUPAC names of each of the following:



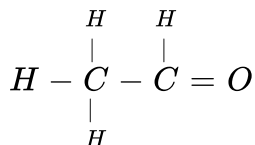
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5. Write the IUPAC names of each of the following:



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6. Write the IUPAC names of each of the following:



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7. Write a balanced chemical equation for each of the following:

(i) Burning of ethane in plentiful supply of air.

(ii) Action of water on Calcium carbide.

(iii) Heating of Ethanol at 170°C in the presence of conc. Sulphuric acid.

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8. Give the structural formulae of each of the following:

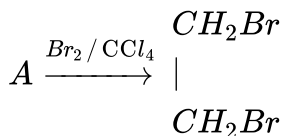
(i) 2-methyl propane

(ii) Ethanoic acid

(iii) Butan-2-ol

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9. Equation for the reaction when compound A is bubbled through bromine dissolved in carbontetrachloride is as follow:



(i) Draw the structure of A .

(ii) State your observation during this reaction.

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## Questions From Previous Icse Board Papers 2017

1. Fill in the blank from the choices given in bracket: The compound formed when ethene reacts with Hydrogen is .....

( $CH_4$ ,  $C_2H_6$ ,  $C_3H_8$ )

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2. Choose the correct answer from the options given below : If the molecular formula of an organic compound is  $C_{10}H_{18}$  it is:

1. alkene

2. alkane

3. alkyne

4. not a hydrocarbon

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3. Identify the substance underlined in the following case :

An organic compound containing - COOH functional group.

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4. Write a balanced chemical equation for the following:

Preparation of methane from iodomethane.

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5. State one relevant observation for the following reaction:

Addition of ethyl alcohol to acetic acid in the presence of concentrated Sulphuric acid.

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6. Draw the structural formula for each of the following:

1. 2,3 - dimethyl butane
2. diethyl ether
3. propanoic acid

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7. Identify the term or substance based on the descriptions given below:

- (i) Ice like crystals formed on cooling an organic acid sufficiently.
- (ii) Hydrocarbon containing a triple bond used for welding purposes.
- (iii) The property by virtue of which the compound has the same molecular formula but different structural formulae.
- (iv) The compound formed where two alkyl groups are linked by - C-group.

group are linked by  $\begin{array}{c} \text{O} \\ || \\ -\text{C}- \end{array}$  group.

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8. Give a balanced chemical equation for each of the following:

(i) Preparation of ethane from Sodium propionate

(ii) Action of alcoholic KOH on bromoethane.

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### Questions From Previous Icse Board Papers 2018

1. Choose the correct answer from the options given below :

(i) The organic compound which undergoes substitution reaction is :

(A)  $C_2H_2$

(B)  $C_2H_4$

(C)  $C_{10}H_{18}$

(D)  $C_2H_6$

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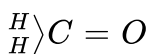
2. Choose the correct answer from the options given below :

The IUPAC name of dimethyl ether is :

- (A) Ethoxy methane
- (B) Methoxy methane
- (C) Methoxy ethane
- (D) Ethoxy ethane

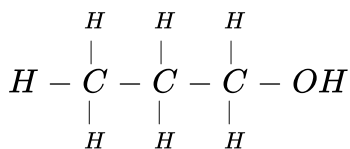
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3. Give the IUPAC name of the for each of the following



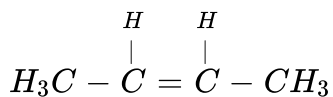
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4. Give the IUPAC name of the for each of the following



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5. Give the IUPAC name of the for each of the following



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6. Name the gas that is produced in the following case: Reaction of ethanol and sodium.

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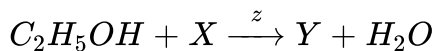
7. Complete the following table which relates to the homologous series of hydrocarbons.

| General formula | IUPAC name of the homologous series | Characteristic bond type | IUPAC name of the first member of the series |
|-----------------|-------------------------------------|--------------------------|--|
| $C_nH_{2n-2}$   | (A) _____                           | (B) _____                | (C) _____                                    |
| $C_nH_{2n+2}$   | (D) _____                           | (E) _____                | (F) _____                                    |

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8. A compound X (having vinegar like smell) when treated with ethanol in the presence of the acid 2, gives a compound Y which has a fruity smell.

The reaction is :



- (i) Identify Y and Z.
- (ii) Write the structural formula of X.
- (iii) Name of the above reaction.

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## Question

1. How to write and name the molecular formula by knowing the number of carbon atoms ?

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## Additional Questions

1. Explain the term 'Organic Chemistry'. State the 'Natural sources' & 'Importance of organic compounds.

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2. Explain the 'unique nature of carbon atom' with reference to - a] 'Tetravalency' - of carbon b] 'Catenation' - leading to formation of single, double & triple bonds and straight chain, branched chain & cyclic compounds.

A. a

B. b

C. c

D. d

**Answer:**

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3. State reasons for 'Justification of a separate branch' for 'Organic Chemistry'.

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4. State five differences between the characteristics of organic & inorganic compounds. State how organic compounds are classified.

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5. Explain the term 'Homologous series'. State the general characteristics of members of the series with special reference to molecular mass or molecular formula.

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6. Differentiate between - Molecular formula' & 'Structural formula' - of an organic compound. Write the 'condensed structural formula' & 'branched structural formula' of ethene.

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7. State what are 'Alkyl groups'. State the alkyl group of the parent alkane - methane and ethane.

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8. State what are 'Functional groups'. Name the following functional groups -

$C = C$ ,  $-C \equiv C-$ ,  $-OH$ ,  $-CHO$ ,  $-COOH$ ,  $-F$ ,  $-Cl$ ,  $-Br$ ,

with one example each of an organic compound with the respective functional group.

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9. Explain the terms - 'Isomers' & 'Isomerism'.

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10. Explain the term - 'Nomenclature'. State its need with reference to organic compounds. State the basic rules of Nomenclature by the trivial system - with suitable examples. Explain the longest chain rule and the smallest number for functional groups rule of Nomenclature by the IUPAC system-with suitable examples.

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11. Explain the term - 'Hydrocarbons'. State the two main groups of hydrocarbons with examples. Draw a chart differentiating - 'Alkanes, Alkenes & Alkynes' - with respect to : i] General formula ii] Characteristic bond iii] IUPAC and the common name of the first three members & condensed/branched/ electronic structural formula of each iv] Availability of electrons v] Reactivity vi] Characteristic reaction.





**14.** Give balanced equations for the laboratory preparations of - Alkanes, Alkenes, Alkynes, Alcohols & Acids.

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**15.** How will you convert ethane into ethanol? Give the chemical reaction involved.

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**16.** Give reasons for i] alkanes are said to be saturated organic compounds ii] alkenes are known as olefins iii) alkenes are more reactive than alkanes iv) ethanoic acid is known as an aliphatic monocarboxylic acid.

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17. Explain the terms i] Denaturated alcohol ii] Glacial acetic acid iii]

Esterification

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18. Give a chemical test for to distinguish between i] Ethane, ethene & ethyne ii] Ethanol & ethanoic acid.

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19. Give the main uses of i] Methane ii] Ethane iii] Ethene iv] Ethyne v] Ethanol vi] Ethanoic acid.

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1. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

Pent-1-ene

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2. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

1,1,2,2-tetrabromoethane

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3. Draw the structural formula for the But-2-yne

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4. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

2-methyl butan-2-ol

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5. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

3-methyl pentane

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6. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

2,2dimethyl propan-1-ol

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7. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

2-methyl-prop-1-ene

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8. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

2,2dimethyl propane

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9. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

Pentan-3-ol

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10. Draw the branched structural formula of the following organic compounds whose IUPAC names are given below.

2-bromo-4-chloro pentane

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11. Select the correct answer from the choice in brackets

The vapour density of the fifth member of the homologous series of alkanes. [22/36/29]

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12. Select the correct answer from the choice in brackets

The isomer of pentane which has '1' C atom attached to '4' other C atoms [n- / iso- / neo-1 pentane].

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13. Select the correct answer from the choice in brackets

The IUPAC name of the product of reaction of ethylene with hydrogen bromide. [ethyl bromide / bromoethane / dibromoethane]

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14. Select the correct answer from the choice in brackets

The IUPAC name of methyl acetylene. [1-butyne / propyne / ethyne]

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15. Select the correct answer from the choice in brackets

The functional group in ethanoic acid. [aldehydic / carboxyl/ hydroxyl]

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16. Give balanced equations for the following conversions:

Zinc to sodium zincate - using an alkali.



Acidic water to hydrogen - by electrolysis.

Water gas to hydrogen - industrially

Iron [III] oxide to iron - using hydrogen.

Nitrogen to a basic gas - using hydrogen.



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17. Select from the letters A to G the correct answer corresponding to the statements from 1 to 5:

A: Ammoniacal  $CuCl_2$ , B: Trichloromethane, C: Trichloroethane, D: Bromine soln., E: Aqueous KOH F: Ethene, G: Sodalime, H: Ethanol, I: Ethyne.

1. The organic compound which forms carbon tetrachloride on reaction with chlorine.
2. The reagent which can distinguish between ethene and ethyne.
3. The substance which reacts with bromoethane to give ethanol.
4. The substance which gives bromoethane on reaction with hydrogen bromide.
5. The substance which reacts with acetic acid to give  $CH_3COOC_2H_5$ .



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**18.** Give balanced equations for the following conversions.

An alkyne to an alkene.



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**19.** Give balanced equations for the following conversions.

An alkene to an alkane.



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**20.** Give balanced equations for the following conversions.

An alkane to an alcohol.



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**21.** Give balanced equations for the following conversions.

An alcohol to an alkene.

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**22.** Give balanced equations for the following conversions.

A carboxylic acid to an ammonium salt

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**23.** Give reasons for the following:

Concentrated sulphuric acid may be added during esterification of acetic acid.

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**24.** Give reasons for the following:

Isomers belonging to the same homologous series may differ in physical properties but not in chemical properties.

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**25.** Give reasons for the following:

A given organic compound can be assigned only one name on the basis of the IUPAC system.

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**26.** Give reasons for the following:

Substitution reactions are characteristic reactions of saturated organic compounds only.

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27. Give reasons for the following:

Acetic acid is considered an aliphatic monocarboxylic acid.



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