# CHEMISTRY

## BOOKS - S CHAND CHEMISTRY (HINGLISH)

## CARBON AND ITS COMPOUNDS

### Solved Examples

**1.** An element belonging to group 14 of the periodic table has two common allotropes A and B. A is very hard and a non conductor of electricity while B is soft to touch and good conductor of electricity . Identify the element . Name each of these allotropes.

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**2.** A boy sharpens a pencil at both the ends and then uses its back ends to complete an electric circuit will the current flow though the electric circuit? Give reason for your answer. Name the black substance of the pencil.

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**3.** A piece of black electrode used in dry cell on strong heating in air gave a colorless gas which tuned lime eater milky. What was the material of the electrode?

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**4.** Ethane with the molecular formula $C_2H_6$ has:

(a) 6 covalent bonds

(b) 7 convalent bonds

(c ) 8 covalent bonds

(d) 9 convalent bonds

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**5.** Give the general formula of "alkynes". Identify the alkynes from the following:

$CH_4, C_2H_6, C_2H_2, C_3H_4, C_2H_4$

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**6.** What is the general formula of alkenes? Identify the alkenes from the following

$C_2H_6, C_2H_4, C_3H_4, C_2H_2, C_3H_6$

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**7.** What is the general formula of alkanes ? Identify the alkanes from the following:

$CH_4, C_2H_2, C_2H_6, C_3H_6, C_3H_8$

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**8.** Which of the following organic compounds is undaturated?

$(CH_4, C_2H_4$

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**9.** Which of the following compunds can have a double bond?

$C_3H_8, C_3H_6$

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**10.** A hydrocarbon molecule has 3 carbon atoms. Write down its molecular formula if it is an : (i) alkane , (ii) alkene, (iii) alkyne.

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**11.** A hydorcarbon molecule contins 4 hydrogen atoms. Give its olecular formula , if it is an : (i) alkane, (ii) alkne ,(iii) alkyne.

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

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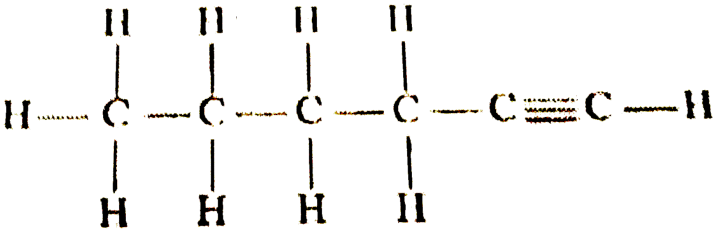
**13.** How would you name the following compound?



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**14.** How many structural isomers can you draw for pentane?

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**15.** Write the structural formulae of any two isomers of hexane $(C_6H_{14})$, other than $n$- hexane.

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**16.** Write the molecular formula of the third and fifth members of homologous series of carbon compounds represented by the general formula $C_nH_{2n-2}$.

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**17.** Which of the following belong to the same homeologous series ?

$C_3H_8, C_3H_6, C_4H_8, C_4H_6$

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**18.** Write the molecular formula of the fourth and fifth members of the homologous series of carbon compounds represented by the general formula $C_nH_{2n+1} - OH$

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**19.** Calculate the difference in the molecular formulae and molecular masses for:

(a) $CH_3OH \text{and} C_2H_5OH$

(b) (a) $C_2H_5OH \text{and} C_3H_7OH$

(c )(a) $C_3H_7OH \text{and} C_4H_7OH$

(i) Is there any similarity in these three?

(ii) Arrange these alcohols in the order of increasing crbon atoms to get a family . Can we call this family a homologous series?

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**20.** Draw the structure for the following compound:

Hexanal.

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

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**22.** An organic compound 'A' is a constituent of wine and beer. This compound, on heating with alkaline potassium permanganate forms another organic compound 'B' which turns blue litmus to red. Identify the compound 'A' write the chemical equation of the reaction that takes place to form the compound 'B'. Name the compound 'B'.

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**23.** An organic compound A has the molecular formula $C_2H_4O_2$ and is acidic in nature. On heating with ethanol and conc. $H_2SO_4$ vapors with pleasant and fruity smell are given out. What is the compound A and what is the chemical equation involved in this reaction?

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**24.** The molecular formula of an ester is $C_3H_7COOC_2H_5$. Write the molecular formula of the alcohol and the acid from which it might be prepared.

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

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Exercise

**1.** Name the element whose on eof the allotropic forms ius buckminsterfullerenc e

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

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**3.** State whether the following statement is true or false:

Diamond and graphite are the covalent compounds of carbon element(c )

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**4.** Name the scientist who disporoved the vital force therory for the formation of organice compounds

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**5.** Name the element whose allotropic form is graphite.

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**6.** In addition to some propane and ethane , LPG cylinder contain mainly two isomers of another alkane. Name the two isomers and write their condensed structureal formulae.

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**7.** Buckminsterfullerene is a spherical molecule in which 60 carbon atoms are arranged in interlocking hexagonal and pentagonal rings of carbon atoms.

(a) How many hexagons of carbon atoms are resent in one molecule of Buckminsterfullerene?

(b) How many pentagons of carbon atoms are present in one molecule p of Buckminsterfullerene?

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**8.** Name the black substance of pencil will the current flow through the electrical circuit when we use the sharppened ends of the pecil to comp[lete the circute ?

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**9.** How does graphite act as a lubricant?

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**10.** Name the hardest natureal substance known

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**11.** Which of the following molecule is called buckninsterullerence?

$C_{90}, C_{60}, C_{70}, C_{120}$

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**12.** Give the name an d structural formula of an alky group

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**13.** Write the elcrron dot sturcutes ofr : (i) ethane ,(ii) ethene , and (iii) ethyne.

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**14.** Give the IUPAC name of the following compound :

$C_2H_6$

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**15.** Write the structural formula of propene.

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**16.** Write the structural formula of propyne.

Watch Video Solution

**17.** Write the structural formula of butane.

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**18.** What do you call the compounds having the same molecualr formula but different sturctural arrangements of atoms ?

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**19.** Wirte the names of any two isomers represented by the moleucular formula $C_5H_{12}$

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**20.** Write down (i) structural formula, and (ii) elecron dot formula, of any one isomer of hexane $(C_6H_{14})$ other than n hexane.

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**21.** Fill in the following blanks with suitable words:

(a) The form of carbon which is know as black lead is .....

(b) The form of carbon which is used as a lubricant at high temperature is.....

(c ) compounds of carbon with hydrogen alone are called .....

(d) $C_nH_{2n}$ is the general foumula of ..... hydrocarbons.

(e ) Hydrocarbons haveing the general formula $C_nH_{2n-2}$ are called .....

(f) Ethyne and ethyne are examples of .....hydrocatbons.

(g) Ethyne has ..... carbon hydrogen single bonds.

(h) carbon compounds have usually ..... melting p[oints and boiling points beacuse they are..... in nature.

(i) The prperty of carbon atoms to form along chains in compounds is called.....

(J) The general formaula $C_nH_{2n}$ for cycloalkanes is the same as that of .....

(k) The IUPAC name of ethylene is .....

(l) The IUPAC name of acetyleneis .....

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**22.** (a) What is the atomic number of carbon . Write its electronic configuration.

(b) What type of chemical bonds are formed by carbon? Why?

(c ) Name the three allotropic forms of carbon.

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**23.** (a) what is the gneeral name of all the compounds made up opf carbon and lhydrogen ?

(b) why does carbon form compunds mainly by covalent bonding ?

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**24.** (a) What is meant by catenation? Name two element which exhibit the property of catenation

(b) Write the names and structural formula al all the possible isomers of hexane.

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**25.** (a) What is buckminsterfullerene? How is it related to diamond and graphite?

(b) Why is diamond used for making cutting tools (like glass cutters) but graphite is not?

(c) Why is graphite used for making dry cell electrodes but diamond is not?

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**26.** (a) Give the general formula of an : (i) alkane,(ii) alkene,(iii) alkyne.

(b) Classify the following compounds as alkanes , alkanes and alkynes:

$C_2H_4, C_3H_4, C_4H_8, C_5H_{12}, C_3H_8, C_6H_6$

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**27.** (a) Friedrich Wohler converted an inorganic compound into an organic compound in the laboratory

(i) Give the name and formula of inorganic compound .

(ii) Write the name and formula of organic compound formed .

(b) Give the molecular formula of butane and mention the name of its two isomers. Name one fuel which contains both these isomers.

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**28.** Give IUPAC names and formulae of an orgnaic compound containign single bonds and the other containing a tirple bond.

(b) which of the folloiwing is the molecula formula of benzene?

$C_6H_6, C_6H_{10}, C_6H_{12}, C_6H_{14}$

(c ) Which of the two has a bracnhed chain : isobutane or normal butane?

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**29.** Catenaion is the ability of an atom to form bonds with other atoms of the same elemenet . It is exhibited by both carbon and silicon. Compare the ability of cateneation of the two elements .Give reasons.

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**30.** (a) How can diamonds be made artificailally? How do synthetic diamonds differ from natureal ones?

(b) Give any two differences between the properites of diamond and graphite . What causes these differnces?

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**31.** (a) why does the element carbon from a large . Number of carbon compounds

(b) write down the structures and anmes of two isomers of butane $(C_4H_{10})$

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**32.** (a) Give the name and structural formula of one member each of the following

(i) alkane ,(ii) alkene , (iii)alkyne ,(iv) cycloalkane

(b) Give the common name of (i) ethyne amd (ii) thene

(c ) Write the molecular formula and structrue of benzene

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**33.** (a) What is the unique property of carbon atom? Hopw is this property helpful to us ?

(b) Explanin why , diamond is hard while graphite is soft (though both are made of carbon atoms).

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**34.** (a) Giving their structures , state the number of single bonds , double bonds and triple bonds (if any) in the following compoiunds:

(i) ethyne , (ii) ethene ,(iii) benzene

(b) write themolecular formula and structure of cyclohexane. How many covalent bonds are there in a molecule of cyclohexane?

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**35.** (a) Write t wo points of difference in the structures of diamond and graphite

(b) Explain why graphite can be used as a lubricant but diamond cannot.

(c ) Explain why , diamond can be used in rock drilling equipment but graphite cannot.

(d) Stae one use of diamond which depends on its 'extraordinary brilliance ' and one use of graphite which depends on its being black and quite soft.

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**36.** (a) What is diamond ? Of what substance is diamond made?

(b) Describe the structure of diamond. Draw a simple diagram to show the arrangement of carbon atoms in diamond.

(c) Explain why, diamond has a high melting point

(d) State any two uses of diamond.

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**37.** (a) What is graphite? Of what substance is graphite made?

(b) Describe the structure of graphite with the help of a labelled diagram.

(c) Why is graphite a good conductor of electricity but diamond is a non conductor of electricity?

(d) State any two uses of graphite.

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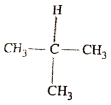
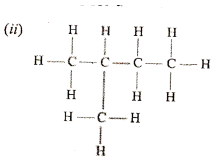
**38.** (a) Explain the term isomers. Give one example of isomers.

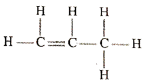
(b) Write (i) structural formula and (ii) electron dot structure of any one isomer of n heptane $C_7H_{16}$)

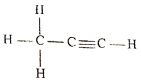
(c) Write IUPAC name of the compound having the formula n-$C_4H_{10}$

(d) Give the IUPAC names for the following :









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**39.** (a) What are hydrocarbons? Explain it with examples.

(b) Explain the meaning of saturated and unsaturated hydrocarbons with

one examples each.

(c) Give the names and structural formulae of one saturated cyclic hydrocarbon and one unsaturated cyclic hydrocarbon.

(d) Give one example of a hydrocarbon , other than pentane having more than three isomers.

(e) How many isomers of the following hydrocarbon are possible?

(i) $C_3H_8$, $(ii)C_4H_{10}$, $(iii)C_5H_{12}$, $(iv)C_6H_{14}$

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**40.** Buckminsterfullerene is an allotropic form of

A. phosphorus

B. fluorine

C. carbon

D. sulphur

**Answer: C**

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**41.** Out of the following pairs of compounds the unsaturated compounds are :

A. $C_2H_6$ and $C_4H_6$

B. $C_6H_{12}$ and $C_5H_{12}$

C. $C_4H_6$ and $C_6H_{12}$

D. $C_2H_6$ and $C_4H_{10}$

**Answer: C**

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**42.** Pentane has the molecular formula $C_5H_{12}$. It has

A. 5

B. 12

C. 17

D. 16

**Answer:**

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**43.** The property of self combination of the atoms of the same element to form long chains is known as :

A. protonation

B. carbonation

C. coronation

D. catenation

**Answer: D**

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**44.** A cyclic hydrocarbon having carbon- carbon single bonds as well as carbon- carbon double bonds in its molecule is :

A. $C_6H_{12}$

B. $C_6H_{14}$

C. $C_6H_6$

D. $C_6H_{10}$

**Answer: C**

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**45.** The hydrocarbon $2-$ methylbutane is an isomer of :

A. $n-$ pentane

B. $n-$ butane

C. propane

D. iso-butane

**Answer: A**

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**46.** An unsaturated hydrocarbon having a triple covalent bond has 50 hydrogen atoms in its molecule. The number of carbon atoms in its molecule will be

A. 24

B. 25

C. 26

D. 28

**Answer: C**

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**47.** An alkyne has seventy five carbon atoms in its molecule. The number of hydrogen atoms in its molecule will be :

A. 150

B. 148

C. 152

D. 146

**Answer: B**

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**48.** A diamond toothed saw is usually used for cutting :

A. steel girders

B. logs of wood

C. marble slabs

D. asbestos sheets

**Answer: C**

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**49.** The organic compound prepared by wholer from an inorganic compound called ammonium cyanate was :

A. glucose

B. urea

C. uric acid

D. vinegar

**Answer: B**

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**50.** One of the following is notan allotrope of carbon . This is :

A. diamond

B. graphite

C. cumene

D. buckninistrefullerene

**Answer: C**

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**51.** The number of carbon atoms in the organic compound named as 2,2-dimethylpropane is :

A. two

B. five

C. three

D. four

**Answer: B**

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**52.** The pair of elements which exhibits the properity of catenation is :

A. Sodium and silicon

B. chlorine and carbon

C. carbon and sodium

D. silicon and carbon

**Answer: A::D**

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**53.** A saturated hydrocarbon has fifty hydrogen atoms in its molecule . The number of carbon atoms in its molecule will be:

A. twenty five

B. twenty four

C. twenty six

D. twenty seven

**Answer: B**

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**54.** A hydrocarbon having one double bond has 100 carbon atoms in its molecule . The number of hydrogen atoms in its molecule will be:

A. 200

B. 198

C. 202

D. 196

**Answer: A**

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**55.** The hydrocarbon which has alternate single and double bonds arranged in the from of ring is :

A. cyclobutane

B. benzene

C. butene

D. hexene

**Answer: B**

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**56.** Which of the following cannot exhibit isomerism ?

A. $C_4H_{10}$

B. $C_5H_{12}$

C. $C_3H_8$

D. $C_6H_{14}$

**Answer: C**

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**57.** Lead pencil is made up of .....

A. lithium

B. charcoal

C. lead

D. graphite

**Answer: A::D**

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**58.** The number of isomers formed by the hydrocarbon with molecular formula $C_5H_{12}$ is :

A. 2

B. 5

C. 3

D. 4

**Answer: C**

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**59.** The number of carbon atoms joined in a spherical molecule of bukminsterfullerence is :

A. fifty

B. sixty

C. seventy

D. ninety

**Answer: B**

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**60.** A solid element X has four elecrtrons in the outermost shell of its tom .An allotrope Y of this element is used as a dry lubricant in machinery and also in making pencil leads .

(a) What is element X?

(b) Name the allotrope Y.

(c ) State whether allotrope Y is a good conductor or non- conductor of electricty .

(d) Name one use of allotrope Y (opther than lubrication and pencil leads)

(e) Name two other allotropes of element X.

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**61.** Two organic compounds A and B have the same molecular formula $C_6H_{12}$ .Write the names and structural formulae:

(a) if A is a cyclic compound

(b) if B is an open chain compound

(c ) Which compound contains single bonds as well as a double bond?

(d) which compound contains only single bonds?

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**62.** The solid element A exhibits the property of catenation. It is also present in the form of a gas B in the air which is utitled by plants in photosythesis An allotrope C of this element is used in glass cutters

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**63.** An element E exists in three allotropic forms A, B and C. In allotrope A, the atoms of element E are joined to form spherical molecules .In allotrope B,each atom of element E is surrounded by three other E atoms to form a sheet like structure . In allotrope C, each atom of element E is surrounded by four other E atoms to form a rigid structrue.

(a) Name the element E

(b) What is allotrope A?

(c )what is allotrope B?

(d) What is allotrope C?

(e) Which allotrope is used in making jewellery?

(f) Which allotrope is used in makeing anode of a dry cell?

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**64.** You are given the following molecular formulae of some hydrocarbons:

$(C_5H_8, C_7H_{14}, C_6H_6, C_5H_{10}, C_7H_{12}, C_6H_{12})$

Which formula represents cyclohexane as well as hexene?

(b) Which formula represents benzene?

(c) Which three formulae represent open chain unsaturated hydrocarbons having double bonds?

(d) Which two formulae represent unsaturated hydrocarbons having triple bonds

(e) Which three formulae can represent cyclic hydrocarbons?

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**65.** Which of the following compounds can have a triple bond?

$C_2H_4, C_3H_4, C_3H_6$

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**66.** Write the molecular and strucatural formula of a cyclic hydrocarbon whose molecule contains 8 atoms of carbon.

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**67.** What is the molecular formula and structrual formula of a cyclic hydrocabon whose one molecule contains 8 kl hydrogen atoms?

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**68.** Write the molecular fromula of : (i) an alkane (ii) an alkne, and ,(iii) an alkyne, each having 20 carbon atoms.

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**69.** Which of the following compounds can have a double bond?

$C_4H_{10}, C_5H_8, C_5H_{10}$

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**70.** Which of the following hydrocarbons is unsaturated ?

$C_3H_4, C_2H_6$

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**71.** Write the molecular formula of ethanol

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**72.** What is the next higher homologue of methanol $(CH_3OH)$?

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**73.** Identify the functional group present in the following compound and name it according to IUPAC system:

$CH_3OH$

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**74.** Give it he common name and IUPAC name of the simplest aldehyde.

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**75.** What is the common name of methanal ?

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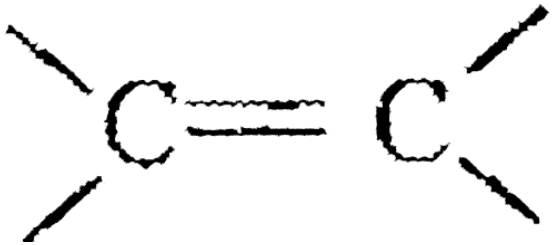
**76.** Write the names of the following functional groups:

(a) $-C \equiv C-$ (b)

(b) 

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**77.** Name the simplest ketone.

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**78.** What is the common name of propanone?

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**79.** Write the IUPAC names of the following :

$(i) CH_3COCH_3$, $(ii) CH_3COCH_2CH_3$

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**80.** Write the name and chemical formula of the simplest organic cid .

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**81.** Write the IUPAC names , common names and formulae of the first two memebers of the homologous seris of carboxylic acids.

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**82.** What is the common name of : (a) methanoic acid , and (b) ethanoic acid?

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**83.** Draw the structures for the following compounds:

(a) Ethanoic acid ,(b) Propanoic acid

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**84.** Give the common names and IUPAC names of the following compounds:

(a) $HCOOH$ (b) $CH_3COOH$

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**85.** Give the name and structural formula of one homologue of HCOOH.

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**86.** Write the froumulae of :(a) mehanoic acid , and,(b) ethanic acid.

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**87.** Give the common name and IUPAC name of $C_2H_5OH$.

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**88.** Give the IUPAC name of the following compound:

$C_3G_7OH$

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**89.** Give the name and structrual fomula of one member of the following Alcohols

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**90.** Give IUPAC names of the following compouinds:

(a)$C_4G_9OH$, $(b)C_5H_{11}OH$

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**91.** What is the common name of methanol?

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**92.** What is the difference between tow consecutive homologues:

(i)in terms of molecular mass?

(ii) in terms of number and kind of atoms per molecule?

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**93.** What tyupe of fuels:

(a) burn with a flame?

(b)burn without a flame?

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**94.** State whether the following statements is true or false:

The minimum number of carbonn atoms in a ketone molecule is two.

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**95.** Fil in the following blanks with suitable words:

(a) The next higher homologue of ethanol is.....

(b) The next homologue of ethanol is.....

(c ) The next higher homologue of ethane is.....

(d) The functional group present in ehanol is.....

(e) Organic compoiunds having $-\overset{O}{\overset{||}{C}}-OH$ functional group are known as.....

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**96.** (a) Give the general name of the calss of compounds having the general formula $C_nH_{2n-2}$.Write name iof the first member of this homologous series.

(b) The general formula of a homologous series of carbon compounds is $C_nH_{2n}$. Write the molecualr formulae of the second and fourth memebers of the series . (c ) Write the molecular formulae of the third and fifth memebers of hmo,ogous series of carbon compounds represented by the general formula $C_nH_{2n+2}$

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**97.** (a) Give the names and structural formulae of the next two higher homologues of methane

(b) The molecular formula of a hydrocarbon is $C_{10}H_{18}$ . Name its homologous series.

(c) Select the hydrocarbons which ae members of the same homologues series . Give the name of each series

$C_5H_{10}, C_3H_8, C_6H_{10}, C_7H_{12}, C_8H_{16}$

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**98.** (a)Give the molecular formula of one homologue of each of the following :

(i)$C_3H_6, (ii)C_2H_6, (iii)C_2H_2$

(b) What is the difference in the molecular mass of any two adjacent homologues?

(c ) By how many carbon atoms and hydrogen atoms do any two adjacent homologues differ?

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**99.** (a) Write the formula of the functional group present in carboxylic acids.

(b) Name the functional group present in $CH_3 - CH = CH_2$

(c) Name the functional groups present in the following compounds:

(i) $CH_3CHO$ (ii) $CH_3CH_2COOH$ (iii) $CH_3COCH_3$ (iv) $CH_3CH_2CH_2OH$

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**100.** (a) Write the IUPAC name and common name of $CH_3Cl$

(b) Draw the structure of chlorobutane.

(c) Draw the structure for bromopentane. Are structural isomers possible for bromopentane?

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**101.** (a) Write the name and formula of an organic compound conatining a ketone functional group.

(b) Wirte the names and formulae for the firest three memebers of the homologus series of chloroalkanes.

(c ) How would you name the following compound?

$CH_3$

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**102.** (a)What is the general name of the organic compounds containing the $-\overset{O}{\overset{||}{C}}-$ group?

(b) Which of the following compounds a carboxylic acid group?

$CH_3OH, CH_3COOH, CH_3CHO, CH_3COCH_3$

(c ) How would you name the following compound?

$H-\overset{H}{\overset{|}{C}}=O$

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**103.** (a) Define a homologous series . Give the name and structureal formula of one homologue of the of the following:

$CH_3OH$

(b) Write the molecular formiula of the third member of the homologous series of carbon compounds with general formula $C_nH_{2n+1}OH$.

(c ) Name any two fossil fuels.

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**104.** (a) Draw the structures for the following compounds:

(i) Propanone , (ii) Butanone

(b) Write the IUPAC names of the following:

(i)

$HCHO, (ii)CH_3CHO, (iii)CH_3CH_2CHO, (iv)CH_3CH_2CH_2CHO$

(c ) Which functional group is likely to be present in an organic compound having the molecular formula $C_4H_{10}O$? Write the formula of the organic compound.

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**105.** (a) Match the formulae in group A with appropriate names from groupB:

Group A: $CH_3COOH, CH_3CHO, CH_3OH$

Group B: Ethanol, Methanol, Ethanal, Ethanoic acid

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**106.** (a) Which functional group do you think can be presetn in an organic compound having the molecular formula $C_5H_{10}O_2$? Write the formujla of the organic compound.

(b) ive one explae each of the compounds having the following functional groups:

(i) Aldehyde group , (ii) Alcohol gorup ,(iii) Crboxylic acid group ,(iv) Halo group

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**107.** (a) What is the molecular formula and structure of the alchol which can be thought to be derived from pentane?

(b) Write the names of the following functional goups :

$-CHO, (ii) -OH, (iii) -COOH, (iv) -X$

(c ) What makes the candel flame yellow and luminous?

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**108.** (a) What is a homologous series ? Explain with an example.

(b) State two characteristics of a homologous series .

(c ) The molecular formula of an organic compound fis $C_{18}H_{36}$ .Name its homologous series

(d) Select the hydrocarbons which belong to the same homologous series . Give the name of each series

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

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**109.** (a) What is meant by a functional group? Explain with an example

(b) Write three common functional groups present in organic compounds. Give their symbols formula

(c) Name the function groups present in the following compounds:

(i)

$CH_3COOH, (ii)CH_3CH_2CHO, (iii)C_2H_5OH, (iv)CH_3COCH_2CH_3$

(d) Name the functional group which always occurs in the middle of a carbon chain.

Draw the structures for the following compounds:

(i) Ethanal, (ii) Propanal,(iii) Butanal,(iv) Pentanal

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**110.** (a) What happens when carbon burns in air ? Write the chemical equation of the reaction which takes place.

(b) Why are coal and petroleum called fossil fuels ?

(c) Explain how coal was formed in the earth.

(d) Describe how petroleum was formed in the earth

(e) Name a fossil fuel other than coal and petroleum.

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**111.** The molecular formula of a homologue of butane is :

A. $C_4H_8$

B. $C_3H_6$

C. $C_4H_6$

D. $C_5H_{12}$

**Answer: D**

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**112.** One of the following molecular formula can represent two organic compounds having different functional groups. This molecular formula is

:

A. $C_5H_{12}O$

B. $C_5H_{10}O$

C. $C_5H_{10}O_2$

D. $C_5H_{12}$

**Answer: B**

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**113.** The number of carbon atoms present in the molecule of fifth member of the homologous series of alkynes is :

A. Four

B. Five

C. Six

D. seven

**Answer: C**

Watch Video Solution

**114.** One of the following burns without producing a flame. This is :

A. wood

B. charcoal

C. LPG

D. candle

**Answer: B**

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**115.** The functional group which always occurs in the middle of a carbon chain is :

A. alcohol group

B. aldehyde group

C. carboxyl group

D. ketone group

**Answer: D**

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**116.** The molecular formulae of some organic compounds are given below.

Which of these compounds contains an aldehyde group ?

A. $C_6H_8O$

B. $C_3H_6O_2$

C. $C_3H_6O$

D. $C_3H_7Cl$

**Answer: C**

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**117.** The organic compounds which are isomeric with one another are:

A. Alcohols and aldehydes

B. aldehydes and carboxylic acids

C. Ketones and aldehydes

D. Alcohols and ketones

**Answer: (c)**

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**118.** The fuel which usually burns with a blue flame is:

A. Coal

B. LPG

C. candle wax

D. Kerosene (in lamp)

**Answer: (b)**

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**119.** Which of the following burns by producing a yellow luminous flame ?

A. natural gas

B. coke

C. wax

D. charcoal

**Answer: C**

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**120.** The molecular formula of an organic compound is $C_{48}H_{94}$. This compound belongs to the homologous series of:

A. Alkenes

B. aldehydes and carboxylic acids

C. alkynes

D. alkanes

**Answer: (c )**

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**121.** One of the following molecular formulae represents a ketone .This formula is :

A. $C_5H_{12}O$

B. $C_6H_{12}O_2$

C. $C_6H_{14}O$

D. $C_6H_{12}O$

**Answer: (d) Ketone group, -CO-**

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**122.** Which one of the following is not a fossil fuel ?

A. petrol

B. coke

C. charcoal

D. coal

**Answer: C**

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

A. $-COOH$

B. $-CHO$

C. $-CO-$

D. $-OH$

**Answer: (c )**

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**124.** The molecular formula of the third member of the homologous series of ketones is :

A. $C_4H_8O$

B. $C_3H_6O$

C. $C_5H_{10}O$

D. $C_6H_{12}O$

**Answer: (c )**

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**125.** The functional group present in propanal is :

A. $-OH$

B. $-COOH$

C. $-CO-$

D. $-CHO$

**Answer: D**

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**126.** An organic compound having the molecular formula $C_3H_6O$ can exist in the form of two isomers A and B having different functional groups. The isomer A is a liquified which is used as a solvent form nail polish. The isomer B is also liquified. An aqueous solution of one of the lower homologues of B is used for preserving biological specimens in the

laboratory

(a) What is compound A?

(b) Write the electron dot structure of A.

(c) What is compound B?

(d) Write the electron dot structure of B.

(e) Name the lower homologue of compound B which is used in preserving biological specimens.

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**127.** A hard material X which is mined from the earth is used as a houselold fuel and also for the generation of electricity at Thermal power Stations. A soft material Y is also used as a fuel in the form of candles .A gaseous material Z which occurs alongwith petroleum is uncreasingly being used as a fuel in running vehichles in its compressed from .

(a) What are materials X,Y andZ?

(b)When materials X,Y and Z are burned separately:

(i)Which materials burns by producing a yellow , luminous flame?

(ii) Which material ultimately burns without producing a flame?

(iii) Which material can burn in a gas stove buy producing a blue flame?

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**128.** Three organic compounds A,B and C have the following molecular formulae:

A.$C_4H_8O_2$

B. $C_4H_{10}O$

C. $C_4H_8O$

(a) Which compound contains an alcohol group ? Write its name and structural formula.

(b) Which compound contains a carboxyl group? Write its name and structural formula

(c) Which molecular formula can represent an aldehyde as well as a ketone ? Write the names and structural formulae of the aldehyde and ketone represented by this molecular formula.

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**129.** A colourless organic liquied X of molecular formula $C_2H_4O_2$ turns blue litmus lto red . Another colourless oranic liquid Y of molecular formula $C_3H_6O$ has no action on any litmus but it is used as a nail polish remover. A yet another colourless organic liquid Z of molecular formula $C_2H_6O$ has also no action onlitmus but it us used in tincture of iodine.

(a) Name the liquid X. To which homologous series does it belong? Give the name of another memebver of this homologous series .

(b) Name the liquid y. To which homologous series doeds it belong ? Wirte the name of naother memeber of this homologous series

(c ) Can you name an organic compound having the same molecular formula as liquid Y but which belongs to a different homologus series? What is this homologous series ?

(d) Name the liquid Z.To which homologous series does it belong ? Write the name of another member of this homologous series.

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**130.** You are given an organic compound having the molecular $C_3H_8$ Give the name and formula of the compound formed:

(a) When one H atoms of $C_3H_8$ is replaced by a CI atom .

(b) When one H atom of $C_3H_8$ is replaced by OH group.

(c) When one H atom of $C_3H_8$ is replaced by a CHO group.

(d) When two H atoms joined to the middle carbon atom of $C_3H_8$ replaced by one O atom.

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**131.** Name the gas evolved when ethanoic acid is added to sdium crbonate.How would you prove the presence of this gas?

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**132.** Which of the following will give brisk effervescence with sodium hydrogenncarbonate and why ?

$CH_3COOH, CH_3CH_2OH$

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**133.** Name the functional group present in an organic compound which gives brisk effervescence with $NaHCO_3$

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**134.** Name the hydrocarbon formed when ethanol is heated woith conc. $H_2SO_4 \text{at} 170^\circ C$? What is this reaction known as?

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**135.** Why does ethyne (acetylene) burn with a sooty flame?

Watch Video Solution

**136.** Name the product formed when hydrogen is added to ethene.

Watch Video Solution

**137.** Explain why ethene decolourises bromine water whereas ethane does not.

Watch Video Solution

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

Watch Video Solution

**139.** State two disadvantages fof incomplete combustion.

Watch Video Solution

**140.** What happens when (given chemical equation):

Sodium rects with ethanol (ethyl alcohol)

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**141.** Describe one reaction of ethanol.

Watch Video Solution

**142.** Name one liquid carbon compound which is being used as an additive in petrol in some countries.

Watch Video Solution

**143.** What are the raw materials required for making soap in a laboratory (or home)?

Watch Video Solution

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

Watch Video Solution

**145.** Describe a test for carboxylic acids.

Watch Video Solution

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

Watch Video Solution

**147.** Explain why alkanes are excellent fuels.

Watch Video Solution

**148.** Name one chemical compound which can be used to ditinguish between ethanol and thanoic acid

Watch Video Solution

**149.** Complete the collowing equations:

(a) $CH_3CH_2OH(conc.\ H_2SO_4) \rightarrow (170^\circ C)$

(b) $CH_3COOH + C_2H_5OH(conc.\ H_2SO_4 \rightarrow$

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**150.** Complete and balance the following equations:

(a) $CH_4 + O_2 \rightarrow$

(b) $CH_4 + Cl_2 \xrightarrow{\text{Sunlight}}$

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**151.** Fill in the following blanks with suitable words:

(a) The process of fburing of a hydrocarbon in the presence pof air to give $CO_2H_2O$ heat and light is known as.....

(b) The sodium salt of a long chain fatty acid is called .....

(c ).....is better than soap for fwashing clothes when the water is hard.

(d) The organic acid present in vinegar is .....

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**152.** which of the following hydrocarbons will give substitution reactions and why?

$CH_4, C_3H_6, C_3H_8, C_4H_6, C_5H_{12}, C_5H_{10}$

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**153.** Which of the following willl give addition reactions and why ?

$C_4H_{10}, C_2H_6, C_2H_4, CH_4, C_3H_8, C_3H_4$

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**154.** (a) Write the chemical eqution of the reaction which takes place during the burining of ethanol in air.

(b)Why is ethanol used as a fuel ?

(c ) State two uses of ethanol (other as a fuel).

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**155.** (a) What happens when propanioic acid is warmed with methanol in the presence of a few drops of concentrated suphuric acid? Write equation of the reaction involved .

(b) What change will you oobserve if you test soap solution with a litmus paper (red and blue)? Give reason for your observation.

(c ) What is meant by denatured alcohol ? What is t he need to denature alcohol?

Watch Video Solution

**156.** (a) How would you test fopr an alcohol ?

(b) Give the harmful effects of dringking alcohol .

(c ) Explain why, methanol is much mopre dangerous to drink than ethanol .

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**157.** How would you convert:

(a) ethanol into ethene?

(b) propanol into propanoic acid? Name the process in each case and write the equations of the reaction involved

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**158.** Give reasons for the following observatins:

(a) Air holes of a gas burner have to be adusted when the vessels being heated get blackened by the flame.

(b) Use of synthetic detergents causes pollution of water.

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**159.** (a) What would be oberved on adding a 5% alkaline potassium permanganate solution drop by drop to some warm thanol in a test tube? Wrote the name of the compound formed during the chemical reation Also write chemical equation of the reaction which takes place.

(b) How would you distinguish experimentally between an alcholhol and a carboxylic acid on the basis of a chemical property?

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**160.** Name the functional group of organic compounds that can be hydrogenated .With the help of a suitable explae explain the process of hydrogenation , mentioning the conditions of the reaction and any one change in physical property with the formation of the product. NAme any one natureal source of organic compounds that are hydrogenated

Watch Video Solution

**161.** (a) Name the gas evolved when ethanol reacts with sodium.

(b) What type of compound is formed when a carboxylic acid reacts with an alcohol in the presence opf conc $H_2SO_4$?

(c ) What will yuou observe when dilute ethanoic acid and dilute hydrocholoiric acid are put on universal indicatior paper , one by one? what does it show?

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**162.** (a) What type of compiound is $CH_3COOH$?

What substane should be oxideised to prepare $CH_3COOH$?

(c ) What is the physical state of $CH_3COOH$?

(d) State one advantage of soaps over detergents .

Watch Video Solution

**163.** (a) What happens when ethanol reacts with ethanoic acid in the presence of a little of concentrated suphuric acid ? Wite equation of the

reaction involved.

(b) What happens when ethanol is heated with concentrated suphuric acid at $170^{\circ} C$? Write the equation f the reaction which takes place.

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**164.** (a) What happens when ehanol is oxidised with alkaline potassium permanganate (or acidified potassium dichromate)? Write the equation of the reaction involved.

(b) Choose those comounds from the folloiwing which can trun blue litmus solution red:

$HCHO, CH_3COOH, CH_3OH, C_2H_5OH, HCOOH, CH_3CHO$

Give reasons for your choice

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**165.** (a) Explain the process of preparation of soap in laboratory.

(b) why is common salt (sodium chloride) added during the preparation

of soap?

(c ) Why is soap not suitable for washing clothes when the water is hard?

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**166.** (a) What happens when methane (natural gas) burn in air ? Write the chemical equation of the rection involved

(b)What happens whsen thanoic acid reacts weith sodium carbonate ? Write chemical equation of the reaction involved.

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

Watch Video Solution

**167.** (a) Describe, giving equation , a chemical reaction which is characteristic of saturated hydrocarbons( or alkanes)

(b) what is an oxidising agent ? Name two oxidising agents which can oxidsise ethanol to ethanoic acid.

(c ) Describe iobe rection of a crboxylic acid.

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**168.** (a) Write names and formaulae of hydrocarbons containing a single and a double bond (one expale for each). Give one characteristic chemical property of each.

(b) What is a detergent? Name one detergent.

(c ) why have detergents replaced soap as a washing agent?

Watch Video Solution

**169.** (a) How does ethanoic acid react with sodium hydrogencarbonate? Give equation of the reaction which takes palce.

(b) Why are carbon and its compounds used as fuels for most aplications?

(c ) Which of the two is better for washing clothes when the water is hard: soap or detergent? Give reason for your answer.

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**170.** (a) What is meant by a substitution reaction ? Give an example (with equation ) of the substitution reaction of an alkane.

(b) How is soap made? Write a word equation involved in soap making.

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**171.** (a) How is ethanoic acid obtained from ethanol? Write down the chemical equation of the reaction involved.

(b) How would you distinguish between ethanol and thanooic acid by chemical test?

(c ) Explain the formation of scum when hard water is treated with soap.

Watch Video Solution

**172.** (a) What happens whsen methane reats with chloringe? Give equation of the reation which takes place.

(b) What is hydrogenation? What is its industrial application ?

(c ) Give any two differences betweeen soaps and detergents.

Watch Video Solution

**173.** (a) What happens when ethanoic acid reacts with sodium hydroxide ? Write equation of he reaction involved

(b) What happens when vegetable oils are hydroenated? Name the cataylst used.

(c )What is the advantage of detergents over soaps for washing clothes ? Al,so state one disadvantage.

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**174.** (a) An organic compound X of molecular formula $C_2H_4O_2$ gives brisk effervescence with sodium hydrogencartbonate. Give the name and formula of X.

(b) A mixture of ethyne (acetylene) and oxygen is burnt for welding . Can you tell why a mixtrue of ethyne and air is not used

(c ) Name a chemical rection which is characteristic of unsatureated hydrocarbons (like alkneses and alkynes).

Watch Video Solution

**175.** (a) What is menat by an addition rection? Give an example (with equation ) of an addition reaction of an alkene.

(b) What is added to groundnut oil when it is to be converted to vanaspati ghee?

(c ) Which of the tow is better for our health : butter or vegetable oil ? why?

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**176.** (a) When ethanoic acid reacts with sodium hydrogencarbonate then a salt X is formed and a gas Y is evolved. Name the salt X and gas Y. Describe an activity with the help of a labelled diagram of the apparatus used to prove that the evolved gas is the one which you have named . Also write the chemical equation of the reaction involved

(b) Give any two uses of ethanoic acid.

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

(b) State any two uses of esters.

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**178.** (a) Name the reaction which is usually sued in the conversion of vegetable oils to fats. Explain the reaction involved in detail. Write a chemical equation to illustrate your answer

(b) What is saponification? Write the chemical equation of the reaction involved in this process. Name all the substances which take part in this process and also those which are formed.

(c) Why does micelle formation take place when soap is added to water ? Will a micelle be formed in other solvents like ethanol also?

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**179.** (a) What is a soap ? Name one soap.

(b) Describe the structure of a soap molecule with the help of a diagram.

(c) Explain the cleansing action action of soap. Draw diagrams to illustrate your answer.

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

A. the food is not cooked completely

B. the fuel is not burning completely

C. the fuel is wet

D. the fuel is burning completely

**Answer: B**

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**181.** When ethanol is heated with alkaline potassium permanganate solution it gets converted in to ethanoic acid. In this reaction, alkaline potassium permanganate acts as :

A. reducing agent

B. oxidising agent

C. catalyst

D. dehydrating agent

**Answer: B**

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**182.** When ethanol is heated with concentrated sulphuric acid at $170^{\circ} C$ it gets converted in to ethene .In this reaction, concentrated sulphuric acid acts as :

A. oxidizing agent

B. catalyst

C. dehydrating agent

D. reducing agent

**Answer: C**

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**183.** Oils on treating with hydrogen in the presence of palladium or nickel catalyst, it forms fats. This is an example of

A. anodising reaction

B. substitution reaction

C. displacement reaction

D. addition reaction

**Answer: D**

Watch Video Solution

**184.** The soap molecule has a

A. hydrophilic head and a hydrophobic tail

B. hydrophobic head and a hydrophilic tail

C. hydrophobic head and a hydrophobic tail

D. hydrophilic head and a hydrophilic tail

**Answer: (a)**

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**185.** Chlorine reacts with saturated hydrocarbons at room temperature in the

A. absence of sunlight

B. presence of sunlight

C. absence of moisture

D. presence of $H_2SO_4$

**Answer: B**

Watch Video Solution

**186.** In a soap micelle, the soap molecules are arranged radially with :

A. ionic ends directed towards the center and hydrocarbon ends directed outwards

B. hydrocarbon ends directed towards the centre and ionic ends directed outwards

C. both ionic ends and hydrocarbon ends directed towards the centre

D. both hydrocarbon ends and ionic ends directed outwards

**Answer: B**

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**187.** Ethanol reacts with sodium and forms two products. These are

A. sodium ethanoate and oxygen

B. sodium ethanaoate and hydrogen

C. sodium ethoxide and oxygen

D. sodium ethoxide and hydrogen

**Answer: D**

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**188.** Vinegar is a solution of about

A. 5 to 8 percent ethanoic acid in alcohol

B. 5 to 8 percent ethanoic acid in water

C. 50 to 80 percent ethanoic acid in water

D. 50 to 80 percent ethanoic acid in alcohol

**Answer: (b)**

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**189.** One of the following substances is not added to make denatured alchol.This is:

A. methyl alcohol

B. copper suphate

C. chloroform

D. pridine

**Answer: (c )**

Watch Video Solution

**190.** One of the following organic compounds cannot decolorize the red brown color of bromine water .This compound is :

A. $C_{14}H_{28}$

B. $C_7H_{12}$

C. $C_6H_{14}$

D. $C_9H_{16}$

**Answer: (c )**

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**191.** Compounds that give a brisk effervescence with sodium hydrogen carbonate are

A. ethanol

B. vegetable oil

C. vinegar

D. soap solution

**Answer: (c )**

Watch Video Solution

**192.** The chemical which is not required for the preparation of soap in the laboratory is :

A. vegetable oil

B. baking soda

C. caustic soda

D. common salt

**Answer: (b)**

Watch Video Solution

**193.** Which of the following can damage optic nerve leading to blindness, if taken internally?

A. $CH_3COOH$

B. $C_2H_5OH$

C. $NaHCO_3$

D. $CH_3OH$

**Answer: D**

Watch Video Solution

**194.** The usual disease caused by the excessive drinking of alcohol over a long period of time is :

A. diabetes

B. cataract

C. cirrhosis

D. arthritis

**Answer: C**

Watch Video Solution

**195.** Which of the following molecular formula corresponds to ethyl butanoate ester ?

A. $C_5H_{10}O_2$

B. $C_6H_{12}O_2$

C. $C_7H_{14}O_2$

D. $C_8H_{16}O_2$

**Answer: B**

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**196.** A neutral organic compound X of molecualr formula $C_2H_6O$ on oxidation with acidified potassium dichromate gives an acidic compound Y. Compound X reacts with Y on warming in the presence of conc $H_2SO_4$ to give a sweet smelling substance Z.What are X,Y and Z?

Watch Video Solution

**197.** Consider the following organic cpompounds:

$HCHO, C_2H_5OH, C_2H_6, CH_3COOH, C_2H_5CI$

Choose two compounds which can react in the presence of conc. $H_2SO_4$ to form an ester. Give the name and formula of the ester formed.

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**198.** A neutral organic compound is warmed with some ethanoic acid and a littl,e of conc . $H_2SO_4$. Vapours having sweet smell (fruity smell) are evolved. What type of functional group is presetn in this organic compound?

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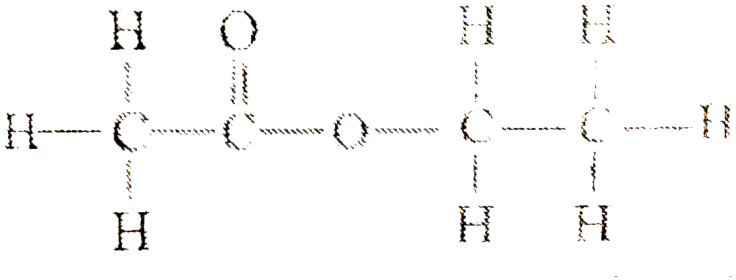
**199.** The structrual formula of an ester is :



Write the formula of the acid and the alchol from which it is formed .

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**200.** Consider the following organci compounds:

$CH_3OH, C_2H_5OH, CH_3COCH_3, CH_3COOH, C_2H_5COOH, C_4H_9COOC$

out of these compounds:

(a) Which compound is most likely to be sweet smelling ?

(b) Which compound on treatement withconc . $H_2SO_4 \text{at} 170^\circ C$ forms an alkene?

(c ) Which compound on repeated chlorination forms chloroform?

(d) Which compound is added to alcohol to denature it?

(e ) Which compound is a constituent of vinegar?

(f) Which compund is used to sterilise wounds and syringes?

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**201.** An organic acid X is a liquid , which of ten freezes during winter time in cold countries having the molecular formula $C_2H_4O_2$. On warming it with methanol in the presence of a few drops of concentrated sulphuric acid, a compound Y with a sweet smell is formed.

(a) Identify X and Y. Also write their formulae showing the functional group present in them.

(b) Write a chemical equation for the reaction involved.

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**202.** An organic compoud A having the molecualr formufla $C_3H_8O$ is a liquid at room temperature .The organic liquid A reacts with sodium metal to evolve a gas which burns causing a little explosion .When the

organic liquid A is heated with concentrated suphuyric acid at $170^{\circ}C$ it forms a compound B which decolourises bromine water. The compound B adds on one molecule of hydrogen in the presence of Ni as catayst to from compound C which gives substitution rections with chlorine.

(a) what is compound A?

(b) what is compound B?

(c ) What type of reaction occurs when A is converted in to B?

(d) What is compound C?

(e ) What type of rection takes place when B is converted in to C?

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**203.** A compound C (molecular formula, $C_2H_4O_2$) reacts with Na metal to form a compounds R and evolves a gas which burns with a pop sound. Compound C on treatment with an alcohol A in the presence of an acid form a sweet smelling compound S (molecular formula, $C_3H_6O_2$). On addition of NaOH to C, it also gives R and water.S on treatment with NaOH solution gives back R and A.

Identify C,R,A,S and write down the reactions involved.

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**204.** Which of the following hydrocarbons can decolourise bromine water and which cannot ? Why ?

$C_6H_{12}, C_6H_{14}, C_6H_{10}$

Watch Video Solution

**205.** A four carbon atoms containing neutral oranic compoud X reacts with sodium metal to evolve a gas which burns with a 'pop' sound . Another foiur carbon atoms containing carbon compoound reacts with sodium hydrogencrbvonate to evolvbe a gas which truns lime water milky when compounds X and Y are heated together in the presence of al little of concentrated suphuric acid then a new compound Z is formed.

(a) What is compound X? Also wrte its formula.

(b) What is compound Y? Also write its formula.

(c ) What is compound Z? Also write its formula.

(d) What type of smell is given by compound Z?

(e ) What is the general name of compunds like Z?

(f) What is the general name of the reaction which takes place between X and Y to form Z?

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

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**207.** What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur? (Hint âˆ’ the eight atoms of sulphur are joined together in the form of a ring.)

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**208.** How many structural isomers can you draw for pentane?

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

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

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**211.** Draw the structures for the following compounds.

(i) Ethanoic acid , (ii) Bromopentane

(iii) Butanone , (iv) Hexanal

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**212.** How would you name the following compounds?

(i) $CH_3 - CH_2 - Br$ , (ii) $H - \overset{\overset{H}{|}}{C} = O$

(iii) $H - \overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}} - \overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}} - \overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}} - \overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}} - C \equiv C - H$

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

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

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**215.** How would you distinguish experimentally between an alcohol and a carboxylic acid?

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**216.** What are oxidising agents?

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

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

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**219.** Ethane with the molecular formula $C_2H_6$ has:

(a) 6 covalent bonds

(b) 7 convalent bonds

(c ) 8 covalent bonds

(d) 9 convalent bonds

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

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

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**222.** Explain the nature of the covalent bond using the bond formation in $CH_3Cl$.

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**223.** Draw the electron dot structures for

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**224.** What is a homologous series ? Explain with an example.

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

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

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

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

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

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**230.** What is hydrogenation? What is its industrial application?

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

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

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**233.** Explain the mechanism of the cleaning action of soaps.

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