CHEMISTRY

BOOKS - MTG IIT JEE FOUNDATION

CARBON AND ITS COMPOUNDS

Illustrations

1. What is vital force theory ? Name the scientist who disproved the vital force theory for the formation of organic compounds.

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2. Give difference between saturated and unsaturated hydrocarbons.

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3. 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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4. 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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5. 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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6. Explain isomerism. State any four characteristics of isomers. Draw the structures of possible isomers of butane, C_4H_{10}.

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7. Define the term functional group. Identify the functional group present in

$$(i)\ H-\overset{\overset{O}{||}}{C}-H \qquad (ii)\ H-\overset{\overset{H}{|}}{\underset{\underset{H}{|}}{C}}-\overset{\overset{OH}{|}}{C}=O$$

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8. Write the name and formula of the first member of the series of carbon compounds having functional group $-\overset{O}{\overset{||}{C}}-OH$.

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9. Butanone is a four-carbon containing compound. Name the functional group present in it.

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10. Write the chemical equations to show what happens when an ester reacts with a base?

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11. Write the chemical equations to show what happens when ethanol reacts with ethanoic acid in the presence of sulphuric acid?

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12. List in tabular form three physical and two chemical properties on the basis of which ethanol and ethanoic acid can be differentiated.

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Solved Examples

1. What is the meaning of functional group in an organic compound ? Give the structural

formula of the functional groups in (i) acetic acid and (ii) ethyl alcohol.

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2. What is homologous series of compounds? List any two characteristics of homologous series.

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3. State the difference between two consecutive homologues of hydrocarbon series.

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4. Give the name and molecular formula of a higher homologue of butane.

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5. Give reasons for the following:

Element carbon forms compounds mainly by covalent bonding.

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6. Give reasons for the following:

Diamond has high melting point.

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7. Give reasons for the following:

Graphite is a good conductor of electricity.

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8. Why does carbon form large number of compounds?

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9. What are hydrocarbons? Give examples

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10. Why are some of the carbon compounds saturated while others are unsaturated compounds?

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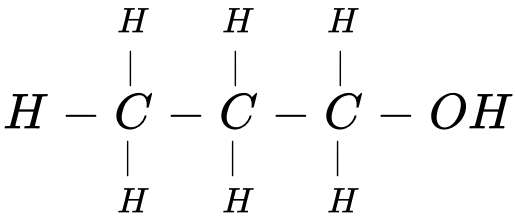
11. Identify and name the functional groups present in the following compounds.



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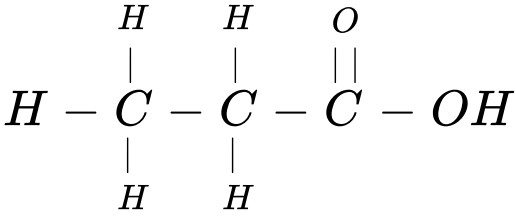

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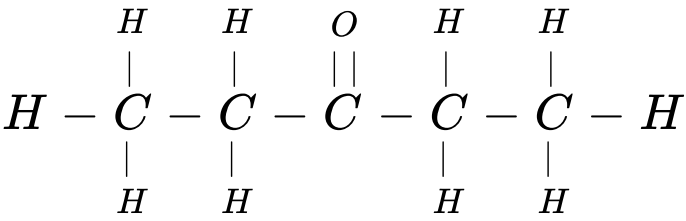
13. Identify and name the functional groups present in the following compounds.



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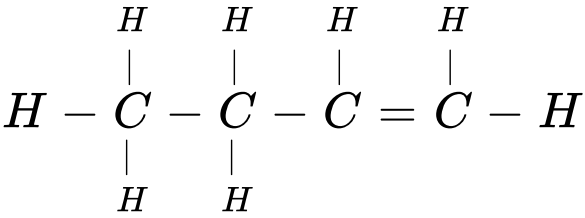
14. Identify and name the functional groups present in the following compounds.



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

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Exercise Multiple Choice Questions

1. The hydrocarbon with the general formula C_nH_{2n+2} is an

A. alkane

B. alkene

C. alkyne

D. unsaturated compound.

Answer: A

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2. Which of the following is an alkane?

A. C_2H_6

B. C_3H_4

C. C_2H_2

D. C_4H_6

Answer: A

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3. The functional group of alcohols is

A. $-\overset{\overset{O}{||}}{C}-O-$

B. $-\overset{\overset{O}{||}}{C}-OH$

C. $-OH$

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

Answer: C

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4. Which of the following formula represents alkenes?

A. C_nH_{2n}

B. C_nH_{2n+2}

C. C_nH_{2n-2}

D. C_nH_{2n+1}

Answer: A

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5. The functional group of carboxylic acid is

A. $-CHO$

B. $-\overset{\overset{O}{||}}{C}-$

C. $-COOH$

D. $-COOR$

Answer: C

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

A. C_2H_6

B. C_3H_4

C. C_3H_8

D. C_3H_6

Answer: B

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7. An alkyne has 8 carbon atoms. The number of hydrogen atoms in it are

A. 8

B. 16

C. 18

D. 14

Answer: D

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8. The vital force theory was propounded by

A. Berzelius

B. Wohler

C. Lavoisier

D. Lewis.

Answer: A

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9. Indentify the unsaturated compounds from the following.

(i) Propane

(ii) Propene

(iii) Propyne

(iv) Chloropropane

A. (i) and (ii)

B. (ii) and (iv)

C. (iii) and (iv)

D. (ii) and (iii)

Answer: D

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

are good conductors of electricity.

are poor conductors of electricity.

have strong forces of attraction between their molecules.

do not have strong forces of attraction between their molecules.

A. (i) and (iii)

B. (ii) and (iii)

C. (i) and (iv)

D. (ii) and (iv)

Answer: D

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

A. only single bonds

B. only double bonds

C. only triple bonds

D. two double bonds and one single bond.

Answer: A

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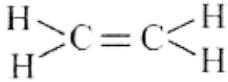
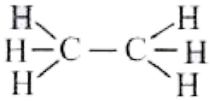
12. Structural formula of ethyne is

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

B. $CH_3 - C \equiv C - H$

C. 

D. 

Answer: A

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

A. CH_4

B. C_2H_6

C. C_3H_8

D. C_4H_8

Answer: D

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14. The first member of alkyne homologous series is

A. ethyne

B. ethene

C. propyne

D. methane.

Answer: A

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15. Which amond the following are unsaturated hydrocarbons ?

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

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

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

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

A. (i) and (iii)

B. (ii) and (iii)

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C

16. Urea was synthesised for the first time by

A. Friedrich Wohler

B. Berzelius

C. Kolbe

D. Berthelot

Answer: A

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17. Buckminsterfullerene is an example of

A. an isomer

B. an isotope

C. an allotrope

D. a functional group.

Answer: C

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18. Can homologues be isomers?

A. Yes

B. No

C. Sometimes

D. None of these

Answer: B

19. Compounds having same molecular formula but different properties are called

A. isotopes

B. isobars

C. isomers

D. isochores.

Answer: C

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20. The IUPAC name of CH_3CHO is :

A. acetaldehyde

B. methanal

C. ethanal

D. formaldehyde

Answer: C

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21. Which of the following is correct set?

(i)Hexane	$(p)C_4H_{10}$
(ii)Ethane	$(q)C_6H_{12}$
(iii)Pentene	$(r)C_5H_{12}$
(iv)Hexene	$(s)C_2H_6$
(v)Butane	$(t)C_6H_{14}$
	$(u)C_4H_8$
	$(v)C_5H_{10}$

A. (i)-(p), (ii)-(q), (iii)-(r), (iv)-(v), (v)-(u)

B. (i)-(e), (ii)-(s), (iii)-(v), (iv)-(u), (v)-(p)

C. (i)-(t), (ii)-(s), (iii)-(v), (iv)-(q), (v)-(p)

D. (i)-(r), (ii)-(q), (iii)-(p), (iv)-(s), (v)-(t)

Answer: C

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22. Which of the following is wood spirit?

A. Methanol

B. Ethanol

C. Methane

D. Ethane

Answer: A

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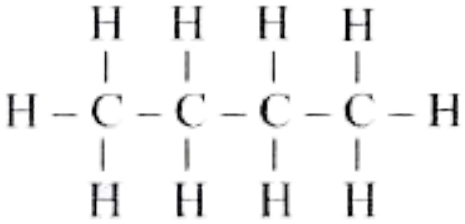
23. Which of the following are correct structural isomers of butane?

(i)



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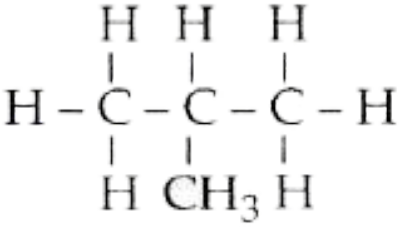

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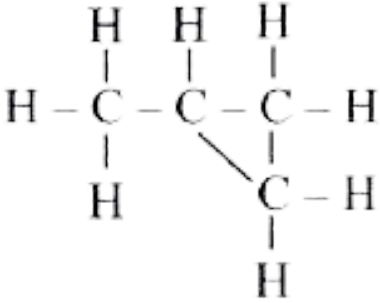

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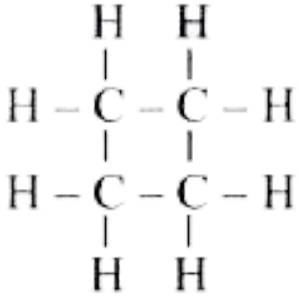

A. (i) and (iii)

B. (ii) and (iv)

C. (i) and (ii)

D. (iii) and (iv)

Answer: C

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24. An alkene has 5 carbon atoms. The number of hydrogen atoms in it is

A. 2

B. 4

C. 8

D. 10

Answer: D

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25. The difference in molecular weights of two consecutive members of a homologous series is

A. 14

B. 2

C. 4

D. 8

Answer: A

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26. The credit for preparing the first organic compound in the laboratory went to

A. Berzelius

B. Berthelot

C. Kolbe

D. Wohler

Answer: C

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27. The first organic compound that have been prepared in the laboratory was

A. acetic acid

B. acetylene

C. methane

D. urea

Answer: D

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28. Which of the following is not an aliphatic compound?

A. Alkane

B. Alkene

C. Alkyne

D. Benzene

Answer: D

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29. The correct IUPAC name of the compound

$$CH_3 - \overset{H_3C}{\underset{|}{C}} = \overset{H}{\underset{|}{C}} - COOH$$ is

A. 2-methylbut-2-enoic acid

B. 3-methylbut-3-enoic acid

C. 3-methylbut-2-enoic acid

D. 2-methylbut-3-enoic acid

Answer: C

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30. The nature of linkage in organic compounds is generally

A. ionic

B. covalent

C. co-ordinate

D. both (a) and (b)

Answer: B

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31. When a mixture of potassium cyanate and ammonium chloride is heated, it gives

A. urea

B. methane

C. acetic acid

D. methanol

Answer: A

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32. Chemically similar compounds having the same functional group but differing by a CH_2 group in their molecular formula are known as

A. homologues

B. isomers

C. polymers

D. allotropes

Answer: A

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33. Ethanol reacts with sodium to form

A. sodium ethanoate and hydrogen

B. sodium ethanoate and oxygen

C. sodium ethoxide and hydrogen

D. sodium ethoxide and oxygen

Answer: C

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34. Which of the following is called marsh gas?

A. Methane

B. Ethane

C. Ethene

D. Ethyne

Answer: A

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35. Which is the molecular formula of decane?

A. $C_{10}H_{22}$

B. C_8H_{16}

C. $C_{12}H_{24}$

D. C_5H_{12}

Answer: A

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36. In ethane each carbon atom is bonded to

A. two atoms

B. three atoms

C. four atoms

D. six atoms.

Answer: C

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37. Saponification is the hydrolysis of an ester under basic conditions to form

A. alkane and salt of carboxylic acid

B. ketone and salt of carboxylic acid

C. aldehyde and salt of carboxylic acid

D. alcohol and salt of carboxylic acid.

Answer: D

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38. Which of the following is not an allotrope of carbon ?

A. Graphite

B. Coal

C. Diamond

D. Fullerene

Answer: B

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39. The saturated hydrocarbons are called

A. olefins

B. alkenes

C. alkanes

D. alkynes

Answer: C

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40. The branch of chemistry which deals with study of hydrocarbons and their derivatives is termed as

A. organic chemistry

B. physical chemistry

C. inorganic chemistry

D. nuclear chemistry

Answer: A

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41. An organic compound must contain

A. carbon

B. boron

C. oxygen

D. nitrogen.

Answer: A

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42. A hydrocarbon is a

A. carbon found in nature in the free state

B. compound of carbon and hydrogen

C. compound found in the form of sulphate

D. carbon found in nature in the form of carbonates.

Answer: B

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43. Which of the following pairs of compounds of carbon will undergo combustion as well as addition reactions?

A. CH_4 and C_2H_6

B. C_2H_6O and C_3H_8O

C. $C_2H_4O_2$ and C_3H_6O

D. C_2H_2 and C_3H_6

Answer: D

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44. IUPAC stands for

A. Indian Union of Pure and Applied Chemistry

B. International Union of Pure and Applied Chemistry

C. International United Pure Agricultural Corporation

D. International United Pure Agro Corporation.

Answer: B

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45. Olefins is the other name of

A. alkanes

B. alkenes

C. alkynes

D. alcohols.

Answer: B

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46. Aldehydic group $R - CHO$ is represented by Suffix

A. $-$ ol

B. $-$ one

C. $-$ al

D. $-$ oate

Answer: C

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47. Which of the following is chiefly present in LPG?

A. Methane

B. Ethane

C. Butane

D. Hexane

Answer: C

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48. Which hydrocarbon is the main component of natural gas?

A. Ethane

B. Propane

C. Methane

D. Ethylene

Answer: C

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49. All hydrocarbons burn in presence of air to produce

A. $CO_2 + H_2O$

B. $CO + H_2O$

C. $CO_2 + H_2$

D. $CO + H_2$

Answer: A

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50. Vinegar is a solution of

A. 50% - 60% acetic acid in alcohol

B. 5%-8% acetic acid in alcohol

C. 5% - 8% acetic acid in water

D. 50% - 60% acetic acid water

Answer: C

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Exercise Match The Following

	List-I	List-II
	$(P) C_nH_{2n+2}$	(1) Alkyne
1.	$(Q) C_nH_{2n}$	(2) Alkene
	$(R) C_nH_{2n-2}$	(3) Alkane
	$(S) C_nH_{2n-1}$	(4) Alkyl group

A. P-3, Q-2, R-1, S-4

B. P-1, Q-2, R-3, S-4

C. P-2, Q-3, R-1, S-4

D. P-3, Q-1, R-2, S-4

Answer: A

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2.

List-I	List-II
(P) Alcohol	$(1) -COOH$
(Q) Aldehyde	$(2) -OH$
(R) Ketone	$(3) -CHO$
(S) Carboxylic acid	$(4) -\overset{\overset{O}{\|\|}}{C}-$

A. P-1, Q-2, R-4, S-1

B. P-2, Q-3, R-4, S-1

C. P-3, Q-2, R-1, S-4

D. P-4, Q-2, R-3, S-1

Answer: B

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	List-I	List-II
	(P) Four carbon atoms	(1) Prop
3.	(Q) Three carbon atoms	(2) Pent
	(R) Five carbon atoms	(3) But
	(S) Six carbon atoms	(4) Hex

A. P-3, Q-1, R-2, S-4

B. P-4, Q-2, R-1, S-3

C. P-1, Q-2, R-3, S-4

D. P-2, Q-4, R-1, S-3

Answer: A

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List-I	List-II
(P) Butane	$(1) C_6H_{10}$
(Q) Hexyne	$(2) C_4H_{10}$
(R) Pentene	$(3) C_2H_2$
(S) Acetylene	$(4) C_5H_{10}$

4.

A. P-1, Q-4, R-3, S-2

B. P-3, Q-2, R-4, S-1

C. P-2, Q-1, R-4, S-3

D. P-4, Q-2, R-1, S-3

Answer: C

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List-I	List-II
(P) Alcohol	(1) – ol
(Q) Aldehyde	(2) – ene
(R) Ketone	(3) – one
(S) Alkene	(4) – al

5.

A. P-2, Q-4, R-3, S-1

B. P-1, Q-3, R-2, S-4

C. P-2, Q-1, R-4, S-3

D. P-1, Q-4, R-3, S-2

Answer: D

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Exercise Assertion Reason Type

1. Assertion : Ethene can be catalytically hydrogenated.

Reason : Ethene contains all C-H bonds.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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2. Assertion : Geometrical isomerism is also called cis-trans isomerism.

Reason : Propene shows geometrical isomerism.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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3. Assertion : Alkenes are reactive than alkanes.

Reason : Alkene contains double bonds.

A. If both assertion and reason are true and reason is the correct explanation of

assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: A

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4. Assertion : Acetylene forms acetylide but ethylene does not.

Reason : Acetylene is lighter than air.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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5. Assertion : Oxidation of alkanes generates large heat.

Reason : Heat generated by burning coal is used to generate electricity.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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6. Assertion : Both aldehydes and ketones contain carbonyl group.

Reaction : In aldehydes, the functional group is attached to atleast one hydrogen atom.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of

assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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7. Assertion : Ethanol is the first member of the alcohol homologous series.

Reason : A homologous series cannot be represented by a general formula.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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8. Assertion : Alkynes show geometrical isomerism.

Reason : Geometrical isomerism arises due to the restricted rotation of a single bond.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of

assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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9. Assetion: Carbon possesses property of catenation.

Reason: Carbon atoms form double as well as triple bonds during catenation.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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10. Assertion :

$CH_3 - \underset{\underset{Cl}{|}}{CH} - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CHO$ is

2-chloro-4-methylpentanal.

Reason : Names are not to be written according to the alphabetical order of substituents.

A. If both assertion and reason are true and reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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Exercise Comprehension Type Passage

1. The IUPAC name of any organic compound consists of four parts, i.e., word root, primary and secondary suffixes and prefixes. The word root denotes the total number of carbon atoms in the longest continuous chain of carbon atoms present in the molecule. The primary suffix denotes whether the compound is saturated (i.e., ane) or unsaturated (i.e., ene or yne) while the secondary suffix denotes the functional group present in the molecule. The primary prefix cyclo is used only when the compound is cyclic in nature while the

secondary prefixes denote the substituents and secondary functional groups, if any.

IUPAC name of acetylene is

A. ethyne

B. methane

C. alcohol

D. ethane

Answer: A

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2. The IUPAC name of any organic compound consists of four parts, i.e., word root, primary and secondary suffixes and prefixes. The word root denotes the total number of carbon atoms in the longest continuous chain of carbon atoms present in the molecule. The primary suffix denotes whether the compound is saturated (i.e., ane) or unsaturated (i.e., ene or yne) while the secondary suffix denotes the functional group present in the molecule. The primary prefix cyclo is used only when the compound is cyclic in nature while the

secondary prefixes denote the substituents and secondary functional groups, if any.

IUPAC name of methyl alcohol is

A. methanol

B. ethanol

C. ethanal

D. ethanoic acid

Answer: A

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3. The IUPAC name of any organic compound consists of four parts, i.e., word root, primary and secondary suffixes and prefixes. The word root denotes the total number of carbon atoms in the longest continuous chain of carbon atoms present in the molecule. The primary suffix denotes whether the compound is saturated (i.e., ane) or unsaturated (i.e., ene or yne) while the secondary suffix denotes the functional group present in the molecule. The primary prefix cyclo is used only when the compound is cyclic in nature while the

secondary prefixes denote the substituents and secondary functional groups, if any.

The IUPAC name of the compound $CH_3 - CH_2 - CH_2 - CH_2 - OH$ is

A. butanol

B. butanal

C. butene

D. propanol

Answer: A

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4. Organic compounds were named after the source from which they were first isolated. For example, urea got its name since the compound was first obtained from the urine of mammals. Similarly, methyl alcohol was called wood spirit since it could be obtained by the destructive distillation of wood. Acetic acid got its name from acetum (Latin : acetum means vinegar) since it is present in vinegar. Similarly, the name formic acid was derived from formica (Latin : formica means red ants)

since it could be obtained by the destructive distillation of red ants. Likewise citric acid is named so because it is found in citrus fruits. These names of organic compounds are called trivial names or common names.

Vinegar is a

A. 5% solution of acetic acid in water

B. 50% solution of acetic acid in water

C. 25% solution of acetic acid in water

D. 40% solution of formic acid in water

Answer: A

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5. Organic compounds were named after the source from which they were first isolated. For example, urea got its name since the compound was first obtained from the urine of mammals. Similarly, methyl alcohol was called wood spirit since it could be obtained by the destructive distillation of wood. Acetic acid got its name from acetum (Latin : acetum means vinegar) since it is present in vinegar. Similarly, the name formic acid was derived

from formica (Latin : formica means red ants) since it could be obtained by the destructive distillation of red ants. Likewise citric acid is named so because it is found in citrus fruits. These names of organic compounds are called trivial names or common names.

IUPAC name of acetic acid is

A. methanoic acid

B. ethanoic acid

C. propanoic acid

D. formic acid

Answer: B

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6. Organic compounds were named after the source from which they were first isolated. For example, urea got its name since the compound was first obtained from the urine of mammals. Similarly, methyl alcohol was called wood spirit since it could be obtained by the destructive distillation of wood. Acetic acid got its name from acetum (Latin : acetum

means vinegar) since it is present in vinegar. Similarly, the name formic acid was derived from formica (Latin : formica means red ants) since it could be obtained by the destructive distillation of red ants. Likewise citric acid is named so because it is found in citrus fruits. These names of organic compounds are called trivial names or common names.

The common name of methanoic acid is

A. acetic acid

B. ethanoic acid

C. formic acid

D. propanoic acid

Answer: C

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7. A functional group is an atom or group of atoms which determines the characteristic functions or chemical properties of a particular organic compound. A functional group contains one or more atoms of elements other than carbon such as oxygen,

nitrogen, sulphur and halogens. These atoms are known as heteroatoms and they can replace one or more hydrogen atoms in a hydrocarbon chain. These heteroatoms are responsible for the specific properties of organic compounds regardless of nature and length of carbon chain. These heteroatoms or group of heteroatoms are known as functional groups. The examples of functional groups are - OH, - F,- Cl, -Br, - CHO, - COOH, $-NO_2$, $-NH_2$, etc.

The functional group of alcohol is

A. $-OH$

B. $-COOH$

C. $-CHO$

D. $-Cl$

Answer: A

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8. A functional group is an atom or group of atoms which determines the characteristic functions or chemical properties of a

particular organic compound. A functional group contains one or more atoms of elements other than carbon such as oxygen, nitrogen, sulphur and halogens. These atoms are known as heteroatoms and they can replace one or more hydrogen atoms in a hydrocarbon chain. These heteroatoms are responsible for the specific properties of organic compounds regardless of nature and length of carbon chain. These heteroatoms or group of heteroatoms are known as functional groups. The examples of functional groups are - OH, - F,- Cl, -Br, - CHO, - COOH,

$-NO_2, \ -NH_2$, etc.

The functional group of amino is

A. $-OH$

B. $-NO_2$

C. $-NH_2$

D. $-Br$

Answer: C

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9. A functional group is an atom or group of atoms which determines the characteristic functions or chemical properties of a particular organic compound. A functional group contains one or more atoms of elements other than carbon such as oxygen, nitrogen, sulphur and halogens. These atoms are known as heteroatoms and they can replace one or more hydrogen atoms in a hydrocarbon chain. These heteroatoms are responsible for the specific properties of organic compounds regardless of nature and

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The functional group of halogens is

A. $-Cl$

B. $-CN$

C. $-OH$

D. $-CHO$

Answer: A

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10. Methane is the first member of the alkane series. It belongs to a group of compounds called aliphatic compounds. Among the hydrocarbons, it belongs to a group called paraffins. Methane being a paraffin, is not very reactive. It is the simplest hydrocarbon and the molecular formula of methane is CH_4 . It is also called marsh gas because it is found bubbling in marshy places where it is produced by the bacterial decomposition of

vegetable matters. It is found in natural gas. It is also produced when wood, peat and coal are dry distilled. It is also found in coal mines where it forms explosive mixture with air. It is called fire-damp by coal miners.

Which of the following is marsh gas?

A. CH_4

B. C_2H_2

C. C_2H_4

D. C_3H_6

Answer: A

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11. Methane is the first member of the alkane series. It belongs to a group of compounds called aliphatic compounds. Among the hydrocarbons, it belongs to a group called paraffins. Methane being a paraffin, is not very reactive. It is the simplest hydrocarbon and the molecular formula of methane is CH_4 . It is also called marsh gas because it is found bubbling in marshy places where it is produced by the bacterial decomposition of

vegetable matters. It is found in natural gas. It is also produced when wood, peat and coal are dry distilled. It is also found in coal mines where it forms explosive mixture with air. It is called fire-damp by coal miners.

Which of the following is the fourth member of alkane?

A. C_3H_6

B. CH_4

C. C_4H_{10}

D. C_2H_5OH

Answer: C

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12. Methane is the first member of the alkane series. It belongs to a group of compounds called aliphatic compounds. Among the hydrocarbons, it belongs to a group called paraffins. Methane being a paraffin, is not very reactive. It is the simplest hydrocarbon and the molecular formula of methane is CH_4 . It is also called marsh gas because it is found

bubbling in marshy places where it is produced by the bacterial decomposition of vegetable matters. It is found in natural gas. It is also produced when wood, peat and coal are dry distilled. It is also found in coal mines where it forms explosive mixture with air. It is called fire-damp by coal miners.

Natural gas is primarily composed of

A. butane

B. pentane

C. methane

D. 2-methylbutane.

Answer: C

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Exercise Integer Numerical Value Type

1. Number of carbon atoms in alkane having molecular mass 86 is

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2. Maximum number of isomers of an alkane with molecular formula C_4H_{10} is

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3. Total number of covalent bonds in an ethane molecule is

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4. Number of free electron(s) in each carbon atom in graphite is/are

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5. If molecular formula of benzene is C_6H_6, total number of carbon-carbon single bonds are

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