Topic 13 FUNDAMENTAL CONCEPTS OF ORGANIC CHEMISTRY

PRACTICE EXERCISE

Q.1 _____ organic compound/s can be classified as acyclic
A. Isobutane
B. Isobutylene
C. Isopentyne
D. All of these

Q.2 Compounds containing ring of three or more than three carbon atom and resembling _____ compounds are called alicyclic
A. Aliphatic
B. Aromatic
C. Benzene
D. Heterocyclic

Q.3 Alicyclic hydrocarbons will not follow _____ general formula
A. C_nH_{2n}
B. C_nH_{2n-2}
C. C_nH_{2n+2}
D. C_nH_{2n-4}

Q.4 Cyclohexane can be classified as
A. Carbocyclic
B. Aromatic
C. Alicyclic
D. Both A and C

Q.5 How many secondary carbon atoms are present in Methylcylopropane
A. 1
B. 3
C. 2
D. 0

Q.6 Which of the following is not heterocyclic compound
A. Naphthalene
B. Furan
C. Pyridine
D. Pyrrole

Q.7 The aliphatic compounds are of two types
A. Straight chain and cyclic
B. Branched chain and alicyclic
C. Straight chain and branched
D. Homocyclic and alicyclic

Q.8 Which is not present as heteroatom in heterocyclic compounds
A. Sulphur
B. Nitrogen
C. Oxygen
D. Chlorine

Q.9 Which compounds is alicyclic in nature
A. Cyclobutane
B. Iso-butane
C. n-Butane
D. Toluene

Q.10 1st synthetic organic compound is
A. Ammonium cyanate
B. Urea
C. Methane
D. Benzene

Q.11 Pyridine is an example of
A. Homocyclic compound
B. Heterocyclic compound
C. Carbocyclic compound
D. Aliphatic compound

Q.12 Anthracene contains _____ number of fused benzene rings
A. 1
B. 2
C. 3
D. 4

Q.13 The isomerism in which the compounds differ with respect to functional group but have same molecular formula is called:
A. Metamerism
B. Functional group isomerism
C. Position isomerism
D. Chain isomerism

Q.14 Ether shows the phenomenon of:
A. Position isomerism
B. Functional group isomerism
C. Metamerism
D. Cis trans isomerism

Q.15 Which of the following compounds does not exhibit positional isomerism

A. Alkynes
B. Nitroalkanes
C. Carboxylic acid
D. Alcohol

Q.16 Total number of possible chain isomers of butylalcohol among alcohols are

A. Four
B. Five
C. Three
D. Six

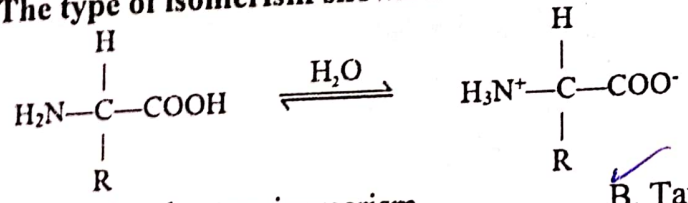
Q.17 Alkanes do not show geometrical isomerism due to

A. Asymmetry
B. Resonance
C. Rotation around single bond
D. Restricted rotation around doubled bond

Q.18 How many esters are possible for $C_4H_8O_2$

A. 2
B. 3
C. 4
D. 5

Q.19 The type of isomerism shown in the following species is



A. Functional group isomerism
B. Tautomerism
C. Metamerism
D. Cis-trans isomerism

Q.20 Which class of compound cannot show positional isomerism

A. Alkanes
B. Alkene
C. Alkynes
D. Alcohol

Q.21 Which one is thioether

A. R – O – R
B. R – Se – R
C. R – S – R
D. R – Te – R

Q.22 Glycols and glycerols can be differentiated on the basis of

A. Number of carbon atom
B. Number of hydroxyl group
C. Position of hydroxyl group
D. All of these.

Q.23 Which of the following is functional group of amino functional group

A. $-NH_2$
B. $\begin{matrix}\diagdown\\ C=NH\\ \diagup\end{matrix}$
C. $-C\equiv N$
D. $\begin{matrix}O\\ \|\\ -C-NH_2\end{matrix}$

Q.24 Select from the following the one which is alcohol

A. CH_3-CH_2-OH
B. CH_3COOH
C. CH_3-O-CH_3
D. CH_3-CH_2-Br

Q.25 Which one of the following class of compounds has been incorrectly matched with their general formulae

A. Phenol ..... Ar –OH
B. Ketone ..... R – COR
C. Carboxylic acid ..... RCOOH
D. Aldehyde ..... ROR

Q.26 Which of the following is an amide

A. $(NH_2)_2CO$
B. NH_2CH_3
C. $C_6H_5NH_2$
D. $N(CH_3)_3$

Q.27 sp-hybridization takes place by the mixing of orbitals
A. One 1s, one 2p
B. One 2s, three 2p
C. One 2s, two 2p
D. One 2s, one 2p

Q.28 The percentage of s character in sp^2 hybrid orbital is
A. 25%
B. 33.3%
C. 50%
D. 75%

Q.29 The percentage of p character in sp^3 hybrid orbital is
A. 25%
B. 75%
C. 50%
D. 33%

Q.30 In sp^2-hybridization, the angle between two hybrid orbitals is
A. 120°
B. 180°
C. 109.5°
D. 90°

Q.31 In t-butyl alcohol, tertiary carbon is bonded to:
A. Two hydrogen atoms
B. Three hydrogen atoms
C. One hydrogen atom
D. No hydrogen atom

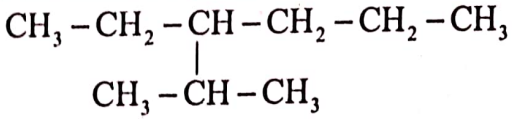
Q.32 IUPAC name of neopentane
A. 2,2- Dimethyl pentane
B. 2,3- Dimethyl pentane
C. 2,2- Dimethyl propane
D. 2,2- Dimethyl butane

Q.33 Propene and propyne have general formula
A. C_nH_{2n} and C_nH_{2n-2}
B. C_nH_{2n-2} and C_nH_{2n+2}
C. C_nH_{2n+2}
D. C_nH_{2n} and C_nH_{2n+2}

Q.34 Choose the correct name according to IUPAC nomenclature
A. 2–Ethyl–3–methyl pentane
B. 3–Ethyl–2–methyl pentane
C. 3-Methyl cyclohexane
D. 3–Ethyl–4–methyl pentane

Q.35 Indicate the number of chain isomers that can be obtained from the C_6H_{14}?
A. 7
B. 6
C. 5
D. 4

Q.36 What is the IUPAC name of this structure



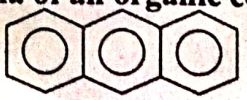
A. 3–Ethyl 2–methyl hexane
B. Iso propyl hexane
C. 4–Ethyl 5–methyl hexane
D. 3–Iso propyl hexane

Q.37 The correct name of 3,5,5-Trimethylhexane is
A. 3–Ethyl 2–methyl pentane
B. 2,3–Dimethylpentane
C. 2,2,4-Trimethylhexane
D. 2,3,4-Trimethylhexane

Q.38 Which suffix is used for carboxylic acid
A. – al
B. – oic
C. – ol
D. – ene

Q.39 The IUPAC name of given compound is $CH_3CH(CH_3)CH_2Cl$
A. 1–Chloro-2–methylbutane
B. Iso-butyl chloride
C. 1–Chloro-2-methylpropane
D. 2-Chloro-2-methyl propane

Q.40 Skeletal formula of an organic compound is given below



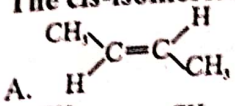
Name of this compound is
A. Naphthalene
B. Pyrene
C. Anthracene
D. Biphenyl methane

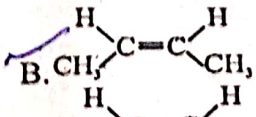
PAST PAPER QUESTIONS

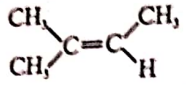
Q.1 1-chloroproane and 2-chloropropane are isomers of each other. The type of isomerism **MDCAT (2011)**

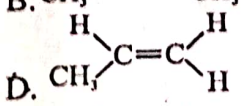
A. Cis-trans isomerism
B. Chain isomerism
C. Positional isomerism
D. Functional group isomerism

Q.2 The cis-isomerism is shown by **MDCAT (2013)**

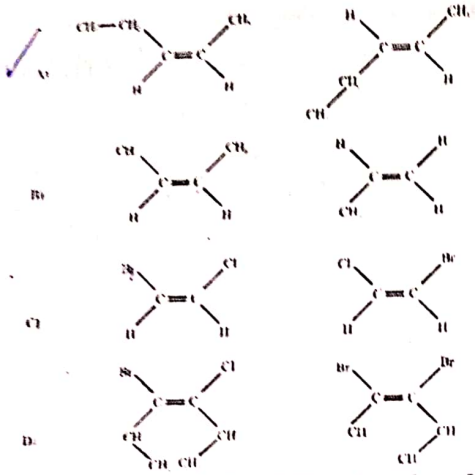
A. 

B. 

C. 

D. 

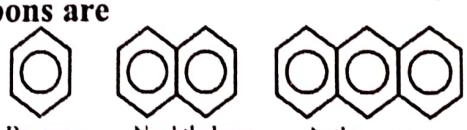
Q.3 Which one of the following pair of compound is cis and trans isomers of each other? **MDCAT (2014)**



Q.4 Which one of the following is a ketone? **MDCAT (2014)**

A. $CH_3—O—CH_2—CH_3$
B. $CH_3COCOOH$
C. $CH_3—CO—CH_2—CH_3$
D. $CH_3—CH_2CHO$

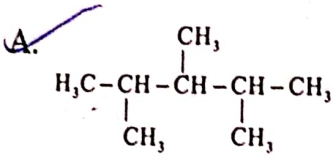
Q.5 The given three hydrocarbons are **MDCAT (2015)**

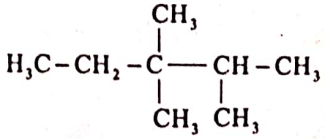


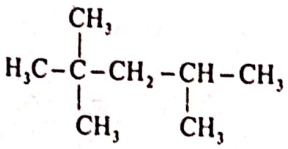
Benzene Naphthalene Anthracene

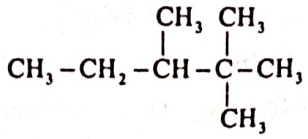
A. Alicyclic hydrocarbons
B. Acyclic Hydrocarbons
C. Aromatic hydrocarbons
D. Heterocyclic hydrocarbons

Q.6 The structural formula of 2,3,4 trimethylpentane is **MDCAT (2015)**

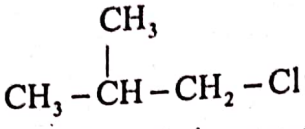
A. 

B. 

C. 

D. 

Q.7 The IUPAC name of the given compound is MDCAT (2015)



A. 1–Chloro-2-methylpropane
B. Isobutyl chloride
C. 1-Chloro-2-methylbutane
D. 2-Methyl-3-chloropropane

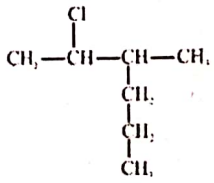
Q.8 Which one of the following pairs can be a cis-trans isomer to each other? MDCAT (2016)

A. $CHCl = CCl_2$ and $CH_2 = CH_2$
B. $CHCl = CH_2$ and $CH_2 = CHCl$
C. CH_3-CH=CH-CH_3 and H_3C-CH=CH-CH_3
D. CH_3-CH_3 and $CH_2 = CH_2$

Q.9 The type of structural isomerism which arises due to the difference in the nature of carbon chain or carbon skeleton is MDCAT (2017)

A. Chain isomerism
B. Cis-Trans isomerism
C. Position isomerism
D. Optical isomerism

Q.10 Which one of the followings is the best name according to IUPAC system for the formula given below? MDCAT (2017)



A. 4-methyl-6-chloro heptane
B. 2-chloro-3-methyl hexane
C. 2-chloro-4n propyl hexane
D. 2-chloro-4-n propyl pentane

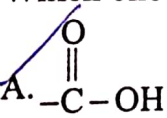
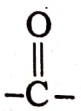
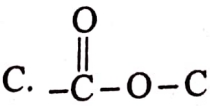
Q.11 Cyclobutane structure is categorized under: MDCAT (2017)

A. Aromatic compounds
B. Aliphatic compounds
C. Alicyclic compounds
D. Heterocyclic compounds

Q.12 Name the compound, which shows geometric isomerism: MDCAT (2017)

A. 1-bromo-2-chloropropene
B. 2,3-dimethylpropene
C. 2-pentene
D. Both A & C

Q.13 Which one is a functional group of carboxylic acid: MDCAT (2017)

A. 
B. 
C. 
D. None of these

Q.14 Butane molecule can have maximum no of isomers MDCAT (2018)

A. 2
B. 5
C. 4
D. 3

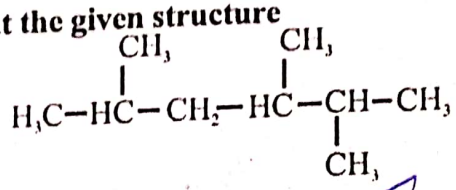
Q.15 Select one which is alcohol — MDCAT (2018)

A. CH_3-O-CH_3 B. CH_3-CH_2-OH
C. CH_3COOH D. CH_3-CH_2-Br

Q.16 In the following organic compound carbon atoms in all of them undergo both sp^3 and sp^2 hybridization except X, which has all sp^3 hybrid orbitals, identify X — MDCAT (2018)

A. 1-butanol B. Trans to butene
C. 2-chloro - 2- butene D. Butanoic acid

Q.17 Have a critical look at the given structure



The IUPAC name of this compound is — SET (2019)

A.2-Methyl-4-isopropylpentane B. 2,3,5-Trimethylhexane
C. 2,4,5-Trimethylhexane D. 2-Isobuty1-3-methylbutane

Q.18 IUPAC name of Divinyl acetylene is — NUMS (2019 RC)

A. 1,5- hexadiene-3-ene B. 1,5- hexadiene-3-yne
C. 3-Hexane-1,5-diyne D. 3-Hexyne-1,5-diene

Q.19 Diethyl ether and n-butanol are — NUMS (2019 RC)

A. Position isomerism B. Functional isomerism
C. Chain isomerism D. Tautomerism

Q.20 The number of isomers of pentane is — ETEA (2019)

A. 2 B. 4
C. 5 D. 3

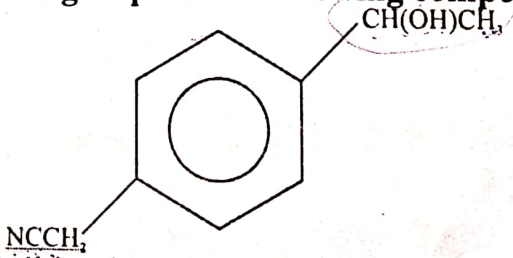
Q.21 Which of the following is not the major source of organic compound? — ETEA (2019)

A. Natural gas B. Petroleum
C. Coal D. Ammoniacal liqour

Q.22 $C_4H_{11}N$ gives the type of isomerism — ETEA (2019)

A. Metamerism B. Optical isomerism
C. Tautomerism D. None of the above

Q.23 The names of functional groups in the following compound X are; — MDCAT (2019)



A. Primary alcohol, nitrile and benzene ring
B. Secondary alcohol, nitrile and aryl ring
C. Secondary alcohol, nitrile and phenol ring
D. Secondary alcohol, amine and benzene ring

Q.24 Select the organic compound which belongs to arene family: — NMDCAT (2020)

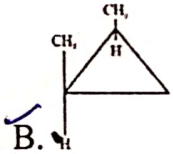
A. $CH_2=CH_2$ B. CH_3-O-CH_3
C. CH_3-NH_2 D. C_6H_6

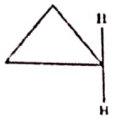
Q.25 The type of isomerism existing in a compound of molecular formula C_2H_6O is: NMDCAT (2020)

A. Functional group
B. Position
C. Chain
D. Metamerism

Q.26 Which of the following compound show geometric isomerism? NMDCAT (2020)

A. 

B. 

C. 

D. 

Q.27 Generic formula of cycloalkane is NMDCAT (2020)

A. C_nH_{2n+2}
B. C_nH_{2n}
C. C_nH_{2n-1}
D. C_nH_{2n-2}

Q.28 In alkanes, each carbon has hybridization NMDCAT (2020)

A. sp^3
B. sp
C. sp^2
D. dsp

ANSWER KEY

1	D	11	B	21	C	31	D
2	A	12	C	22	D	32	C
3	C	13	B	23	A	33	A
4	D	14	C	24	A	34	B
5	C	15	C	25	D	35	C
6	A	16	A	26	A	36	D
7	C	17	C	27	D	37	C
8	D	18	C	28	B	38	B
9	A	19	B	29	B	39	C
10	B	20	A	30	A	40	C

PAST PAPER QUESTIONS

1	C	6	A	11	C	16	A	21	D	26	B
2	B	7	A	12	D	17	B	22	A	27	B
3	A	8	C	13	A	18	B	23	B	28	A
4	C	9	A	14	A	19	B	24	D		
5	C	10	B	15	B	20	D	25	A		