

Class: 11
Subject: Chemistry
Topic: Organic chemistry principles
No. of Questions: 20
Duration: 60 Min
Maximum Marks: 60

1. Chlorobenzene is less reactive for nucleophilic reaction due to

- A. Inductive effect
- B. mesomeric effect
- C. electromeric effect
- D. hyperconjugative effect

Sol: B

Due to +M effect the carbon chlorine bond in chlorobenzene gets a partial double bond character. Hence it is difficult to break. Therefore the nucleophilic substitution reactions are difficult

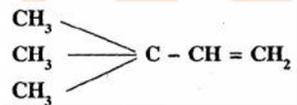
2. Which of the following can show electromeric effect

- A. ethers
- B. alcohols
- C. aldehydes
- D. amines

Sol: C

Electromeric effect is shown by compounds containing multiple bonds. Among the Compounds only aldehydes contain multiple bonds. Hence they show -E effect when an nucleophile approaches it

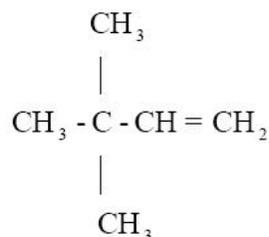
3. The IUPAC name of the compound having the formula



- A. 3, 3, 3 trimethyl-1-propene
- B. 1, 1, 1-trimethyl3-propene
- C. 3, 3 dimethyl-1-butene
- D. 1, 1-dimethyl-3butene

Sol: C

The compound is



The carbon atoms are numbered from the right and end giving the least value for the carbon atom containing the double bond. Hence the name becomes 3,3 - dimethyl - 1 - butene

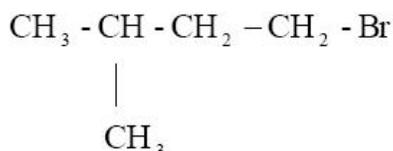
4. The IUPAC name of the compound $\text{HC} \equiv \text{CCH}_2\text{CH} = \text{CH}_2$ is
- A. 4-penten- 1-yne
 - B. 4-pentyn-1-ene
 - C. 1 -penten-4-yne
 - D. 1-pentyn-4-ene

Sol: C

$\text{HC} \equiv \text{C} - \text{CH}_2 - \text{CH} = \text{CH}_2$. The compound contains a double bond between C1 and C3 and triple bond between C4 & C5. The double bond group should get lower number. Hence the correct name is as given in option 3. Here pent-ene and -yne are arranged alphabetically

5. The IUPAC name of the compound $(\text{CH}_3)_2\text{CH} - \text{CH}_2 - \text{CH}_2 - \text{Br}$ is
- A. 2-methyl3-bromopropane
 - B. 1 -bromopentane
 - C. 2-methyl4-bromobutane
 - D. 1-bromo-3-methylbutane

Sol: D



Compound is a derivative of butane. Substituents are 1 - bromo and 3 - methyl. Halogen should get the least number. Substituents are arranged in alphabetical order. Hence option 4 gives the IUPAC name

6. The IUPAC name for the compound $(\text{CH}_3)_3\text{C}-\text{CH}=\text{CH}_2$

- A. 3,3, 3-trimethyl propene-1
- B. 1, 1, 1-trimethyl-2-propene
- C. 3, 3-dimethyl-1-butene
- D. 2, 2-dimethyl-3-butene

Sol: C

The longest chain contains four carbon atoms and the chain contains one double bond. Hence the parent hydrocarbon is butane. Carbon atoms are numbered from that end which gives least number to the carbon atom, containing the double bond. Considering these requirements, the IUPAC name turns out to be given in option no 3

7. The number of possible enantiomeric pairs that can be produced during monochlorination of 2-Methyl butane is

- A. 2
- B. 3
- C. 4
- D. 1

Sol: A

8. IUPAC name of the compound $\text{CH}_3-\text{CH}_2-\text{CH}-\text{CH}_2-\text{COOH}$



- A. 3-ethyl-4-oxo-butanoic acid
- B. 3-formylbutanoic acid
- C. 3-pentane-3-al-1-oic acid
- D. 3-formylpentanoic acid

Sol: D

When $-\text{COOH}$ and $-\text{CHO}$ groups are present $-\text{COOH}$ group is a principal functional group and $-\text{CHO}$ becomes substituent group.

Hence it is named as formyl. (Note Here carbon atom of CHO is not a part of parent chain)

9. During Lassaigne's test which one of the following will give blood red colour?

- A. Urea
- B. Aniline
- C. p-aniline sulphonic acid
- D. Benzene sulphonic acid

Sol: C

During Lassaigne's test if sulphur is present along with nitrogen, gives blood red color with ferric chloride

10. Compounds $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$ and $\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH}_2$ are

- A. geometric isomers
- B. position isomers
- C. optical isomers
- D. chain isomers

Sol: B

In the two compounds the position of the double bond is different. Considering the double bond as a functional group, the two are identified as position isomers

11. Which of the following statement is not applicable for organic compounds?

- A. they have low melting and boiling points
- B. they form homologous series
- C. they are generally soluble in organic solvents
- D. they are ionic in nature

Sol: D

Organic compounds are generally covalent molecules and do not ionize

12. An organic molecule necessarily shows optical activity if it

- A. contains asymmetric carbon atoms
- B. is non-planar
- C. is non-superimposable on its mirror image
- D. is superimposable on its mirror image

Sol: C

13. Among Cis - and trans - dichloroethene

- A. cis isomer has more heat of combustion
- B. trans isomer is less stable
- C. boiling point of trans isomer is more
- D. melting point of cis isomer is more

Sol:A

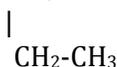
Cis isomer is associated with more energy. Hence it has more heat of combustion. Trans isomer is associated with less energy and hence more is the stability. Due to dipole interactions cis isomer has more boiling point. Due to well packed crystalline structure the trans isomer has higher melting point

14. The IUPAC name of $C_2H_5 - O - CH_3$ is
- methoxyethane
 - dimethyl ether
 - dimethyl oxide
 - ethoxymethane

Sol:A

For ethers, the rule is to consider the compound to be an alkoxy derivative of the alkane

15. The IUPAC name of the compound is $CH_3-CH-CHO$



- Butan - 2 - aldehyde
- 2 - Methyl butanal
- 2 - Ethyl propanal
- 3 -Methyl butyraldehyde

Sol: B

Longest chain to be selected is



16. The IUPAC name of $CH_3 - CH_2 - CH = CH - CH_3$ is

- pentane
- 2-pentene
- 3-pentene
- 4-pentene

Sol: B

The numbering is done from the right hand side. Double bond is between carbon atoms 2 and 3. The compound contains 5 carbons. atoms. Hence option 2 is to be chosen

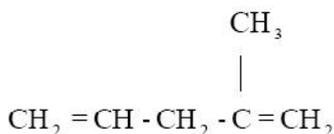
17. IUPAC name of the compound is



- 4 - Methyl - 1, 4 - pentadiene
- Pentadiene
- 2 - Methyl - 1, 4 - pentadiene
- Methyl pentadiene

Sol: C

The molecule can be written as



Hence the name becomes 2 Methyl -1, 4, - pentadiene

18. The open chain structure of fructose has 3 chiral carbon atoms. Hence the number of optical isomers possible is

- A. 4
- B. 16
- C. 8
- D. 2

Sol: C

A molecule having n number of carbon atoms there will be 2^n optically active isomers possible i.e $2^3 = 8$ isomers are possible for fructose

19. Assertion (A) Parent hydrocarbon changes if formyl methanoic acid is mild oxidised.
Reason (R) It changes to ethanedioic acid.

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true but (R) is not the correct explanation of (A).
- C. (A) is true but (R) is false.
- D. (A) is false but (R) is true.

Sol: A

20. The IUPAC name of $\text{CH}_2 = \text{C}(\text{CH}_3) - \text{CH} = \text{CH} - \text{CH}_3$ is

- A. 2-methyl-1,3-diene
- B. 2-methyl-1,3-pentadiene
- C. 2-methyl-2,4-pentadiene
- D. 2-methyl-1,3-hexene

Sol: B

Numbering is done from the left hand side It can also be called 2-methylpenta-1, 3- diene