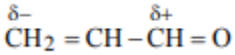
General Organic Chemistry (Basic Concepts)

Q.1. Which of the following pairs represent electrophiles?

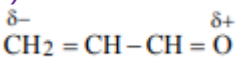
a) $AlCl_3, H_2O$
b) SO_3, NO_2^+
c) BF_3, H_2O
d) $NH_3, S0_3$

Q.2. Polarization of electrons in acrolein may be written as

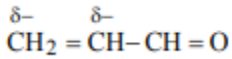
a)



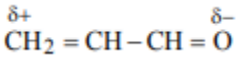
b)



c)



d)

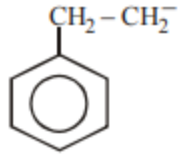


Q.3. In which of the following homolytic bond fission takes place ?

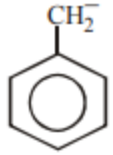
a) Alkaline hydrolysis of ethyl chloride
b) Addition of HBr to double bond
c) Photochlorination of methane
d) Nitration of benzene

Q.4. The most stable carbanion among the following is

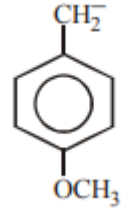
a)



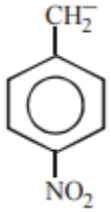
b)



c)



d)



Q.5. Which of the following behaves both as a nucleophile and as an electrophile ?

a) $CH_3-C\equiv N$
b) CH_3OH
c) $CH_2 = CH-CH_3$
d) CH_3NH_2

Q.6. The reaction,

$CH_2=CH-CH_3 + HBr \rightarrow CH_3-CHBr-CH_3$ is

a) nucleophilic addition
b) electrophilic substitution
c) electrophilic addition
d) free radical addition

Q.7. The heat of hydrogenation of 1-hexene is 126 $kJmol^{-1}$, When a second double bond is introduced in the molecule, the heat of hydrogenation of the resulting compound is 230 $kJ\ mol^{-1}$. The resulting compound (diene) is

a) 1, 3-Hexadiene
b) 1, 4-Hexadiene
c) 1, 5-Hexadiene
d) Nothing certain

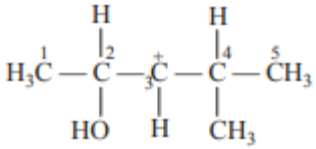
Q.8. Hyperconjugation involves overlap of the following orbitals

a) σ−σ
b) σ−π
c) π−π
d) P-P

Q.9. A solution of (−)−1−chloro−1−phenylethane in toluene racemises slowly in the presence of a small amount of $SbCl_5$, due to the formation of :

a) carbanion
b) carbene
c) carbocation
d) free radical

Q.10. . In the following carbocation, H/CH_3 that is most likely to migrate to the positively charged carbon is



a) CH_3 at C−4
b) CH_3 at C−2
c) H at C−4
d) H at C−2

Q.11. Nucleophilicity order is correctly represented b

a) $CH_3^- < NH_2^- < HO^- < F^-$
b) $CH_3^- > NH2^- > HO^- > F^-$
c) $NH_2^- > F^- > HO^- > CH_3^-$
d) $CH_3^- \simeq NH_2^- > HO^- \simeq F^-$

Q.12. The addition of carbonyl compound to HCN is an example of

a) Nucleophilic substitution
b) Electrophilic addition
c) Nucleophilic addition
d) Electrophilic substitution

Q.13. Hyperconjugation is most useful for stabilizing which of the following carbocation?

a) Neopenty
b) Tert-butyl
c) Iso-propyl
d) Ethyl

Q.14. Among the following alkenes : 1-butane (I), cis-2-butene (II), trans-2-butene (III), the decreasing order of stability is

a) III > II > I
b) III > I > II
c) I > II > III
d) II > I > III

Q.15. Which of the following compounds possess the C-H bond with the lowest bond dissociation energy?

a) Toluene
b) Benzene
c) n-Pentane
d) 2, 2-Dimethyl propane

Q.16. Which of the following is correct regarding the-I. Effect of substituents?

a) $-NR_2 < -OR < F-$
b) $-NR_2 > -OR < -F$
c) $-NR_2 < -OR < -F$
d) $-NR_2 > -OR > -F$

Q.17.Electromeric effect is a

a) permanent effect
b) temporary effect
c) resonance effect
d) inductive effect

Q.18.The kind of delocalization involving the cleavage of sigma bond orbitals is called

a) Inductive effect
b) Hyperconjugation effect
c) Electromeric effect
d) Mesomeric effect

Q.19.Intermediate involved in Reimer-Tiemann reaction is

a) carbocation
b) carbanion
c) carbene
d) free radical

Q.20.In the mechanism of Hofmann reaction which intermediate rearranges to alkyl isocyanate?

a) Bromamide
b) Nitrene
c) Nitroso
d) Amide

Q.21.Acetaldehyde is the rearrangement product of

a) methyl alcohol
b) allyl alcohol
c) vinyl alcohol
d) All are correct

Q.22.Among the given compounds, the most susceptible to nucleophilic attack at the carbonyl group is:

a) CH_2COOCH_2
b) CH_2CONH2
c) $CH_2COOCOCH_2$
d) CH_2COCl

Q.23.Presence of a nitro group in a benzene ring

a) deactivates the ring towards electrophilic substitution
b) activates the ring towards electrophilic substitution
c) renders the ring basic
d) deactivates the ring towards nucleophilic substitution

Q.24.Hyperconjugation involves overlap of the following orbitals

a) σ-σ
b) σ-π
c) π-π
d) p-p

Q.25.A solution of (−)−1−chloro−1−phenylethane in toluene racemises slowly in the presence of a small amount of $SbCl_5$,due to the formation of :

a) carbanion
b) carbene
c) carbocation
d) free radical