Hydrocarbons

Q.1. Which of the following can be used as the halide component of a Friedel craft reaction?

a) Chlorobenzene
b) Bromobenzene
c) Chloroethene
d) Isopropyl chloride

Q.2. Which of the following compounds will exhibit cis-trans isomerism?

a) Butanol
b) 2- Butyne
c) 2-Butenol
d) 2-Butene

Q.3. When 2-butyne is treated with dil.$H_2SO_4/HgSO_4$, the product formed is

a) Butanal
b) Butanol-1
c) Butanol-2
d) 2-Butanone

Q.4. The orth/para-drecting group among the following is

a) COOH
b) $NHCOCH_3$
c) $COCH_3$
d) CN

Q.5. When $CH_3CH_2CHCl_2$ is treated with $NaNH_2$, the product is

a) $CH_3– CH = CH_2$
b) $CH_3– C \equiv CH$
c) $CH_3CH_2CH(NH_2)_2$
d) $CH_3CH_2CHCl(NH_2)$

Q.6. The treatment of benzene with isobutene in the presence of sulphuric acid gives

a) No reaction
b) n-Butyl benzene
c) Tert-butyl benzene
d) Isobutyl benzene

Q.7. Which of the following compounds exhibits steroisomerism?

a) 2-methyl butene-1
b) 3-methylbutanoic acid
c) 2-methylbutanoic acid
d) 3-methyl butyne-1

Q.8. The correct order of reactivity towards the electrophilic substitution of the compounds (i) aniline (ii) benzene (iii) nitrobenzene is

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

Q.9. On mixing certain alkane with chlorine and irradiating it with ultraviolet light, one forms only one monochloro alkane. The alkane could be

a) Neopentane
b) Propane
c) Pentane
d) Isopentane

Q.10. Which of the following species participate in salphonation of benzene ring?

a) H_2SO_4
b) SO_3
c) HSO_3^-
d) SO_2^-

Q.11.Arrange the following in decreasing order of their boiling points.
(A) n–butane (B) 2-methylbutane (C) n-pentane (D) 2, 2–dimethylpropane

a) A > B > C > D
b) B > C > D > A
c) D > C > B > A
d) C > B > D > A

Q.12.Arrange the halogens F_2, Cl_2, Br_2, I_2 , in order of their increasing reactivity with alkanes.

a) $I_2 < Br_2 < Cl_2 < F_2$
b) $Br_2 < Cl_2 < F_2 < I_2$
c) $F_2 < Cl_2 < Br_2 < I_2$
d) $Br_2 < I_2 < Cl_2 < F_2$

Q.13.Which of the following has highest octane number ?

a) n-Hexane
b) n-Heptane
c) n-Pentane
d) 2, 2, 4-Trimethylpentane

Q.14. How many monochlorobutanes will be obtained on chlorination of n-butane?

a) 2
b) 3
c) 4
d) 5

Q.15. Which of the following compound gives similar products obeying Markovnikov's rule and peroxide effect ?

a) $CH_3–CH=CH_2$
b) $CH_3–CH = CH–CH_3$
c) $C_2H_5–CH = CH–CH_3$
d) $C_2H_5 –CH = CH_2$

Q.16.Identify the reagent from the following list which can easily distinguish between 1-butyne and 2-butyne

a) bromine, CCl_4
b) H_2, Lindlar catalyst
c) dilute H_2SO_4, $HgSO_4$
d) ammonical Cu_2Cl_2 solution

Q.17.The hydrocarbon which decolourises alkaline $KMnO_4$ solution, but does not give any precipitate with ammonical silver nitrate is

a) benzene
b) acetylene
c) propyne
d) butyne-2

Q.18. $KMnO_4$ will oxidise acetylene to

a) ethylene glycol
b) ethyl alcohol
c) oxalic acid
d) acetic acid

Q.19.Addition of Br_2 to trans-2-butene would give a product which is

a) chiral
b) meso
c) racemic
d) optically active

Q.20.The most reactive compound for electrophilic nitration is

a) benzene
b) nitrobenzene
c) benzoic acid
d) toluene

Q.21.Aromatic compounds burn with a sooty flame because

a) they have a ring structure of carbon atoms
b) they have a relatively high percentage of hydrogen
c) they have a relatively high percentage of carbon
d) they resist reaction with oxygen of air

Q.22.The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is

a) benzyl alcohol
b) benzophenone
c) acetophenone
d) benzoic acid.

Q.23.What is the product when acetylene reacts with hypochlorous acid?

a) CH_3COCl
b) $ClCH_2CHO$
c) Cl_2CHCHO
d) ClCHCOOH.

Q.24.2-Hexyne gives trans-2-Hexene on treatment with :

a) Pt/H_2
b) Li / NH_3
c) $Pd/BaSO_4$
d) Li AlH_4

Q.25.In the free radical chlorination of methane, the chain initiating step involves the formation of

a) chlorine atom
b) hydrogen chloride
c) methyl radical
d) chloromethyl radical