Unit 13 Hydrocarbons

Evaluation

I. Choose the best answer.

1. The correct statement regarding the comparison of staggered and eclipsed conformations of ethane, is (NEET)

   a) the eclipsed conformation of ethane is more stable than staggered conformation even though the eclipsed conformation has torsional strain.

   b) the staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain.

   c) the staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain.

   d) the staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has no torsional strain.

2. $C_2H_5Br + 2Na \xrightarrow{\text{dry ether}} C_4H_{10} + 2NaBr$ The above reaction is an example of which of the following

   a) Reimer Tiemann reaction

   b) Wurtz reaction

   c) Aldol condensation

   d) Hoffmann reaction

3. Analkyl bromide (A) reacts withsodium in ether to form 4, 5- diethyloctane, the compound (A) is

   a) $CH_3(CH_2)_3Br$

   b) $CH_3(CH_2)_5Br$

   c) $CH_3(CH_2)_3CH(Br)CH_3$

   d) $CH_3-(CH_2)_2-CH(Br)-CH(CH_3)$

4. The C – H bond and C – C bond in ethane are formed by which of the following types of overlap

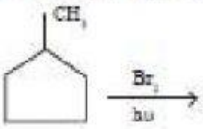
   a) $sp^3 - s$ and $sp^3 - sp^3$

   b) $sp^2 - s$ and $sp^2 - Sp^2$

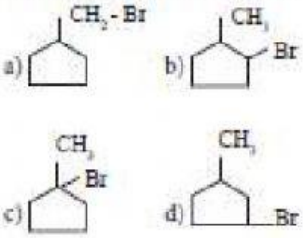
   c) sp – sp and sp – sp

   d) p – s and p – p

5. In the following reaction,



The major product obtained is



6. Which of the following is optically active

   a) 2 – methyl pentane

   b) citric acid

   c) Glycerol

   d) none of of these

7. The compounds formed at anode in the electrolysis of an aquous solution of potassium acetate are

a) CH_4 and H_2

b) CH_4 and CO_2

c) C_2H_6 and CO_2

d) C_2H_4 and Cl_2

8. The general formula for cyclo alkanes

a) C_nH_n b) C_nH_{2n}

c) C_nH_{2n-2} d) C_nH_{2n+2}

9. The compound that will react most readily with gaseous bromine has the formula (NEET)

a) C_3H_6 b) C_2H_2

c) C_4H_{10} d) C_2H_4

10. Which of the following compounds shall not produce propene by reaction with HBr followed by elemination (or) only direct elimination reaction (NEET)

a)

b) $CH_3 - CH_2 - CH_2 - OH$

c) $H_2C = C = 0$

d) $CH_3 - CH_2 - CH_2Br$

11. Which among the following alkenes on reductive ozonolysis produces only propanone ?

a) 2 – Methyl propene

b) 2 – Methyl but – 2 - ene

c) 2, 3 – Dimethyl but – 1 – ene

d) 2, 3 – Dimethyl but – 2 – ene

12. The major product formed when 2 – bromo – 2 – methyl butane is refluxed with ethanolic KOH is

a) 2 – methylbut – 2 – ene

b) 2 – methyl butan – 1 – ol

c) 2 – methyl but – 1 – ene

d) 2 – methyl butan – 2 – ol

13. Major product of the below mentioned reaction is,

$(CH_3)_2C = CH_2 \xrightarrow{ICl}$

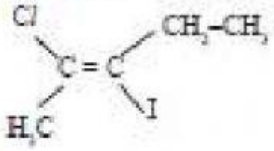
a) 2–chloro –1– iodo – 2 – methyl propane

b) 1–chloro–2–iodo–2–methylpropane

c) 1,2 – dichloro – 2 – methyl propane

d) 1, 2 – diiodo – 2 – methyl propane

14. The IUPAC name of the following compound is



a) trans–2–chloro–3–iodo – 2 – pentene

b) cis–3 – iodo – 4 – chloro – 3 – pentane

c) trans–3–iodo–4–chloro – 3 – pentene

d) cis–2 – chloro – 3 – iodo – 2 – pentene

15. Cis – 2 – butene and trans – 2 – butene are

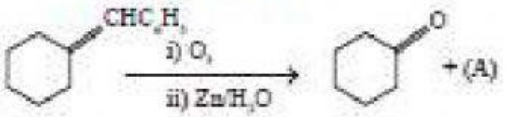
a) conformational isomers

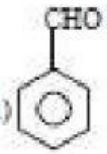
b) structural isomers

c) configurational isomers

d) optical isomers

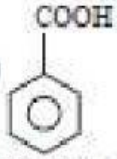
16. Identify the compound (A) in the following reaction



a) 

b)

c)

d) 

17. $CH_2-CH_2 \xrightarrow{(A)} CH \equiv CH$, where A is,

Br	Br

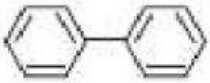
a) Zn b) Conc H_2SO_4
c) alc. KOH d) dil H_2SO_4

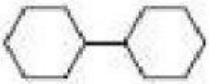
18. Consider the nitration of benzene using mixed con H_2SO_4 and HNO_3 if a large quantity of $KHSO_4$ is added to the mixture, the rate of nitration will be

a) unchanged b) doubled
c) faster d) slower

19. In which of the following molecules, all atoms are co-planar

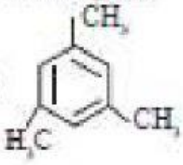
a)

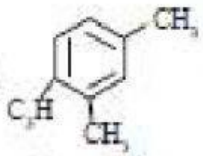
b) 

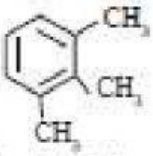
c) 

d) both (a) and (b)

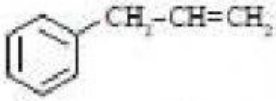
20. Propyne on passing through red hot iron tube gives

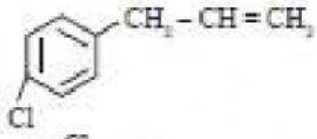
a) 

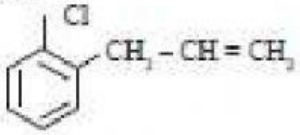
b) 

c) 

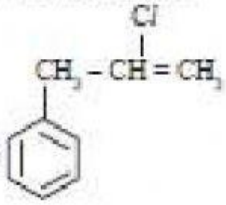
d) none of these

21. 

a) 

b) 

c) both (a) and (b)

d) 

22. Which one of the following is non aromatic ?

a) b)

c) d)

23. Which of the following compounds will not undergo Friedal – crafts reaction easily ? (NEET)

a) Nitro benzene b) Toluene

c) Cumene d) Xylene

24. Some meta-directing substituents in aromatic substitution are given. Which one is most deactivating ?

a) – COOH b) – NO_2
c) – C ≡ N d) – SO_3H

25. Which of the following can be used as the halide component for friedal - crafts reaction ?

a) Chloro benzene

b) Bromo benzene

c) chloro ethene

d) isopropyl chloride

26. An alkane is obtained by decarboxylation of sodium propionate. Same alkane can be prepared by

a) Catalytic hydrogenation of propene

b) action of sodium metal on iodomethane

c) reduction of 1 – chloro propane

d) reduction of bromomethane

27. Which of the following is aliphatic saturated hydrocarbon

a) C_8H_{18} b) C_5H_{10}
c) C_8H_{14} d) All of these

28. Identify the compound 'Z' in the following reaction

$$C_2H_6O \xrightarrow[623\ K]{Al_2O_3} X \xrightarrow{O_2} Y \xrightarrow{Zn/H_2O} (Z)$$

a) Formaldehyde

b) Acetaldehyde

c) Formic acid d) none of these

29. Peroxide effect (Kharasch effect) can be studied in case of

a) Oct – 4 – ene b) hex – 3 – ene
c) pent – 1 – ene d) but – 2 – ene

30. 2 – butyne on chlorination gives

a) 1 – chloro butane
b) 1, 2 – dichloro butane
c) 1, 1, 2, 2 – tetrachlorobutane
d) 2, 2, 3, 3 – tetra chloro butane