

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. An alkyl bromide (A) reacts with sodium in ether to form 4, 5- diethyloctane, the

compound (A) is

a) $CH_3(CH_2)_3Br$

b) $CH_3(CH_2)_4Br$

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

d) $CH_3 - (CH_2)_2 - CH(Br) - \underset{\begin{array}{c} | \\ CH_3 \end{array}}{CH_2}$

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

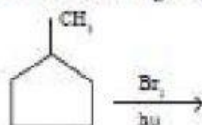
a) $sp^3 - s$ and $sp^3 - sp^3$

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

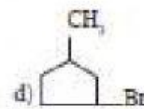
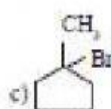
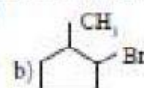
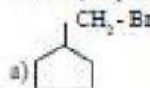
c) $sp - sp$ and $sp - sp$

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 these

7. The compounds formed at anode in the electrolysis of an aqueous 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) $\text{C}_n\text{H}_{2n-2}$ d) $\text{C}_n\text{H}_{2n+2}$

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 elimination (or) only direct elimination reaction (NEET)

a) ∇
 b) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$
 c) $\text{H}_2\text{C} = \text{C} = \text{O}$
 d) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2\text{Br}$

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

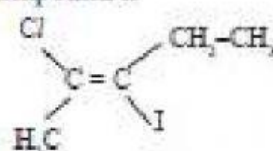
a) 2 - methylbut - 2 - ene
 b) 2 - methyl butan - 1 - ol
 c) 2 - methyl but - 1 - ene
 d) 2 - methyl butan - 2 - ol

13. Major product of the below mentioned reaction is,



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

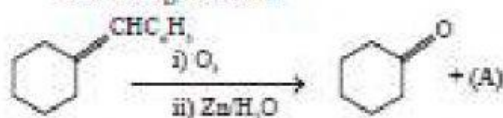


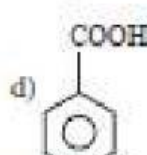
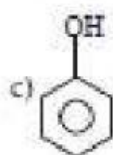
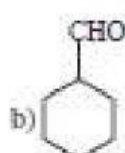
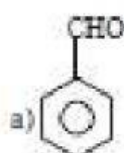
a) trans-2-chloro-3-iodo - 2 - pentene
 b) cis-3 - iodo - 4 - chloro - 3 - pentane
 c) trans-3-iodo-4-chloro - 3 - pentene
 d) cis-2 - chloro - 3 - iodo - 2 - pentene

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





17. $\text{CH}_2 - \text{CH}_2 \xrightarrow{\text{A}} \text{CH} \equiv \text{CH}$, where A is,

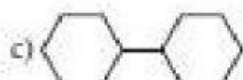
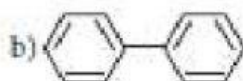
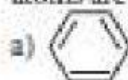


- a) Zn
c) alc. KOH
b) Conc H_2SO_4
d) dil H_2SO_4

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

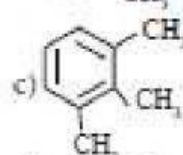
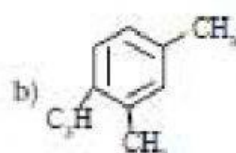
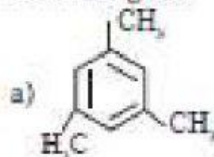
- a) unchanged
c) faster
b) doubled
d) slower

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



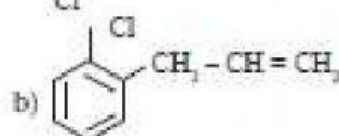
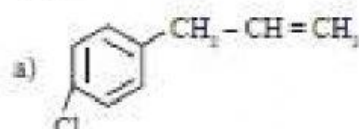
- d) both (a) and (b)

20. Propyne on passing through red hot iron tube gives

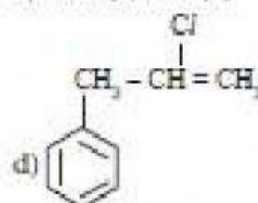


- d) none of these

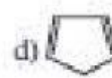
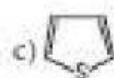
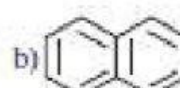
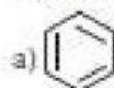
21. $\xrightarrow{\text{HCl}}$ (A) is



- c) both (a) and (b)



22. Which one of the following is non aromatic ?



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) - NO₂
 c) - C ≡ N d) - SO₃H
25. Which of the following can be used as the halide component for Friedel-Crafts reaction ?
 a) Chloro benzene
 b) Bromo benzene
 c) chloro ethene
 d) isopropyl chloride
26. An alkane is obtained by decarboxylation of sodium propanoate. 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) C₈H₁₈ b) C₈H₁₆
 c) C₈H₁₄ d) All of these
28. Identify the compound 'Z' in the following reaction



- 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-tetrachlorobutane