CHAPTER - ALDEHYDE KETONE AND CARBOXYLIC ACID

(ONE MARK MCQ TYPE QUESTIONS)

1. Which of the following reactions will not result in the formation of C-C bond?
   (a) Cannizzaro Reaction (c) Reimer-Tiemann Reaction
   (b) Wurtz Reaction (d) Friedal Crafts Reaction
2. The strongest acid among the following compound is.
   (a) HCOOH (*b*) CH3COOH (*c*) $(CH_3)_3$ CHCOOH (*d*) $(CH_3)_3CCOOH$
3. Which of the following do not give aldol condensation reactions?
   (a) Formaldehyde (*b*) Acetaldehyde (*c*) Dimethylketone (*d*) Propionaldehyde
4. The catalyst used in Rosenmund's reduction is
   (a) $HgSO_4$ (*b*) $Pd/BaSO_4$ (*c*) Anhydrous $AlCl_3$ (*d*) Ni/H_2
5. Carboxylic acids are more acidic then phenol and alcohol because of :
   (a) Intermolecular hydrogen bonding (c) Highly acidic hydrogen
   (b) Formation of dimers (d) Resonance stabilization of conjugate base
6. Correct order of decreasing reactivity of nucleophillic addition in case of HCHO, CH_3 CHO and CH_3 $COCH_3$ is
   (a) CH_3 $COCH_3$ > CH_3 CHO > HCHO (*b*) HCHO > CH_3 CHO > CH_3 $COCH_3$
   (*c*) CH_3 $COCH_3$ > HCHO > CH_3 CHO (*d*) CH_3 CHO > HCHO > CH $_3COCH_3$
7. The reagent with which both acetaldehyde and acetone react easily is
   (a) Fehling's reagent (c) Schiff's reagent
   (b) Grignard's reagent (d) Etard's reaction.
8. The chemical reaction $2HCHO \xrightarrow{Conc.\ NaOH} CH_2OH+HCOONa$ represents
   (a) Rosenmund's reaction. (c) Kolbe's reaction
   (b) Cannizaro's reaction (d) Etard's reaction
9. For distinction between pentan-2-one and pentan-3-one, which reagent can be employed?
   (a) $K_2Cr_2O_7$ /H (*b*) ZnHg/HCl
   (*c*) $NaOH/I_2$ (*d*) $AgNO_3$ /NH_4 OH

10. Which of the following will undergo aldol condensation?

(a) CH_2 = CHCHO (*b*) CH = CCHO

(*c*) C_6 H_5 CHO (*d*) CH_3 CH_2 CHO

11. Compound 'A' C_5 H_{10} O forms a phenyl hydrazone and gives a negative Tollen's reagent test and iodoform test. On reduction with Zn+Hg/HCl, compound A gives n-pentane. Thecompound OA' is

(a) Primary alcohol (*b*) Aldehyde (*c*) Secondary alcohol (*d*) Ketone

12. Tert Butyl alcohol can be obtained by treating with CH_3 MgBr followed by hydrolysis

(a) HCHO (*b*) CH_3 CHO (*c*) CH_3 $COCH_3$ (*d*) CH_3 CH_2 CHO

13. $C_6H_3N_3O_7$ is called as :

(a) 3-Nitrosalicylic acid (*b*) 3, 5-Dinitrosalicylic acid

(*c*) m-Nitrobenzoic acid (*d*) Picric acid

14. The end product (C) in the following reaction sequence is

(a) CH_3 — CH_2 COONa (*b*) CH_2= CH_2 (*c*) CH_3 — CH_3 (*d*) CH_2 = CH-COOH

15. Benzoic acid is weaker than ..... but stronger than .....

(a) p-toluic acid, o-toluic acid (*b*) p-nitrobenzoic acid, p-toluic acid

(*c*) acetic acid, formic acid (*d*) fomic acid, acetic acid

16. Which of the following reactions will give benzolphenone?

(i) Benzoyl chloride + Benzene + $AlCl_3$

(ii) Benzoyl chloride + Phenylmagnesium bromide

(iii) Benzoyl chloride + Diphenyl cadmium

(*a*) (i) and(ii) (*b*) (ii) and (iii) (*c*) (i) and (iii) (*d*) (i), (ii) and (iii)

17. Propanone can be prepared from ethyne by

(a) passing a mixture of ethyne and steam over a catalyst, magnesium at 420°C

(b) passing a mixture of ethyne and ethanol over a catalyst zinc chromite

(c) boiling ethyne with water in the presence of $HgSO_4$ and H_2 SO_4

(d) treating ethyne with iodine and NaOH

18. The oxidation of toluene to benzaldehyde by chromyl, chloride is called

(*a*) Etard reaction (*b*) Riemer-Tiemann reaction

(*c*) Wurtz reaction (*d*) Cannizzaro's reaction

19. There is a large difference in the boiling points of butanal and butanal-1-ol due to

(a) intermolecular hydrogen bonding in butan-1-ol

(b) intermolecular hydrogen bonding in butanal

(c) higher molecular mass of butan-1-ol

(d) resonance shown by butanal

20. The addition of HCN to carbonyl compounds is an example of

(*a*) nucleophilic addition (*b*) electrophilic addition

(*c*) free radical addition (*d*) electromeric addition

21. Aldehydes other than formaldehyde react with Grignard's reagent to give additionproducts which on hydrolysis give

(*a*) tertiary alcohols (*b*) secondary alcohols

(*c*) primary alcohols (*d*) carboxylic acids

22. Which of the following will not give aldol condensation?

(*a*) Phenyl acetaldehyde (*b*) 2-Methylpentanal

(*c*) Benzaldehyde (*d*) 1-Phenylpropanone

23. Which of the following compounds does not react with $NaHSO_4$?
(*a*) HCHO (*b*) $C_6H_5COCH_3$ (*c*) CH_3COCH_3 (*d*) CH_3CHO

24. The product of hydrolysis of ozonide of 1-butene are
(*a*) ethanol only (*b*) ethanal and methanal
(*c*) propanal and methanal (*d*) methanal only

25. Which of the following compounds will undergo Cannizzaro reaction?
(i) CH_3CHO (*b*) CH_3COCH_3 (*c*) C_6H_5CHO (*d*) $C_6H_5CH_2CHO$

Answers

1. (*a*)	**2.** (*a*)	**3.** (*a*)	**4.** (*b*)	**7.** (*d*)
6. (*b*)	**7.** (*b*)	**8.** (*b*)	**9.** (*c*)	**10.** (*d*)
11. (*b*)	**12.** (*c*)	**13.** (*d*)	**14.** (*b*)	**17.** (*d*)
16. (*c*)	**17.** (*c*)	**18.** (*a*)	**19.** (*a*)	**20.** (*a*)
21. (*b*)	**22.** (*c*)	**23.** (*b*)	**24.** (*c*)	**25.** (*c*)

True / False

1. Aldehydes and ketones react with electrophiles but not with nucleophiles (False)
2. Wolff Kishner reduction of acetophenone gives toluene (False)
3. Acetaldehyde can be reduced to ethane in the presence of $LiAlH_4$ (False)
4. Acetaldehyde can be prepared by the distillation of calcium acetate (False)
5. Benzaldehyde cannot undergo Cannizzaro Reaction. (True)
6. Aldehydes are less easily oxidized than ketones (False)
7. Benzaldehyde reduces Fehling Solution (False)
8. Ketones give nucleophilic addition reactions more readily. (False)
9. Acetaldehyde cyanohydrin on hydrolysis give Lactic Acid (True)
10. Benzaldehyde forms addition product with sodium bisulphite but but acetophenone does not. (True)
11. Calcium formate on heating gives acetaldehyde (False)
12. The pK Value of formic acid is smaller than that of acetic acid (True)
13. The carbon-oxygen bond lengths in formic acid are equal. (False)
14. During the reaction of carboxylic acid with $NaHCO_3$ (True)
15. When benzoic acid is heated with soda lime, benzene is formed. (True)
16. Acetate ion is a stronger acid than methoxide ion. (Acetate ion is a weaker base than methoxide ion because a stronger acid has a weaker conjugate base) (False)
17. Me_3CCH_2 -COOH is more acidic than Me_3SiCH_2COOH. (True)
18. Formic acid gives Silver mirror test Tollens Reagent. (True)

(TWO MARKS QUESTIONS)

1. Most aromatic acids are solids while acetic acid and other acids of this series are liquids. Explain.
2. Why do aldehyde and ketones have high dipole a moment ?
3. Aldehydes lower boiling points than corresponding alcohols and acids. Explain
4. Distinguish test between aldehyde and Ketone
5. What is formalin solution give its one use ?
6. How does > C = C< differ from >C = O group in Chemical reactions.
7. Why carboxylic acid exists as dimer ?
8. Why are boiling points of carboxylic acids higher than the corresponding alcohols?
9. Why chloroacetic acid is stronger acid than acetic acid ?
10. Write the IUPAC name of salicylic acid.
11. How benzoic acid is prepared from toluene ?
12. Why are bond length of C = O in carboxylic acid is slightly larger than that in aldehyde and Ketone ?
13. Discuss Hell-volhard-Zelinsky reaction of carboxylic acid
14. Why do aldehyde and ketones have high dipole a moment ?
15. Explain Clemmeson's reaction.
16. Aldehydes lower boiling points than corresponding alcohols and acids. Explain.
17. How will you distinguish between Acetaldehyde and benzaldehyde ?
18. Explain, why benzoic acid is stronger acid than acetic acid.
19. Fluoroacetic acid is stronger acid than chloroacetic acid. Explain.
20. How will you account for the acidic nature of carboxylic acid ?
21. Why chloroacetic acid is stronger acid than acetic acid ?
22. Why formic acid is a stronger acid than acetic acid ?