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UDUPI

CET25C8 ALDEHYDES KETONES AND CARBOXYLIC ACIDS

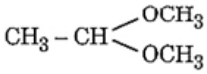
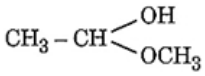
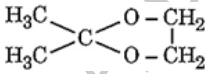
Class 12 - Chemistry

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 61**

1. One mole of a symmetrical alkane on ozonolysis gives two moles of an aldehyde having a molecular mass of 44u. The alkene is: **[1]**

   a) 1 – butene
   b) 2 – butene
   c) Propene
   d) Ethene

2. Which of the following is an **Acetal**? **[1]**

   a) 
   b) $CH_3CH_2 - OCH_3$
   c) 
   d) 

3. For making a distinction between 2 – pentanone and 3 – pentanone the reagent to be employed is: **[1]**

   a) $K_2Cr_2O_7 / H_2SO_4$
   b) SeO_2
   c) Zn – Hg/HCl
   d) Iodine/NaOH

4. The reduction of ethanenitrile with sodium and alcohol gives: **[1]**

   a) 1-aminoethane
   b) Ethanamide
   c) 1-aminopropane
   d) Ethanoic acid

5. Which of the following is most reactive in nucleophilic addition reactions? **[1]**

   a) CH_3CHO
   b) HCHO
   c) $CH_3COC_2H_5$
   d) CH_3COCH_3

6. The reagent that can be used to distinguish acetophenone and benzophenone is **[1]**

   a) aqueous $NaHSO_3$
   b) 2, 4-dinitrophenyl hydrazine
   c) I_2 and NaOH
   d) Fehling solution

7. Which is the most suitable reagent for the following conversion? **[1]**

   $$CH_3 - CH = CH - CH_2 - \overset{O}{\overset{\|}{C}} - CH_3 \longrightarrow CH_3 - CH = CH - CH_2 - \overset{O}{\overset{\|}{C}} - OH$$

   a) I_2 and NaOH solution
   b) Tollen's reagent
   c) Sn and NaOH solution
   d) Benzoyl peroxide

8. Iodoform test is given by **[1]**

   a) Ethanoic acid
   b) Pentan-3-one
   c) Methoxymethane
   d) Pentan-2-one

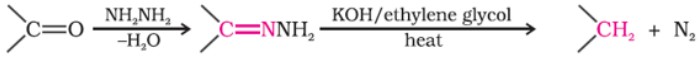
9. The oxidation of toluene to benzaldehyde by chromyl chloride is called **[1]**

a) Cannizzaro's reaction
b) Riemer-Tiemann reaction
c) Etard reaction
d) Stephen's reaction

10. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives: **[1]**

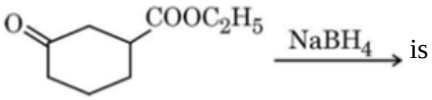
a) Benzyl alcohol and methyl alcohol
b) Benzyl alcohol and sodium formate
c) Sodium benzoate and methyl alcohol
d) Sodium benzoate and sodium formate

11. The following reaction is: **[1]**

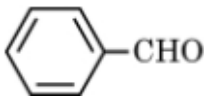


a) catalytic hydrogenation
b) Clemens reduction
c) catalytic ionisation
d) Wolff – Kishner reduction

12. The product formed in the reaction: **[1]**



is

a) HCHO
b) $(CH_3)_3$ C - CHO
c) 

d) $(CH_3)_2$ CH - CHO

13. The base hydrolysis of an ester is called_____. **[1]**

a) saponification
b) esterification
c) hydrolysis
d) neutralization

14. The common name for pentanedioic acid is: **[1]**

a) Succinic acid
b) Pimelic acid
c) Oxalic acid
d) Glutaric acid

15. Benzene reacts with CH_3COCl in the presence of $AlCl_3$ to give: **[1]**

a) $C_6H_5COCH_3$
b) C_6H_5COCl
c) $C_6H_5CH_3$
d) C_6H_5Cl

16. The fragrance of the aldehyde and ketone are used for perfume and similar uses depend on: **[1]**

a) on its reactivity with other functional groups.
b) size and solubility of the aldehyde and ketone molecule.
c) only solubility of aldehydes and ketones.
d) moisture of the air.

17. Pentan-2-one and Pentan-3-one can be distinguished by: **[1]**

a) Sodium bicarbonate test
b) Fehling's test
c) Tollens' test
d) Iodoform test

18. Methyl ketones are usually characterized by: **[1]**

a) Benedict's reagent
b) Iodoform test
c) Schiff's test
d) Tollen's reagent

19. Which of the following will undergo aldol condensation? **[1]**

a) CH_3CH_2CHO b) CH = CCHO

c) C_6H_5CHO d) CH_2 = CHCHO

20. Acetone is treated with excess of ethanol in the presence of hydrochloric acid. The product obtained is: **[1]**

a) $(CH_3)_2C(OH)(OC_2H_5)$ b) $(CH_3)_2C(OC_2H_5)(OC_2H_5)$

c) CH_3COOH d) $(CH_3)_2CH(OH)$

21. Which of the following compounds will undergo self-condensation in the presence of dilute NaOH solution? **[1]**

a) CH_3CH_2CHO b) $(CH_3)_3C$ - CHO

c) C_6H_5CHO d) H-CHO

22. Common name of Ethan-1, 2-dioic acid is known a **[1]**

a) Adipic acid b) Acetic acid

c) Oxalic acid d) Phthalic acid

23. Which of the following reagents would one choose to transform CH_3COCl into acetone? **[1]**

a) CH_3MgBr b) $(CH_3)_2Cd$

c) $(CH_3O)_2Mg$ d) CH_3Cl

24. Compound 'A' undergoes the formation of cyanohydrins which on hydrolysis gives lactic acid ($CH_3CHOHCOOH$). Therefore, compound 'A' is: **[1]**

a) Acetone b) Benzaldehyde

c) Acetaldehyde d) Formaldehyde

25. Which of the following has most acidic hydrogen? **[1]**

a) 2, 3 – Hexanedione b) 2, 5 – Hexanedione

c) 2, 4 – Hexanedione d) 3 – Hexanone

26. Toluene reacts with Cl_2 /hv and H_3O^+ to form: **[1]**

a) Chlorotoluene b) Benzoic Acid

c) Benzaldehyde d) Benzal chloride

27. Give the products of the reaction **[1]**

$PhC \equiv CMe \xrightarrow{H_3O^+, Hg^{2+}} ?$

a) $PhCH_2CH_2CHO$ b) $PhCOCH_2CH_3$

c) PhCOCOMe d) $PhCH_2COCH_3$

28. Aldehydes and ketones react with hydroxylamine to form **[1]**

a) cyanohydrins b) Oxime

c) semicarbazones d) hydrazones

29. The molecular formula of ethyl acetate is: **[1]**

a) C_4H_8O b) $C_4H_8O_2$

c) $C_5H_{10}O_2$ d) $C_5H_8O_2$

30. The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is **[1]**

a) Benzophenone b) Acetophenone

c) Benzoic acid d) Benzyl alcohol

31. What kind of compounds undergo Cannizaro reactions? **[1]**

a) Ketones with no α- hydrogen b) Aldehydes with α- hydrogen

c) Aldehydes with no α- hydroge d) Carboxylic acids with α- hydrogen

32. Oximes are formed by the reaction of aldehydes and ketones with: **[1]**

a) NH_2NH_2 b) NH_2OH

c) NH_3 d) $NH_2NHC_6H_5$

33. When ethanal is heated with Fehlings solution, it gives a precipitate of: **[1]**

a) Cu + Cu_2O + CuO b) CuO

c) Cu d) Cu_2O

34. In the following reaction **[1]**

CH_3-CH=CH-CH_2-OH $\xrightarrow{PCC}$

the product formed is:

a) CH_3-CH_2-CH_2-CHO b) CH_3-CH = CH-COOH

c) CH_3-CH = CH-CHO d) CH_3-CHO and CH_3CH_2OH

35. Compounds A and C in the following reaction are _____. **[1]**

$$CH_3CHO \xrightarrow[(ii)\ H_2O]{(i)\ CH_3MgBr} (A) \xrightarrow{H_2SO_4,\ \Delta} (B) \xrightarrow[oxidation]{Hydorboration} (C)$$

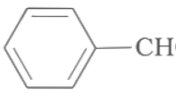
a) optical isomers b) identical

c) functional isomers d) positional isomers

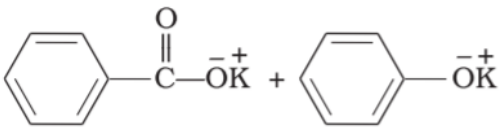
36. In Clemmensen reduction, carbonyl compound is treated with _____. **[1]**

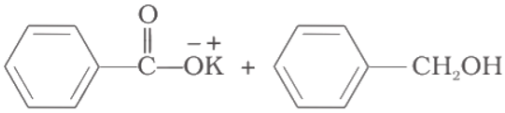
a) sodium amalgam + HNO_3 b) zinc amalgam + nitric acid

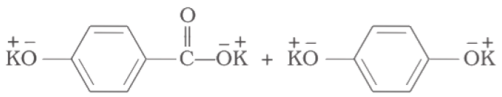
c) sodium amalgam + HCl d) zinc amalgam + HCl

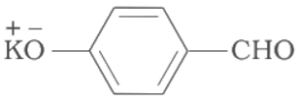
37. Which product is formed when the compound  is treated with concentrated aqueous KOH **[1]**

solution?

a) 

b) 

c) 

d) 

38. Which of the following does not give silver mirror test? **[1]**

a) CH_3CH_2CHO b) HCOOH

c) CH_3CHO d) CH_3COCH_3

39. $CH_3 - C \equiv CH \xrightarrow[1\%HgSO_4]{40\%H_2SO_4} A \xrightarrow{Isomerisation} CH_3 - \underset{\underset{O}{\|}}{C} - CH_3$ **[1]**

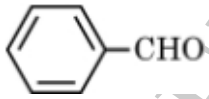
Structure of A and type of isomerism in the above reaction are respectively.

a) Prop-2-en-2-ol, geometrical isomerism b) Prop–1–en–2–ol, metamerism

c) Prop-1-en-2-ol, tautomerism d) Prop-1-en-1-ol, tautomerism

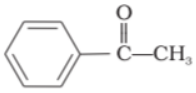
40. Which of the following does not give Cannizaro reaction? **[1]**

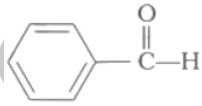
a) $(CH_3)_3$ C - CHO b) $(CH_3)_2$ CH - CHO

c) HCHO d) 

41. Which of the following compounds is most reactive towards nucleophilic addition reactions? **[1]**

a) $CH_3 - \overset{\overset{O}{\|}}{C} - H$ b) $CH_3 - \overset{\overset{O}{\|}}{C} - CH_3$

c) 

d) 

42. Iodoform test is **not** given by **[1]**

a) Ethanol b) Hexan-2-one

c) Ethanal d) Hexan-3-one

43. What compound is produced when cyclohexene is treated with concentrated $KMnO_4$? **[1]**

a) Succinic acid b) Adipic acid

c) Hexanoic acid d) Cyclohexanecarboxylic acid

44. Aldol condensation will not take place in: **[1]**

a) CH_3CHO b) CH_3COCH_3

c) HCHO d) CH_2CH_2CHO

45. What is the correct IUPAC name of the given compound? **[1]**

$CH_3 - \underset{\underset{COOH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_3$

a) 2-Carboxyl-2-methylbutane b) 2-Ethyl-2-methylpropanoic acid

c) 3-Methylbutane carboxylic acid d) 2,2-Dimethylbutanoic acid

46. Which of the following compounds will give butanone on oxidation with alkaline $KMnO_4$ solution? **[1]**

a) Butan-2-ol b) Both Butan-2-ol and Butan-1-ol

c) Butan-1-ol d) Butan-3-ol

47. The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is **[1]**

a) Acetophenone

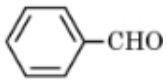
b) Benzoic acid

c) Benzophenone

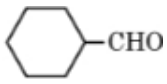
d) Benzyl alcohol

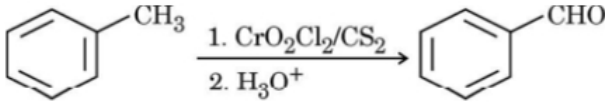
48. Which of the following does not give aldol condensation reaction? **[1]**

a) CH_3COCH_3

b) 

c) CH_3 - CHO

d) 

49. 

[1]

This reaction is known as:

a) Rosenmund reduction

b) Etard reaction

c) Cannizzaro reaction

d) Aldol condensation

50. Addition of water to alkynes occurs in an acidic medium and in the presence of Hg^{2+} ions as a catalyst. Which of the following products will be formed on addition of water to but-1-yne under these conditions? **[1]**

a) $CH_3 - CH_2 - CH_2 - \overset{O}{\overset{\|}{C}} - H$

b) $CH_3 - CH_2 - \overset{O}{\overset{\|}{C}} - CH_3$

c) $CH_3 - CH_2 - \overset{O}{\overset{\|}{C}} - OH + CO_2$

d) $CH_3 - \overset{O}{\overset{\|}{C}} - OH + H - \overset{O}{\overset{\|}{C}} - H$

51. A compound (A) with molecular formula $C_5H_{10}O$, forms a phenyl hydrazone and gives negative Tollens' and iodoform tests. The compound on reduction gives n-pentane. The compound (A) is: **[1]**

a) Pentan-3-one

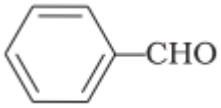
b) Pentan-2-one

c) Pentanal

d) Pentanol

52. Cannizaro's reaction is not given by _____. **[1]**

a) CH_3CHO

b) 

c) 

d) HCHO

53. The correct sequence of steps involved in the mechanism of Cannizzaro's reaction is **[1]**

a) electrophilic attack by OH^- , transfer of H^+ and transfer of H^-

b) transfer of H^+, nucleophilic attack and transfer of H^-

c) electrophilic attack by OH^-, transfer of H^-

d) nucleophilic attack, transfer of H^- and transfer of H^+

54. $C_6H_5CHO + CH_3COCH_3 \xrightarrow[\Delta]{OH^-} C_6H_5CH = CH - COCH_3$ **[1]**

This reaction is known as:

a) Friedel-Crafts reaction
b) Cannizzaro's reaction
c) Aldol condensation
d) Cross-Aldol condensation

55. The compound which forms acetaldehyde when heated with dilute NaOH is: **[1]**

a) 1, 2 dichloroethane
b) 1, 1, 1 trichloroethane
c) 1 chloroethane
d) 1, 1 dichloroethane

56. Many naturally occurring aldehydes and ketones are used in the blending of perfumes and flavouring agents. But the preferred ones are_____. **[1]**

a) lower ketones
b) higher ketones
c) lower aldehydes
d) higher aldehydes

57. The reagent which does not react with both acetone and benzaldehyde. **[1]**

a) Sodium hydrogensulphite
b) Phenyl hydrazine
c) Fehling's solution
d) Grignard reagent

58. Which of the following is the strongest acid? **[1]**

a) Methyl alcohol
b) Acetic acid
c) Phenol
d) Water

59. Benzaldehyde and acetone can be best distinguished by using: **[1]**

a) Hydrazine
b) Tollen's reagent
c) 2, 4 – DNP reagent
d) Sodium hydroxide solution

60. Give IUPAC names of the following compound: $CH_3CH_2CH_2CH(Br)CH(CH_3)CH_2CHO$ **[1]**

a) 4 – Bromo – 3 – methylheptanal
b) 2 – Methyl – 3 – bromoheptanal
c) 3– Methyl – 3 – bromoheptanaldehyde
d) 2 – Methyl – 3 – bromoheptanaldehyde

61. How to do the following conversion: **[1]**
$RCOOCl + ? \rightarrow RCHO$

a) Using H_2-Pd,$BaSO_4$
b) Using DIBAL-H
c) Using H_2 - Pd
d) Using $NaBH_4$