

Aldehyde and ketone Assignment

1. The product (s) obtained via oxymercuration ($HgSO_4 + H_2SO_4$) of 1-butyne would be
 (a) $CH_3CH_2COCH_3$ (b) $CH_3CH_2CH_2CHO$ (c) $CH_3CH_2CHO + HCHO$ (d) $CH_3CH_2COOH + HCOOH$

2. Consider the following statement acetophenone can be prepared by

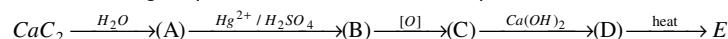
- Oxidation of 1-phenylethanol
- Reaction of benzaldehyde with methyl magnesium bromide
- Friedel craft's reaction of benzene with acetyl chloride
- Distillation of calcium benzoate

- (a) 1 and 2 (b) 1 and 4 (c) 1 and 3 (d) 3 and 4

3. For obtaining 2-butanone from acetyl chloride which of the following reagent can be used

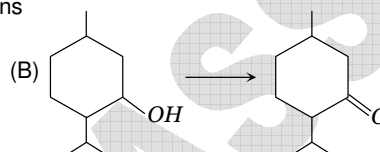
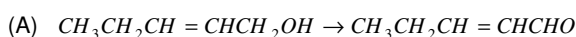
- (a) Grignard reagent (b) HI (c) $H_2, Pd - BaSO_4$ (d) Diethyl cadmium

4. In the following sequence of reactions, the end product



- (a) Acetaldehyde (b) Formaldehyde (c) Acetic acid (d) Acetone

5. Suggest suitable oxidising reagents for the following conversions



- (a) MnO_2 in A and CrO_3 (in glacial acetic acid) in B (b) CrO_3 in A and MnO_2 in B
 (c) Both (a) and (b) (d) None of these

6. Acetone may be produced from starch by the action of

- (a) Acid (b) Certain bacteria (c) Oxidising agents (d) None of these

7. Which one of the following on oxidation will not give a carboxylic acid with the same number of carbon atoms

- (a) CH_3COCH_3 (b) CCl_3CH_2CHO (c) $CH_3CH_2CH_2OH$ (d) CH_3CH_2CHO

8. Among the following compounds, which will react with acetone to give a product containing $>C=N-$

- (a) $C_6H_5NH_2$ (b) $(CH_3)_3N$ (c) $C_6H_5NHC_6H_5$ (d) $C_6H_5NHNH_2$

9. Which of the following will fail to react with potassium dichromate and dilute sulphuric acid

- (a) Ethyl alcohol (ethanol) (b) Acetaldehyde (ethanal)
 (c) Secondary propyl alcohol (2-propanol) (d) Acetone (propanone)

10. The enol form of acetone, after treatment with D_2O gives

- (a) $CH_3 - \overset{OD}{\underset{|}{C}} = CH_2$ (b) $CD_3 - \overset{O}{\parallel} C - CD_3$ (c) $CH_2 = \overset{OH}{\underset{|}{C}} - CH_2D$ (d) $CD_2 = \overset{OD}{\underset{|}{C}} - CD_3$

11. Which of the following will undergo aldol condensation

- (a) Acetaldehyde (b) Propanaldehyde (c) Benzaldehyde (d) Trideuteroacetaldehyde

12. The following reagent converts C_6H_5COCHO to $C_6H_5CHOHCOONa$

- (a) aq. $NaOH$ (b) Acidic $Na_2S_2O_3$ (c) Na_2CrO_4 / H_2SO_4 (d) $NaNO_2 / HCl$

13. Acetaldehyde on treatment with dil. $NaOH$ followed by heating gives

- (a) $CH_3CH_2CH_2CH_2OH$ (b) $CH_3CH_2CH_2CHO$ (c) $CH_3 - CH = CHCHO$ (d)
 $CH_3 - CH = CHCH_2OH$

14. Which of the following products is formed when benzaldehyde is treated with CH_3MgBr and the addition product so obtained is subjected to acid hydrolysis

- (a) Secondary alcohol (b) A primary alcohol (c) Phenol (d) Tert-Butyl alcohol

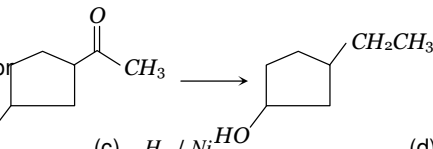
15. $(CH_3)_2CO \xrightarrow[(HCl)]{NaCN} A \xrightarrow[\Delta]{H_3O^+} B$. In this reaction A and B are

- (a) $(CH_3)_2C(OH)CN, (CH_3)_2C(OH)COOH$ (b) $(CH_3)_2C(OH)CN, (CH_3)_2C(OH)_2$
 (c) $(CH_3)_2C(OH)CN, (CH_3)_2CHCOOH$ (d) $(CH_3)_2C(OH)CN, (CH_3)_2C=O$

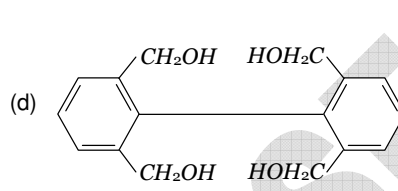
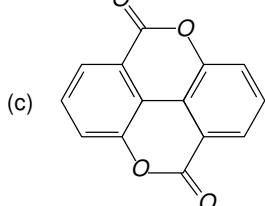
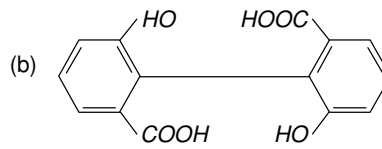
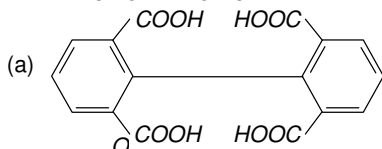
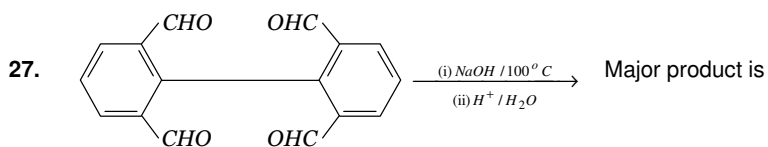
16. An organic compound 'A' has the molecular formula C_3H_6O , it undergoes iodoform test. When saturated with dil. HCl it gives 'B' of molecular formula $C_9H_{14}O$. A and B respectively are

- (a) Propanal and mesitylene (b) Propanone and mesityl oxide
 (c) Propanone and 2, 6-dimethyl-2, 5-heptadien-4-one (d) Propanone and mesitylene oxide

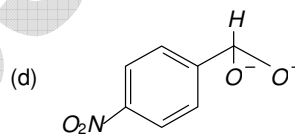
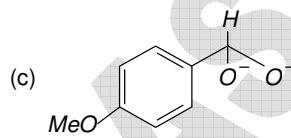
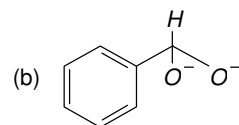
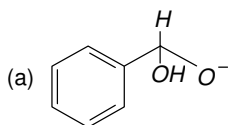
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17. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives
- Benzyl alcohol and sodium formate
 - Sodium benzoate and methyl alcohol
 - Sodium benzoate and sodium formate
 - Benzyl alcohol and methyl alcohol
18. The appropriate reagent for the following transformation  is
- Zn(Hg), HCl
 - $\text{NH}_2, \text{NH}_2, \text{OH}^-$
 - H_2 / Ni
 - NaBH_4
19. On vigorous oxidation by permanganate solution $(\text{CH}_3)_2\text{C}=\text{CH}-\text{CH}_2\text{CH}_3$ gives
- $\text{CH}_3-\overset{\text{OH}}{\underset{\text{CH}_3}{\text{C}}}-\overset{\text{OH}}{\text{CH}}-\text{CH}_2\text{CH}_3$
 - $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}-\text{HCO}_2\text{H} + \text{CH}_3\text{COOH}$
 - $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}-\text{CHOH} + \text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
 - $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}=\text{O} + \text{CH}_3\text{CH}_2\text{COOH}$
20. The key step in cannizzaro's reaction is the intermolecular shift of
- Proton
 - Hydride ion
 - Hydronium ion
 - Hydrogen bond
21. Aldehydes and ketones can be reduced to hydrocarbon by using
- LiAlH_4
 - $\text{H}_2 / \text{Pd} - \text{BaSO}_4$
 - $\text{Na} - \text{Hg} / \text{HCl}$
 - $\text{NH}_2 - \text{NH}_2 / \text{C}_2\text{H}_5\text{ONa}$
22. The reaction of an organic compound with ammonia followed by nitration of the product gives a powerful explosive, called *RDX*. The organic compound is
- Phenol
 - Toluene
 - Glycerine
 - Formaldehyde
23. Benzophenone does not react with
- RNH_2
 - SO_3
 - NaOH
 - Na_2CO_3
24. $\text{A} \xrightarrow[800^\circ\text{C}]{\Delta} \text{CH}_2 = \text{C} = \text{O}$, reactant 'A' in the reaction is
- $\text{CH}_3\text{CH}_2\text{CHO}$
 - CH_3CHO
 - $\text{CH}_3-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{CH}_3$
 - $\text{C}_2\text{H}_5\text{OH}$
25. A and B in the following reactions are $\text{R}-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{R} \xrightarrow[\text{KCN}]{\text{HCN}} \text{A} \xrightarrow{\text{B}} \text{R}-\overset{\text{OH}}{\underset{\text{CH}_2\text{NH}_2}{\text{C}}}-\text{R}$
- $\text{A} = \text{RR}'\overset{\text{CN}}{\underset{\text{OH}}{\text{C}}}, \text{B} = \text{LiAlH}_4$
 - $\text{A} = \text{RR}'\overset{\text{OH}}{\underset{\text{COOH}}{\text{C}}}, \text{B} = \text{NH}_3$
 - $\text{A} = \text{RR}'\overset{\text{CN}}{\underset{\text{OH}}{\text{C}}}, \text{B} = \text{H}_3\text{O}^{\oplus}$
 - $\text{A} = \text{RR}'\text{CH}_2\text{CN}, \text{B} = \text{NaOH}$
26. In this reaction $\text{CH}_3\text{CHO} + \text{HCN} \xrightarrow{\text{H}^+ / \text{OH}^-} \text{CH}_3\text{CH}(\text{OH})\text{COOH}$ an asymmetric centre is generated. The acid obtained would be
- 20% D + 80% L-isomer
 - D-isomer
 - L-isomer
 - 50% D + 50% L-isomer

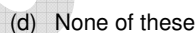
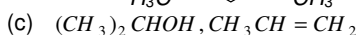
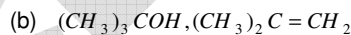
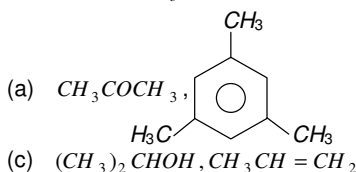
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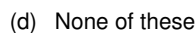
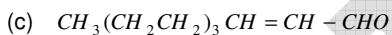
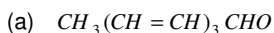
28. In a cannizzaro's reaction, the intermediate that will be the best hydride donor is



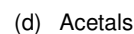
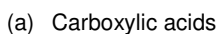
29. $CH_3CN \xrightarrow[H_3O^+]{CH_3MgBr (2 mol)} A \xrightarrow{conc. H_2SO_4} B$; A and B are



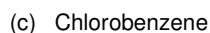
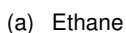
30. $CH_3CH=CHCHO \xrightarrow[aldol]{OH^-} \xrightarrow{\Delta} A$, A is



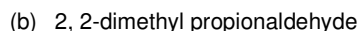
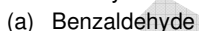
31. Addition of alcohols to aldehydes in presence of anhydrous acids yields



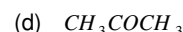
32. Which of the following compound will react with ethanolic KCN



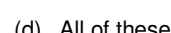
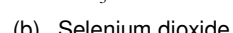
33. Base catalysed aldol condensation occurs with



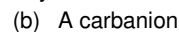
34. Which of the following aldehydes is most reactive towards nucleophilic addition reactions



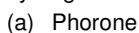
35. $CH_3CH=CHCHO$ is oxidised to $CH_3CH=CHCOOH$ using

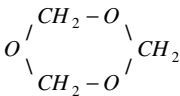


36. Aldol condensation of acetaldehyde involves the formation of which of the following intermediate



37. $3CH_3COCH_3 \xrightarrow{HCl} (CH_3)_2C=CH-CO-CH=C(CH_3)_2$. This polymer (B) is obtained when acetone is saturated with hydrogen chloride gas. B can be



38. . The shown polymer is obtained when a carbon compound is allowed to stand. It is a white solid. The polymer is



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39. Oxidation of compound X gives a product which reacts with phenyl hydrazine but does not give a silver mirror test. A possible structure for X is
 (a) CH_3CHO (b) CH_3CH_2OH (c) $(CH_3)_2CHOH$ (d) $CH_3CH_2CH_2OH$
40. Consider reduction of 2-butanone $B \xleftarrow[D_2O]{NaBD_4}$ 2-butanone $\xrightarrow[H_2O]{NaBD_4}$ A and $\xrightarrow[D_2O]{NaBH_4}$ C . A , B and C are
 (a) $CH_3 \underset{OH}{\underset{|}{C}} CH_2CH_3$ in all cases
 (b) $CH_3 \underset{D}{\underset{|}{C}} CH_2CH_3, CH_3 \underset{D}{\underset{|}{C}} CH_2CH_3, CH_3 \underset{H}{\underset{|}{C}} CH_2CH_3$
 (c) $CH_3 \underset{D}{\underset{|}{C}} CH_2CH_3, CH_3 \underset{H}{\underset{|}{C}} CH_2CH_3, CH_3 \underset{H}{\underset{|}{C}} CH_2CH_3$
 (d) $CH_3 \underset{D}{\underset{|}{C}} CH_2CH_3$ in all cases
41. Aldehyde $A(C_4H_8O) \xrightarrow[\text{Tischenko}]{Al-t\text{-butoxide}} B(\text{ester}) \xrightarrow{H_3O^+} \begin{matrix} CH_3 \\ \diagup \\ CHCOOH \\ \diagdown \\ CH_3 \end{matrix} + \begin{matrix} CH_3 \\ \diagup \\ CHCH_2OH \\ \diagdown \\ CH_3 \end{matrix}$. A and B are
 (a) $\begin{matrix} CH_3 \\ \diagup \\ CHCHO \\ \diagdown \\ CH_3 \end{matrix}, \begin{matrix} CH_3 \\ \diagup \\ CHCOOH \\ \diagdown \\ CH_3 \end{matrix} \cdot \begin{matrix} CH_3 \\ \diagdown \\ CHC \\ \diagup \\ CH_3 \end{matrix}$ (b) $\begin{matrix} CH_3 \\ \diagup \\ CHCHO \\ \diagdown \\ CH_3 \end{matrix}, \begin{matrix} CH_3 \\ \diagup \\ CHCOOCH \\ \diagdown \\ CH_3 \end{matrix}$
 (c) Both (a) and (b) (d) None of these
42. $CH_3MgBr + CH_2 = \overset{O}{\parallel} C - H \xrightarrow{H_3O^+}$ product (1 : 4 addition). It is
 (a) $CH_2 = \overset{OH}{\underset{|}{C}} - H$ (b) $CH_2CH = CH - CH_3$ (c) $CH_3CH_2CH_2CHO$ (d) None of these
43. $CH_3CH_2CHO \xrightarrow[\text{(aldol)}]{NaOH, \Delta} A$, A is
 (a) $CH_3CH_2CH = CHCH_2CHO$ (b) $CH_3CH_2CH = \overset{CH_3}{\underset{|}{C}}CHO$
 (c) $CH_3CH_2 \underset{OH}{\underset{|}{C}} CH_2CH_2CHO$ (d) $CH_3CH_2 \underset{OH}{\underset{|}{C}} \underset{OH}{\underset{|}{C}} CHO$
44. $2D - \overset{D}{\underset{|}{C}} = O + OH^- \xrightarrow{\text{Cannizzaro}}$ X and Y (Y is alcohol, D is deuterium) X and Y will have structure
 (a) $D - \overset{O}{\parallel} C - O^-, D - \overset{D}{\underset{|}{C}} - OH$ (b) $D - \overset{O}{\parallel} C - O^-, D - \overset{D}{\underset{|}{C}} - OH$ (c) $H - \overset{O}{\parallel} C - O^-, D - \overset{D}{\underset{|}{C}} - OH$ (d) None of these
45. $2 \begin{matrix} COOH \\ | \\ CHO \end{matrix} \xrightarrow{NaOH} \begin{matrix} COOH \\ | \\ CH_2OH \end{matrix} + \begin{matrix} COOH \\ | \\ COONa \end{matrix}$; It is
 (a) Crossed cannizzaro reaction (b) Intermolecular cannizzaro reaction
 (c) Intramolecular cannizzaro reaction (d) None of these
46. The reaction of aldehydes and ketones with $LiAlH_4$ and $NaBH_4$ is
 (a) Nucleophilic addition (b) Nucleophilic substitution (c) Elimination (d) Electrophilic substitution
47. Which of the following reagents cannot be used to distinguish between pentanal and pentanone-2
 (a) Tollen's reagent (b) Fehling solution (c) I_2 in $NaOH$ (d) Br_2 in carbon tetrachloride
48. Reduction with aluminium isopropoxide in excess of isopropyl alcohol is called Meerwein Ponndorff Verley reduction (MPV). What will be the final product when cyclohex-2-enone is selectively reduced in MPV reaction
 (a) Cyclohexanol (b) Cyclohex-2-enol (c) Cyclohexanone (d) Benzene

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49. A new carbon-carbon bond formation is possible in
Cannizzaro reaction ; Friedel craft reaction ; Clemmensen reduction ; Riemer - Tiemann reaction
I II III IV
- (a) II (b) II and IV (c) All of these (d) None of these
50. $C_6H_5CHO + CH_3COCH_3 \xrightarrow{OH^-} C_6H_5CH(OH)CH_2COCH_3 \rightarrow C_6H_5CH = CHCOCH_3$. This reaction is known as
- (a) Aldol condensation (b) Cross aldol condensation
(c) The Claisen-Schmidt reaction (d) None of these

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