



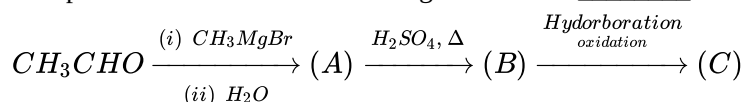
ALDEHYDES, KETONES, CARBOXYLIC ACID

Class 12 - Chemistry

Time Allowed: 59 minutes

Maximum Marks: 60

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



- a) positional isomers
b) functional isomers
c) identical
d) optical isomers

2. Common name of Ethan-1, 2-dioic acid is known as _____ [1]

- a) Acetic acid
b) Oxalic acid
c) Adipic acid
d) Phthalic acid

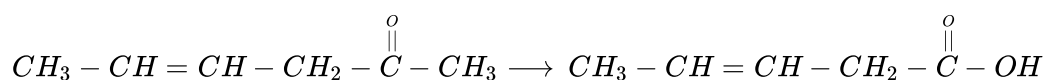
3. Many naturally occurring aldehydes and ketones are used in the blending of perfumes and flavouring agents. But the preferred ones are _____. [1]

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

4. Dry distillation of calcium acetate gives : [1]

- a) Acetaldehyde
b) Ethane
c) Acetone
d) Propanal

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



- a) Sn and NaOH solution
b) I₂ and NaOH solution
c) Benzoyl peroxide
d) Tollen's reagent

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


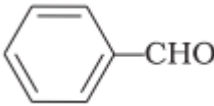
- a) 1-aminopropane
b) Ethanamide
c) 1-aminoethane
d) Ethanoic acid

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

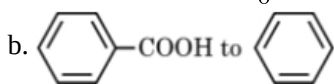
- a) 3 - Hexanone
b) 2, 5 - Hexanedione
c) 2, 4 - Hexanedione
d) 2, 3 - Hexanedione

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

- a) aqueous NaHSO₃
b) I₂ and NaOH

- c) Fehling solution
d) 2, 4-dinitrophenyl hydrazine
9. Iodoform test is given by [1]
a) Pentan-3-one
b) Ethanoic acid
c) Pentan-2-one
d) Methoxymethane
10. The base hydrolysis of an ester is called _____. [1]
a) neutralization
b) saponification
c) esterification
d) hydrolysis
11. The reagent which does not react with both acetone and benzaldehyde. [1]
a) Sodium hydrogensulphite
b) Fehling's solution
c) Grignard reagent
d) Phenyl hydrazine
12. The oxidation of toluene to benzaldehyde by chromyl chloride is called [1]
a) Stephen's reaction
b) Riemer-Tiemann reaction
c) Cannizzaro's reaction
d) Etard reaction
13. Which of the following reagents would one choose to transform CH_3COCl into acetone? [1]
a) $(\text{CH}_3\text{O})_2\text{Mg}$
b) CH_3MgBr
c) CH_3Cl
d) $(\text{CH}_3)_2\text{Cd}$
14. Cannizzaro's reaction is not given by _____. [1]
a) 
b) CH_3CHO
c) HCHO
d) 
15. The fragrance of the aldehyde and ketone are used for perfume and similar uses depend on: [1]
a) moisture of the air.
b) on its reactivity with other functional groups.
c) only solubility of aldehydes and ketones.
d) size and solubility of the aldehyde and ketone molecule.
16. What compound is produced when cyclohexene is treated with concentrated KMnO_4 ? [1]
a) Cyclohexanecarboxylic acid
b) Succinic acid
c) Hexanoic acid
d) Adipic acid
17. Consider the following sequence of reactions. [1]
$$\text{CH}_3\text{COCH}_3 \xrightarrow[\text{heat}]{\text{NaOH}} \text{A} \xrightarrow{\text{LiAlH}_4} \text{B}$$

The final product (B) is :
a) $(\text{CH}_3)_2\text{C} = \text{CHCHOHCH}_3$
b) $(\text{CH}_3)_2\text{CHCH}_2\text{CHOHCH}_3$



31. Do the following conversions in not more than two steps: [1]
 i. Toluene to Benzoic acid
 ii. Benzaldehyde to 1-Phenylethanol
32. **Assertion (A):** Benzaldehyde gives a positive test with Benedict's and Fehling solution. [1]
Reason (R): Benzaldehyde forms black precipitate or silver mirror with Tollen's reagent.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false. d) A is false but R is true.
33. **Assertion (A):** The final product in Aldol condensation is always α, β -unsaturated carbonyl compound. [1]
Reason (R): α, β -unsaturated carbonyl compounds are stabilised due to conjugation.
- a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A). b) Both Assertion (A) and Reason (R) are true, but Reason (R) is **not** the correct explanation of the Assertion (A).
 c) Assertion (A) is true, but Reason (R) is false. d) Assertion (A) is false, but Reason (R) is true.
34. **Assertion (A):** Formic acid reduces Tollen's reagent. [1]
Reason (R): Compounds containing -CHO group reduce Tollen's reagent.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false. d) A is false but R is true.
35. **Assertion (A):** Carbonyl compounds undergo nucleophilic addition. [1]
Reason (R): Addition of KCN solution to carbonyl compounds decreases the pH of solution.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false. d) A is false but R is true.
36. **Assertion (A):** RCHO, RCOCH₃ and cyclic ketones react with sodium bisulphite. [1]
Reason (R): Crystalline solid derivatives are formed when aldehydes or ketones are shaken with saturated aqueous solution of sodium bisulphite.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false. d) A is false but R is true.
37. **Assertion (A):** Pure HCN reacts with aldehydes and ketones. [1]
Reason (R): Addition of HCN to carbonyl compounds gives cyanohydrins.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.

- c) A is true but R is false. d) A is false but R is true.

38. **Assertion (A):** RMgX on reaction with CO₂ gives $R - \overset{\overset{O}{\parallel}}{C} - OH$ [1]

Reason (R): RMgX on reaction with carbonyl compounds give alcohols.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false. d) A is false but R is true.

39. **Assertion (A):** Glucose gets oxidised to six carbon carboxylic acid on reaction with bromine water. [1]

Reason (R): Glucose contains a ketonic group.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false. d) A is false but R is true.

40. **Assertion (A):** Fehling's solution can be used to distinguish benzaldehyde from acetaldehyde. [1]

Reason (R): The C-H bond of CHO group in benzaldehyde is stronger than C-H bond of CHO group in acetaldehyde.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false. d) A is false but R is true.

41. **Assertion (A):** Carbonyl compounds do not show intermolecular hydrogen bonding. [1]

Reason (R): Boiling points of carbonyl compounds are lower than alkanes.

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false. d) A is false but R is true.

42. Match the items given in column I with that in column II: [1]

Column I	Column II
(a) Methanoic acid	(i) Food preservation
(b) Hexanedioic acid	(ii) Electroplating industries
(c) Ethanoic acid	(iii) Manufacturing of nylon-6-,6
(d) Sodium benzoate	(iv) Vinegar

- a) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i) b) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)
c) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii) d) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)

43. Match the items given in column I with that in column II: [1]

Column I	Column II
(a) Jone's reagent	(i) Alkaline solution of copper sulphate containing sodium potassium tartrate
(b) Fehling Solution	(ii) Chromic acid in aqueous acetone
(c) Collins reagent	(iii) Ammonical solution of silver nitrate

(d) Tollen reagent	(iv) 1 mole of CrO ₃ and 2 mole of pyridine in CH ₂ Cl ₂
--------------------	---

- a) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii) b) (a) - (i), (b) - (iv), (c) - (iii), (d) - (ii)
c) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv) d) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)

44. Match the items given in column I with that in column II:

[1]

Column I	Column II
(a) Clemmensen's reduction	(i) NH ₂ NH ₂ /KOH
(b) Aldol Condensation	(ii) Aluminium isopropoxide
(c) Meerwein-Ponndorf reduction	(iii) Dilute alkali
(d) Wolff-Kishner reduction	(iv) Zn-amalgam and conc. HCl

- a) (a) - (i), (b) - (iv), (c) - (iii), (d) - (ii) b) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)
c) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii) d) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)

45. Arrange the following alcohols, hydrocarbon, and ether in order of their increasing boiling points.

[1]

Pentan-1-ol, n-butane, pentanal, ethoxyethane.

- a) pentanal and pentan - 1 - ol, n - Butane, ethoxyethane b) ethoxyethane, pentanal and pentan - 1 - ol, n - Butane
c) n - Butane, ethoxyethane, pentanal and pentan - 1 - ol d) pentan - 1 - ol, n - Butane, ethoxyethane, pentanal

46. The reactivities of the carbonyl compounds HCHO (I), CH₃CHO (II) and CH₃COCH₃ (III) towards nucleophilic addition reaction decreases in the order:

[1]

- a) I > II > III b) I > III > II
c) II > III > I d) III > II > I

47. Which sequence of steps below describes the best synthesis of 5 - oxohexanoic acid starting with 1 - methylcyclopentan - 1 - ol.

[1]

- a) 1. Conc. KMnO₄
2. CH₃MgBr/ether
3. H₃O⁺ b) 1. Conc. KMnO₄
2. Dry gaseous HBr
3. mg/ether
4. CO₂
c) 1. H₂SO₄ and heat
2. Conc. KMnO₄ d) 1. H₂SO₄ and heat
2. O₃
3. (CH₃)₂S
4. PCC

48. Which of the following statements is not correct?

[1]

- a) Aldehydes and ketones undergo electrophilic substitution.
b) Lower members of aldehydes and ketones are soluble in water due to hydrogen bonding.

- c) Aldehydes and ketones contain polar carbonyl group.
- d) Aldehydes and ketones undergo nucleophilic addition.
49. Which of the following given reaction is correct? [1]
- a) C_2H_5OH , iodine with $NaOH$ gives iodoform.
- b) Reaction of vegetable oil with H_2SO_4 gives glycerine.
- c) Sucrose on reaction with $NaCl$ give invert sugar.
- d) Any aldehyde gives secondary alcohol on reduction.
50. The incorrect IUPAC name is: [1]
- a) $CH_3C(=O)-CH(CH_3)-CH_3$
2 - Methyl - 3 - butanone
- b) $CH_3-C\equiv CCH(CH_3)_2$
4-methyl-pent-2-yne
- c) $CH_3-CH(Cl)-CH(Br)-CH_3$
2 - bromo - 3 - chloro butane
- d) $CH_3CH(CH_3)-CH(CH_3)-CH_3$
2, 3 - Dimethylpentane
51. Fill in the blanks: [10]
- (a) The reaction of formaldehyde with magnesium methyl bromide followed by hydrolysis gives _____ alcohol. [1]
- (b) Both aldehydes and ketones are oxidized by peroxy acids. This reaction is called _____ for example, benzaldehyde reacts with peroxy acids to give benzoic acid. [1]
- (c) Oxidation reaction can be used to distinguish between _____ and _____. [1]
- (d) Formaldehyde in the form of _____ is used for preserving biological specimens. [1]
- (e) Oxidation of toluene with CrO_3 to benzaldehyde is carried out in the presence of _____. [1]
- (f) The IUPAC name of according to the system is $CH_3COCH_2COCH_3$ is _____. [1]
- (g) The formula of functional isomer of $CH_3CH_2CH_2CHO$ is _____. [1]
- (h) Aldehydes and ketones have _____ dipole moments. [1]
- (i) The IUPAC name of $CH_3COCH_2CH_2CH_3$ is _____. [1]
- (j) Acetaldehyde gives silver mirror with _____. [1]