Saitechinfo NEET JEE Academy

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ALDEHYDES, KETONES, CARBOXYLIC ACIDS - IUPAC, PREPARATION, STRUCTURE

Class 12 - Chemistry

Time Allowed: 1 hour **Maximum Marks: 48**

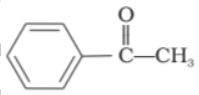
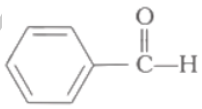
1. Give IUPAC names of the following compound: $CH_3CH_2CH_2CH(Br)CH(CH_3)CH_2CHO$ **[1]**

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

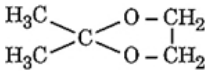
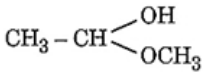
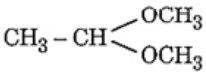
2. The molecular formula of ethyl acetate is: **[1]**

   a) $C_5H_8O_2$
   b) $C_5H_{10}O_2$
   c) $C_4H_8O_2$
   d) C_4H_8O

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

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

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

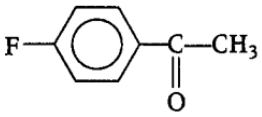
   a) 
   b) 
   c) CH_3CH_2 - OCH_3
   d) 

5. Write the structures of compounds: **[1]**

   4-Fluoroacetophenone

6. Draw the structure of 2-methybutanal. **[1]**

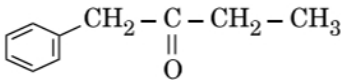
7. Write IUPAC name of **[1]**



8. Write the IUPAC name of the following: **[1]**

$(CH_3)_2CH - CH_2 - \underset{\underset{O}{\|}}{C} - CH(CH_3)_2$

9. Write the IUPAC name of the following compound: **[1]**



10. Write the IUPAC name of the following: **[1]**

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

11. Write IUPAC names of the following: **[1]**

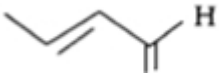
a. $[Co(en)_2(H_2O)(CN)]^{2+}$

b. $[Ni(NH_3)_6]Cl_2$

12. Write the name of **[1]**

$$CH_3 - \underset{\underset{O}{\|}}{C} - CH = \underset{\underset{CH_3}{|}}{C} - CH_3$$

13. Write the IUPAC name of **[1]**



14. Write the IUPAC name of the following ketones and aldehyde. If possible, give also common name. **[1]**

$CH_3(CH_2)_5CHO$

15. **Assertion (A):** Formaldehyde is a planar molecule. **[1]**

Reason (R): It contains sp^2 hybridised carbon atom.

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.

16. Match the common name of column I with IUPAC name given in column II: **[1]**

Column I	Column II
(a) Formaldehyde.	(i) Propanal
(b) Acetaldehyde	(ii) Butanal
(c) Propionaldehyde	(iii) Methanal
(d) Butyraldehyde	(iv) Ethanal

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

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

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

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

17. Match the compound given in column I with IUPAC of column II: **[1]**

Column I	Column II
(a) CH_3COCH_3	(i) 3-Methyl-butan-2-one
(b) $(CH_3)_2CHCOCH(CH_3)_2$	(ii) 2,4-Dimethyl-pentan-3-one
(c) $C_6H_5COC_6H_5$	(iii) 2-Phenylethanal
(d) $C_6H_5CH_2CHO$	(iv) Propanone

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

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

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

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

18. Match the isomerism given in column I with compound given in column II: **[1]**

Column I	Column II

(a) Chain isomerism	(i) Propanal and Propanone
(b) Position isomerism	(ii) Acetaldehyde and Eth-ene-ol
(c) Functional isomerism	(iii) o-Tolualdehyde and p-Tolualdehyde
(d) Tautomerism	(iv) Butanal and 2-Methylpropanal

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

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

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

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

19. The incorrect IUPAC name is: **[1]**

a) $CH_3\underset{\underset{O}{||}}{C}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

2 - Methyl - 3 - butanone

b) $CH_3 - C \equiv CCH(CH_3)_2$

4-methyl-pent-2-yne

c) $CH_3-\underset{\underset{Cl}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

2 - bromo - 3 - chloro butane

d) $CH_3\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

2, 3 - Dimethylpentane

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

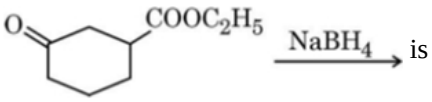
a) Benzoic Acid

b) Chlorotoluene

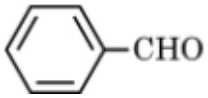
c) Benzal chloride

d) Benzaldehyde

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



is

a) 

b) $(CH_3)_3$ C - CHO

c) HCHO

d) $(CH_3)_2$ CH - CHO

22. 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) Pentanal

c) Pentanol

d) Pentan-2-one

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

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

a) PhCOCOMe

b) $PhCH_2COCH_3$

c) $PhCOCH_2CH_3$

d) $PhCH_2CH_2CHO$

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

The 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

25. One mole of a symmetrical alkane on ozonolysis gives two moles of an aldehyde having a molecular mass of **[1]**

44u. The alkene is:

a) 1 – butene

b) 2 – butene

c) Ethene

d) Propene

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

a) C_6H_5Cl

b) C_6H_5COCl

c) $C_6H_5COCH_3$

d) $C_6H_5CH_3$

27. How to do the following conversion: **[1]**

RCOOCl + ? $\rightarrow$ RCHO

a) Using $NaBH_4$

b) Using DIBAL-H

c) Using H_2 - Pd

d) Using H_2-Pd,$BaSO_4$

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

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

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

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

29. Rosenmund reduction is used for the preparation of Aldehydes. The catalyst used in this reaction is **[1]**

a) Iron (III) oxide

b) $Pd - BaSO_4$

c) Anhydrous $AlCl_3$

d) $HgSo_4$

30. Name the compounds according to IUPAC system of nomenclature: $OHCC_6H_4CHO$-p **[1]**

31. What happens when **[1]**

a. Acetone is treated with Zn(Hg) / Conc. HCl, and

b. Ethanal is treated with methylmagnesium bromide and then hydrolysed?

32. Identify A, B, C, D and E in the following sequence of reactions: **[1]**

$$A \xrightarrow{Cl_2} CHCl_3 \xrightarrow{NaOH} B \xrightarrow{C_6H_5COCl} C \xrightarrow{C_6H_6/AlCl_3} D + E$$

33. **Assertion:** p-O_2N - $C_6H_5COCH_3$ is prepared by Friedel Crafts acylation of nitrobenzene. **[1]**

Reason: Nitrobenzene easily undergoes electrophilic substitution reaction.

a) If both Assertion & Reason are true and the reason is the correct explanation of the assertion.

b) If both Assertion & Reason are true but the reason is not the correct explanation of the assertion.

c) If Assertion is true statement but Reason is false.

d) If both Assertion and Reason are false statements.

34. **Assertion (A):** Isobutanal does not give the iodoform test. **[1]**

Reason (R): It does not have alpha-hydrogen.

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. Ozonolysis of alkenes followed by the reaction with zinc dust and water gives _____ depending on the substitution pattern of the alkene. **[1]**

a) ketone

b) any of these

c) aldehyde

d) a mixture of both aldehyde and ketone

36. Compound $Ph - O - \overset{O}{\overset{\|}{C}} - Ph$ can be prepared by the reaction of _____. **[1]**

a) Phenol and benzoyl chloride in the presence of $ZnCl_2$

b) Phenol and benzoyl chloride in the presence of pyridine

c) Phenol and benzaldehyde in the presence of palladium

d) Phenol and benzoic acid in the presence of NaOH

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

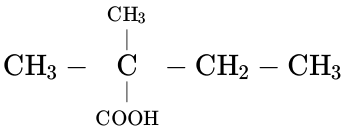
a) Oxalic acid

b) Succinic acid

c) Glutaric acid

d) Pimelic acid

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



a) 2,2-Dimethylbutanoic acid

b) 3-Methylbutane carboxylic acid

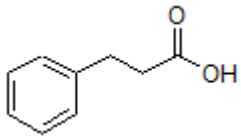
c) 2-Carboxyl-2-methylbutane

d) 2-Ethyl-2-methylpropanoic acid

39. Name the following compound according to IUPAC system of nomenclature. **[1]**

$(CH_3)_3CCH_2COOH$

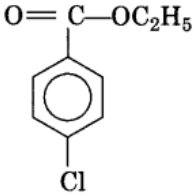
40. Give the IUPAC name of the following compound: **[1]**



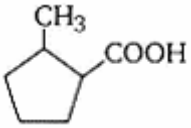
or $PhCH_2CH_2COOH$

41. Draw the structure of the following compound: Hexane-1, 6-dioic acid. **[1]**

42. Write the IUPAC name of. **[1]**



43. Give the IUPAC name of the following compound : **[1]**



44. Give the IUPAC name of the following compound: **[1]**

$(CH_3)_2C{=}CHCOOH$

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

Column I	Column II
(a) Acyl halide.	(i) RCOSR'.
(b) Acid anhydride.	(ii) RCOX.
(c) Acid amides.	(iii) RCOOCOR'.
(d) Thioester.	(iv) $RCONH_2$.

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

46. Match the items given in column I with that in column I: **[1]**

Column I	Column II
(a) Aldehydes	(i) -CO-
(b) Ketones	(ii) -CHO
(c) Carboxylic Acid	(iii) -COOR
(d) Ester	(iv) -COOH

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

47. **Fill in the blanks:** **[2]**

(a) Phenolic aldehydes are obtained by treating the phenol with chloroform in aqueous sodium hydroxide solution at about 343 K. This reaction is called _____. **[1]**

(b) _____ alkene which on reductive ozonolysis gives only acetone. **[1]**