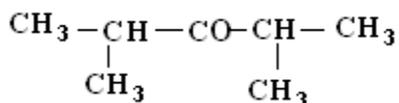


THE GURUKUL INSTITUTE

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ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

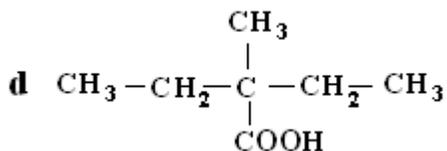
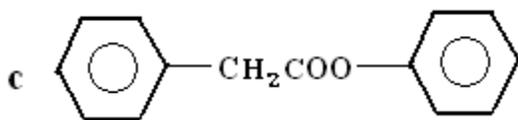
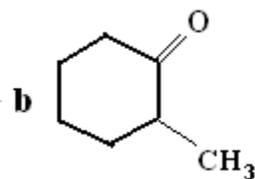
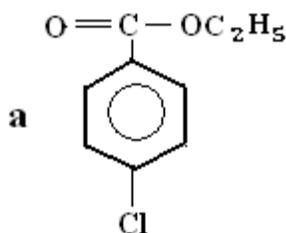
1. Write the IUPAC name of the compound:



2. Draw the structural formula of hex-2-en-4-ynoic acid.
3. Complete the reaction equation:

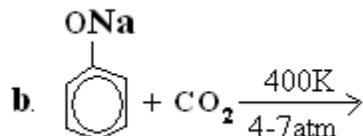


4. Mention a chemical property in which methanoic acid differs from acetic acid.
5. Write the IUPAC name of :



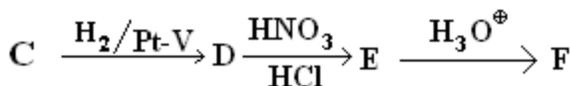
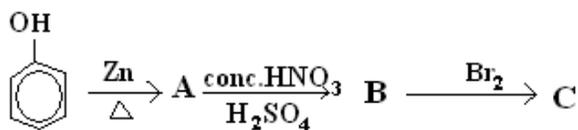
6. How is amino ethane obtained from ethanal (acetaldehyde)?
7. Write the IUPAC name of the following:
 $(\text{CH}_3)_2\text{C} = \text{CHCOCH}_3$.
8. Draw the structure of 4-methylpent-3-en-2-one.
9. Write the chemical tests to distinguish between:
Formic acid and acetic acid.
10. Mention one important use of methanoic acid.
11. Give one chemical test to distinguish between acetaldehyde and benzaldehyde.
12. What is the product of obtained when ethyl benzene is oxidized with alkaline KMnO_4 ?

13. Name two important uses of formalin.
 14. Write the complete reaction and give the names of major products:



15. Give chemical test to distinguish between the following pairs of compounds:
- Propanal and propanone
 - Benzaldehyde and acetophenone
 - Benzaldehyde and benzoic acid.
 - Propanoyl chloride and propanoic acid.
16. Write chemical reactions to illustrate each of the following reactions:
- Acylation reaction
 - Rosemund reduction
 - Tollens' reagent
17. Write the names of the reagents and equations in the conversion of
- Phenol to salicylaldehyde
 - Anisole to p-methoxyacetophenone.
18. How is the conversion of ethanol to 1, 2 ethanediol carried out.(Give reaction)
19. Account for the following :
- Ethers possess a dipole moment even if the alkyl radicals in the molecule are identical.
 - Sodium bisulphate is used for the purification of aldehydes and ketones.
 - Most aromatic acids are solid while acetic alkyl radicals and other of this series are liquids.
 - Explain why ketones are less reactive towards nucleophiles than aldehydes.
20. Give one test to distinguish between:
- Aqueous solution of acetaldehyde and acetone.
 - Aqueous solution of formaldehyde and acetaldehyde.
 - Aqueous solution of formaldehyde and acetaldehyde.
21. State the sequence of steps to obtain:
- Acetophenone from benzene.
 - Acetone from acetyl chloride.
22. Describe trans-esterification reaction, giving an example.
23. Complete the following reactions:
- $\text{RCHO} \xrightarrow{\text{Zn}/\text{HCl}}$
 - $\text{CH}_3\text{CONH}_2 + \text{HNO}_2 \rightarrow$
24. Give one example of : Wolf- Kishner reduction.
25. Carboxylic acids do not give reactions of aldehydes and ketones, why?
26. How is the following conversion carried out Acetic acid to ethanamine?
27. An organic compound 'A' which has characteristic odour, on treatment with NaOH forms two compounds 'B' and 'C'. Compound 'B' has the molecular formula $\text{C}_7\text{H}_8\text{O}$ which on oxidation gives back compound 'A'. Compound 'C' is the sodium salt of an acid which when heated with soda lime yields an aromatic hydrocarbon 'D'. Deduce the structures of A, B, C and D.
28. Account for the following:
- Formaldehyde gives Cannizzaro's reaction whereas acetaldehyde does not.

- b. Carboxylic acids do not give characteristic reactions of carbonyl group.
29. An organic compound 'A' has the molecular formula $C_5H_{10}O$. It does not reduce Fehling's solution but forms a bisulphate compound. It also gives positive iodoform test. What are possible structures of 'A'? Explain your reasoning which helped to arrive at the structures.
30. Account for the following observations:
- Oxidation of toluene to Benzaldehyde with CrO_3 is carried out in presence of acetic anhydride.
 - Melting point of an acid with even number of carbon atoms is higher than those of its neighbors with odd number of carbon atoms.
31. (a) Write the steps and conditions involved in the following conversions:
- Acetophenone to 2-phenyl-2-butanol
 - Propene to acetone
- (b) Describe simple chemical tests to distinguish between the following pairs of compounds:
Diethyl ether and Propanal.
32. Draw the structure of a carbonyl group and indicate clearly (i) the hybridized state of carbon, (ii) The σ and π bonds present and (iii) the electrophilic and nucleophilic centres in it.
33. (a) Give an example of acetals and oximes.
(b) Why is benzoic acid stronger than acetic acid?
34. Write the structures of organic compounds A to F in following sequence of reactions:



35. Giving an example of each with necessary reaction conditions:
- Aldol condensation
 - Hell Volhard Zelinsky reaction
 - Friedel Crafts Reaction.
36. Complete the following equations:
- $\text{CH}_3\text{CHO} \xrightarrow{\text{NaOH}}$
 - $\text{CH}_3\text{CONH}_2 \xrightarrow{\text{P}_2\text{O}_5}$
 - $\text{CH}_3\text{CONH}_2 + \text{NaOH} + \text{Br}_2 \rightarrow$
 - $\text{C}_6\text{H}_5\text{CHO} \xrightarrow{\text{HNO}_3/\text{H}_2\text{SO}_4}$