



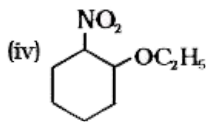
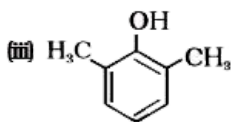
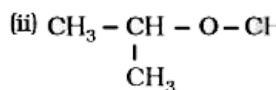
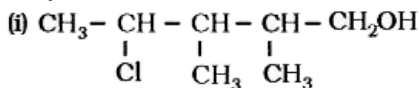
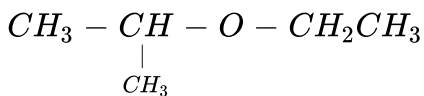
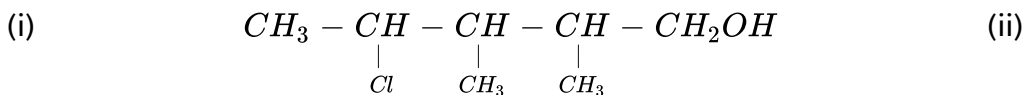
## CHEMISTRY

### BOOKS - VIKRAM PUBLICATION ( ANDHRA PUBLICATION)

### ORGANIC COMPOUNDS CONTAINING C,H AND O

#### Textual Examples

1. Give IUPAC names of the following compounds:



(ii)

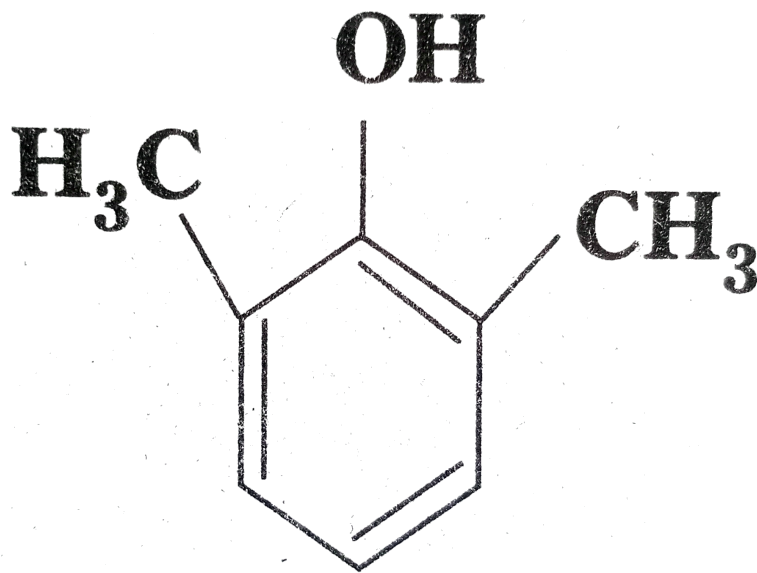


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2. Give IUPAC names of the  $CH_3 - \underset{\substack{| \\ CH_3}}{C} H - O - CH_2CH_3$

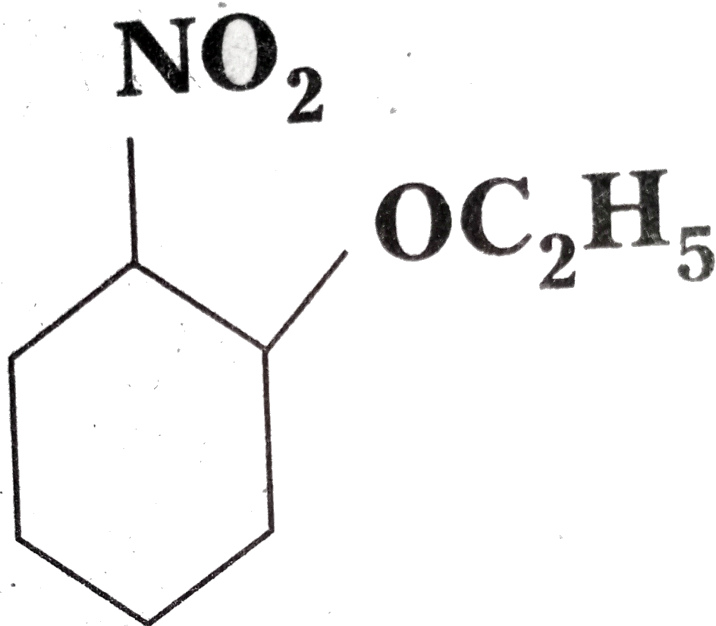
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3. Give IUPAC names of the



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4. Give IUPAC names of the



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5. Give the structures and IUPAC names of the products expected from the Catalytic reduction of butanal.

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6. Give the structures and IUPAC names of the products expected from the Hydration of propene in the presence of dilute sulphuric acid.

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7. Give the structures and IUPAC names of the products expected from the Reaction of propanone with methylmagnesium bromide followed by hydrolysis.

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8. Arrange the following sets of compounds in order of their increasing boiling points:

(a) Pentan-1-ol, butan-1-ol, butan-2-ol, ethanol, propan-1-ol, methanol.

(b) Pentan-1-ol, n-butane, pentanal, ethoxyethane.

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9. Arrange the Pentan-1-ol, n-butane, pentanal, ethoxyethane, methanol set of compounds in order of their increasing boiling points .

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10. Arrange the following compounds in increasing order of their acid strength:

Propane-1-ol, 2, 4, 6-trinitrophenol, 3-nitrophenol, 3,5-dinitrophenol , phenol, 4-methylphenol.

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11. Write the structures of the major products expected from the Mononitration of 3-methylphenol.

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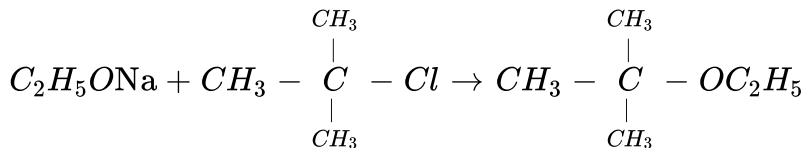
12. Write the structures of the major products expected from the Dinitration of 3 methylphenol.

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13. Write the structures of the major products expected from the Mononitration of phenyl methanoate.

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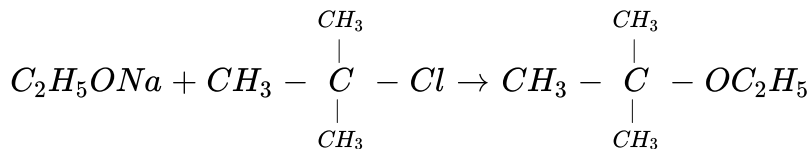
14. The following is not an appropriate reaction for the preparation of t-butyl ethyl ether.



What would be the major product of this reaction ?

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15. The following is not an appropriate reaction for the preparation of t-butyl ethyl ether.

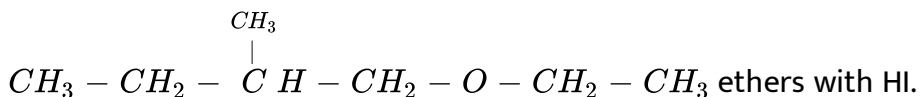


i) What would be the major product of this reaction ?

ii) Write a suitable reaction for the preparation of t-butylethyl ether

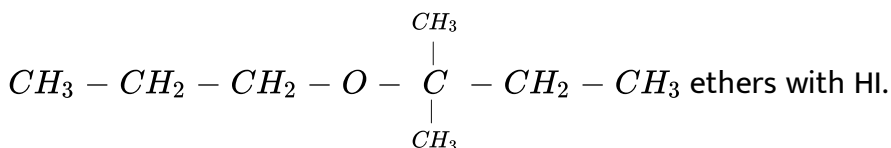
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16. Give the major products that are formed by heating of the



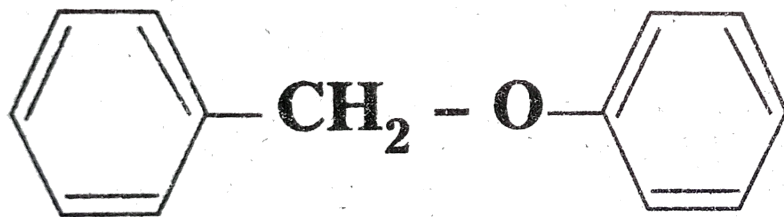
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17. Give the major products that are formed by heating of the



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18. Give the major products that are formed by heating of the



ethers with

HI.

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19. Give name of the reagents to bring about the Hexan-1-ol to hexanal.

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20. Give name of the reagents to bring about the Cyclohexanol to cyclohexanone.

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21. Give name of the reagents to bring about the p-Fluorotoluene to p-fluorobenzaldehyde.

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22. Give name of the reagents to bring about the Ethanenitrile to ethanal.

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23. Give name of the reagents to bring about the Allyl alcohol to propanal

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24. Give name of the reagents to bring about the But-2-ene to ethanol.

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25. Arrange the following compounds in the increasing order of their boiling points:



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26. Would you expect benzaldehyde to be more reactive or less reactive in nucleophilic addition reactions than propanal? Explain your answer.

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27. An organic compound (A) with molecular formula  $C_8H_8O$  forms an orange-red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with iodine in the presence of sodium hydroxide. It neither reduces Tollens' or Fehlings' reagent, nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formula  $C_7H_6O_2$ . Identify the compounds (A) and (B) and explain the reactions involved.



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28. Write chemical reactions of affect the Butan-1-ol to butanoic acid transformations.



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29. Write chemical reactions of affect the Benzyl alcohol to phenylethanoic acid transformations.



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30. Write chemical reactions of affect the 3-Nitrobromobenzene to 3-nitrobenzoic acid transformations.



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31. Write the products and reagents needed for the 4-Methylacetophenone to Benzene-1,4-dicarboxylic acid conversions .

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32. Write chemical reactions of affect the Cyclohexene to hexane-1, 6-dioic acid transformations.

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33. Write chemical reactions of affect the Butanal to butanoic acid transformations.

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Very Short Answer Questions

1. Explain why propanol has higher boiling point than that of the hydrocarbon-butane.

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2. Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular masses. Explain this fact.

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3. Give the structures and IUPAC names of monohydric phenols of molecular formula,  $C_7H_8O$ .

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4. Give the reagents used for the preparation of phenol from chlorobenzene .



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5. Preparation of ethers by acid dehydration of secondary or tertiary alcohols is not a suitable method. Give reason.

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6. Write the mechanism of the reaction of HI with methoxymethane.

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7. Name the reagents used in the Oxidation of primary alcohol to carboxylic acid reaction.

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8. Name the reagents used in the Oxidation of primary alcohol to aldehyde reaction.

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9. Write the equations for the Bromination of phenol to 2,4,6-tribromophenol reactions.

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10. Write the equations for the Benzyl alcohol to benzoic acid reactions.

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11. Identify the reactant needed to form t-butylalcohol from acetone.

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12. Write the structures for the Ethoxyethane compounds.

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13. Write the structures for the Ethoxybutane compounds.

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14. Write the structures for the Phenoxyethane compounds.

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15. Write any one method for the preparation of ethyl alcohol.

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16. What is Williamsons synthesis ? Given example.



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17. What is Esterfication ? Give equation.

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18. What is Dehydration ? Give equation.

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19. What is Reimer Tiemann reaction ? Give equation.

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20. What is Kolbe's reaction ? Give equation .

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21. Write the Oxidation reaction of phenol.

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22. Arrange the Acetaldehyde, Acetone, Methyl t. butyl ketone reactivity towards HCN. Compounds in increasing order of their property indicated.

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23. Arrange the Fluoroacetic acid, monochloroacetic acid, Acetic acid and Dichloroacetic acid (acid strength) compounds in increasing order of their property indicated.

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24. Write the reaction showing  $\alpha$ -halogenation of carboxylic acid and give its name .

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25. Although phenoxide ion has more number of resonating structures than carboxylate ions carboxylic acid is a stronger acid than phenol. Why ?

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26. How do you distinguish acetophenone and benzophenone ?

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27. Explain the position of electrophilic substitution in benzoic acid.

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28. Write equation showing the conversion of Acetic acid to Acetyl chloride.



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29. Write equation showing the conversion of Benzoic acid to Benzamide.



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30. An organic acid with molecular formula  $C_8H_8O_2$  on decarboxylation forms Toluene. Identify the organic acid.



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31. List the reagents needed to reduce carboxylic acid to alcohol.



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32. Write the mechanism of esterification .



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**33.** Compare the acidic strength of acetic acid, Chloroacetic acid, benzoic acid and Phenol.

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**34.** What is Etard reaction ? Give equation.

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**35.** What is Gatterman-Koch formylation reaction. Give equation.

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**36.** What is decarboxylation ? Give equation.

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## Short Answer Questions

1. Draw the structure of all isomeric alcohols of molecular formula  $C_5H_{12}O$  and give their IUPAC names and classify them as primary, secondary and tertiary alcohols.

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2. While separating a mixture of ortho and para nitrophenols by steam distillation, name the isomer which will be steam volatile. Give reason.

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3. Give the equations for the preparation of phenol from Cumene.

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4. Write the mechanism of hydration of ethane to yield ethanol.



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5. Explain the acidic nature of phenols and compare with that of alcohols.



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6. Write the products formed by the reduction and oxidation of phenol.



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7. Ethanol with  $H_2SO_4$  at 443 K forms ethene while at 413 K it forms ethoxy ethane. Explain the mechanism .



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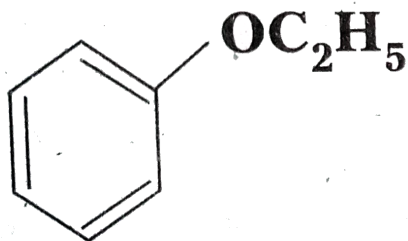
8. Account for the statement : Alcohols boil at higher temperature than hydrocarbons and ethers of comparable molecular masses.

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9. Explain why in anisole electrophilic substitution takes place at ortho and para positions and not at meta position.

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10. Write the products of the

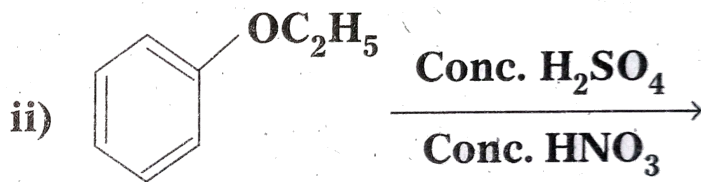


reaction.

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11. Write the products of the



reaction.

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12. Explain why phenol with bromine water forms 2,4,6-tribromophenol while on reaction with bromine in  $CS_2$  at low temperature forms para-bromophenol as the major product .

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13. Explain the acidic nature of phenol.

[Watch Video Solution](#)

14. Explain the electrophilic substitution reaction of Anisole.

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15. Write equations of the Alkylation of anisole reaction.

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16. Write equations of the Nitration of anisole reactions.

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17. Write equation of the Friedel-Crafts acetylation of anisole reaction.

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18. Illustrate hydroboration -oxidation reaction with a suitable example.



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19. Write any two methods for the preparation of phenol.



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20. Write the structure of the 2-Methyl butan -1-ol compound.



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21. Write the structure of the 2,3-diethyl phenol compound.



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22. Write the structure of the 1-ethoxy propane compound.



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23. Write the structure of the Cyclohexyl methanol compound.

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24. Write the equations of any aldehyde with Fehlings reagent.

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25. What is Tollens reagent ? Explain its reaction with Aldehydes.

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26. Write the oxidation products of : Acetaldehyc, Acetone and Acetophenone.

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27. Explain why Aldehydes and ketones undergo nucleophilic addition while alkenes undergo electrophilic addition though both are unsaturated compounds.

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28. Which the IUPAC name of  $CH_3CH_2CH(Br)CH_2COOH$

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29. Which the IUPAC name of *Ph. CH<sub>2</sub>COCH<sub>2</sub>COOH*

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30. Which the IUPAC name of  $CH_3. CH(CH_3)CH_2COOC_2H_5$

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**31.** Arrange the following in the increasing order of their acidic strength :  
Benzoic acid , 4-Methoxybenzoic acid, 4-Nitrobenzoic acid and 4-Methylbenzoic acid.

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**32.** Describe the Cross aldol condensation .

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**33.** Describe the Decarboxylation.

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**34.** Explain the role of electron withdrawing and electron releasing groups on the acidity of carboxylic acids.

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35. Draw the structure of the Acetaldehydedimethylacetal .

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36. Draw the structure of the ethylene ketal of hexan-3-one.

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37. Draw the structure of the methyl hemiacetal of formaldehyde.

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38. An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen. The molecular mass of the compound is 86. It does not reduce Tollens' reagent but forms an addition compound with sodium hydrogensulphite and give positive iodoform test. On vigorous oxidation

it gives ethanoic and propanoic acid. Write the possible structure of the compound.

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**39.** Explain Nucleophilic addition reaction mechanism of aldehydes and ketones.

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**40.** Write any two methods for the preparation of Aldehydes.

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**41.** Write any two methods for the preparation of Ketones.

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42. Explain Clemenson's reduction and Wolf Kishmer reduction reactions.

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43. What is haloform reaction ? Give equation .

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44. What is Cannizaro reaction ? Give equation .

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45. What is HVZ reaction ? Give equation.

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46. Write any three methods for the preparation of Carboxylic acid.



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47. Explain Ring substitution reactions of aromatic carboxylic acids.



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48. How do you prepare the Acetyl chloride compound from acetic acid ?



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49. How do you prepare the Acetamide compound from acetic acid ?



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50. How do you prepare the Acetic anhydride compound from acetic acid ?



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51. How do you prepare the Ethyl alcohol compound from acetic acid ?

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52. Explain how methyl ketones are distinguished from other ketones .

Write the equations showing it .

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53. Write the equations showing the conversion of the 1-phenylpropane to Benzoic acid along with reagents.

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54. Write the equations showing the conversion of the Benzamide to Benzoic acid along with reagents.



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55. Write the equations showing the conversion of the Ethyl butanoate to Butanoic acid along with reagents.

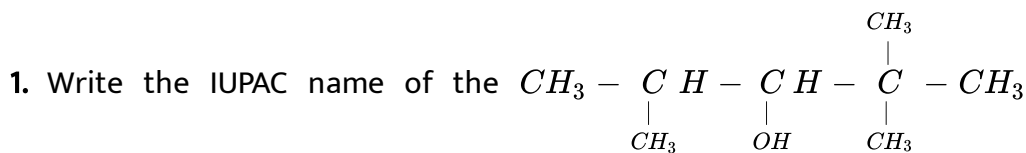
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56. Write the products and reagents needed for the 3-Nitrobromobenzene to 3-Nitrobenzoic acid conversions .

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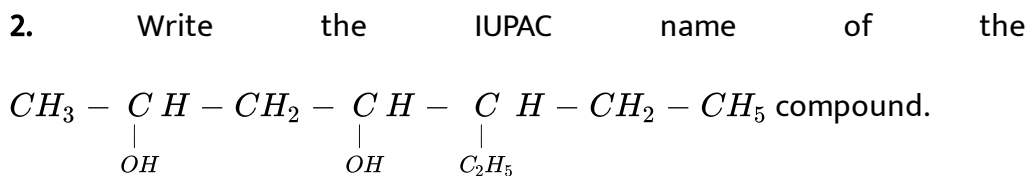
57. Write the products and reagents needed for the 4-Methylacetophenone to Benzene-1-4-dicarboxylic acid conversions .

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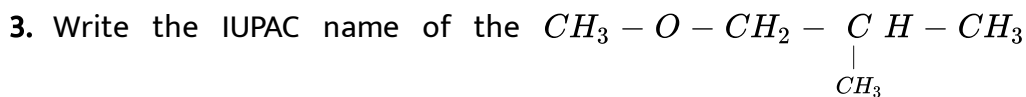


compound.

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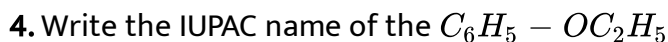


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compound.

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5. Write structure of the compound whose IUPAC name is 2-Methyl butanol



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6. Write structure of the compound whose IUPAC name is 1-Phenylpropan-2-ol



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7. Write structure of the compound whose IUPAC name is 3,5-Dimethylhexane-1,3,5-triol



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8. Write structure of the compound whose IUPAC name is 2,3-Diethylphenol.

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9. Write structure of the compound whose IUPAC name is 1-Ethoxypropane.

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10. Write structure of the compound whose IUPAC name is 2-Ethoxy-3-methylpentane

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11. Write structure of the compound whose IUPAC name is Cyclohexylmethanol.



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12. Write structure of the compound whose IUPAC name is 3-Chloromethylpentan-1-ol.

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13. Write the equations for the preparation of phenol using benzene, conc.  $H_2SO_4$  and NaOH.

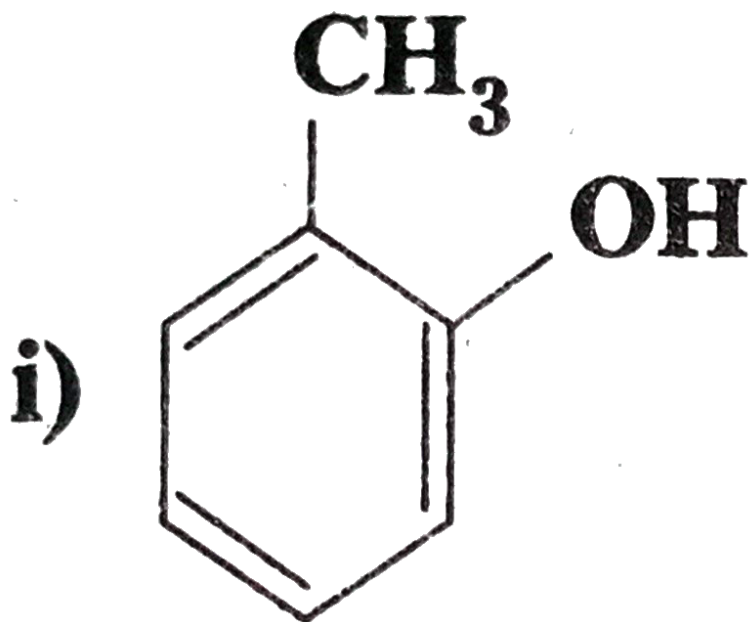
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14. Illustrate hydroboration -oxidation reaction with a suitable example.

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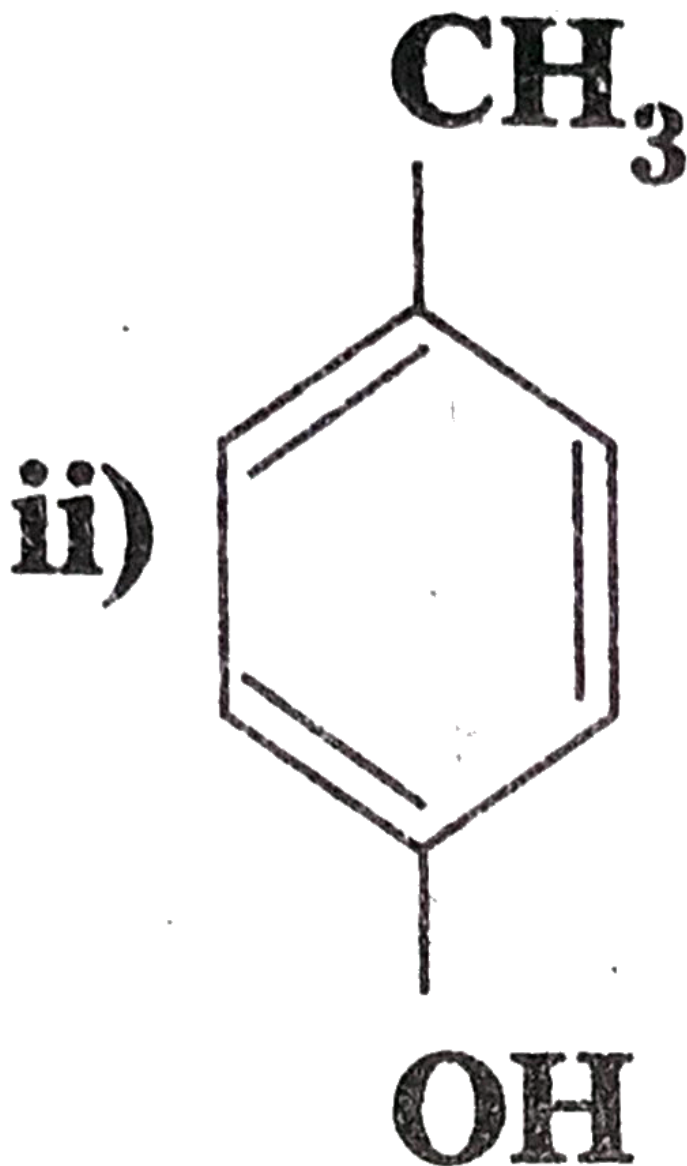
15. Write the IUPAC name of the



compound.

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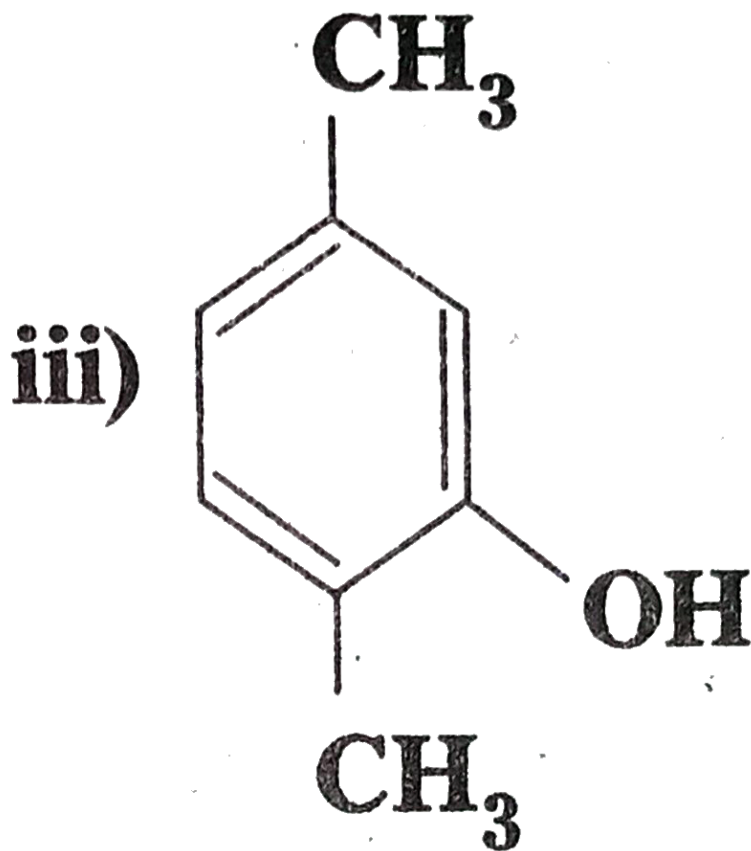
16. Write the IUPAC name of the



compound.

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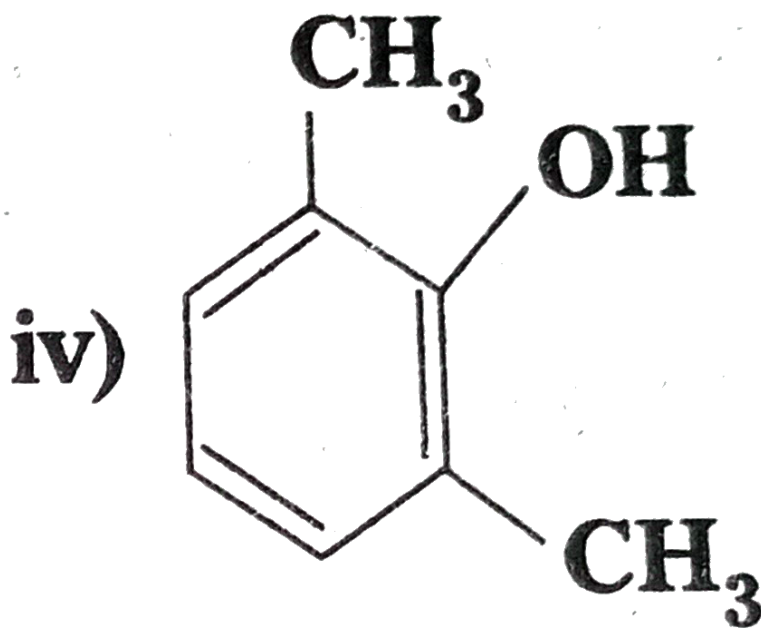
17. Write the IUPAC name of the



compound.

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18. Write the IUPAC name of the



compound.

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19. How will you synthesise 1-Phenylethanol from a suitable alkene.

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20. How will you synthesise Cyclohexylmethanol using an alkyl halide by an  $S_N2$  reaction.

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21. Show how will you synthesise:

(i) 1-phenylethanol from a suitable alkene.

(ii) cyclohexylmethanol using an alkyl halide by an  $S_N2$  reaction.

(iii) pentan-1-ol using a suitable alkyl halide?

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22. Explain Ortho nitrophenol is more acidic than Ortho methoxyphenol.

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23. Explain OH group attached to benzene ring activates it towards electrophilic substitution.

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24. With a suitable example write equations for the Kolbe's reaction.

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25. With a suitable example write equations for the Reimer-Tiemann reaction.

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26. With a suitable example write equations for the Williamson's ether synthesis.

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27. How is Benzyl chloride to Benzyl alcohol conversions carried out ?

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28. How is Ethyl magnesium bromide to Propan-1-ol conversions carried out ?

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29. How is 2-Butanone to 2-Butanol conversions carried out ?

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30. Write the names of the reagents and equations for the preparation of the 1-Propoxypropane ethers by Williamson's synthesis .

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**31.** Write the names of the reagents and equations for the preparation of the Ethoxybenzene ethers by Williamson's synthesis .

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**32.** Write the names of the reagents and equations for the preparation of the 2-Methoxy-2-methylpropane ethers by Williamson's synthesis .

 [Watch Video Solution](#)

**33.** Write the names of the reagents and equations for the preparation of the 1-Methoxyethane ethers by Williamson's synthesis .

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**34.** How is 1-propoxypropane synthesized from propan-1-ol ? Write mechanism of this reaction.





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35. Explain the fact that in aryl alkyl ethers the alkoxy group activates the benzene ring towards electrophilic substitution.



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36. Write equation of the Alkylation of anisole reaction.



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37. Write equations of the Nitration of anisole reactions.



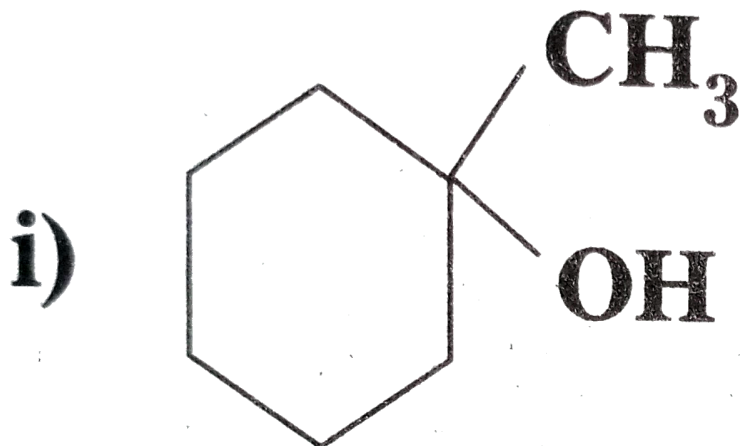
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38. Write equation of the Friedel-Crafts acetylation of anisole reaction.



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39. Show how you would synthesize the



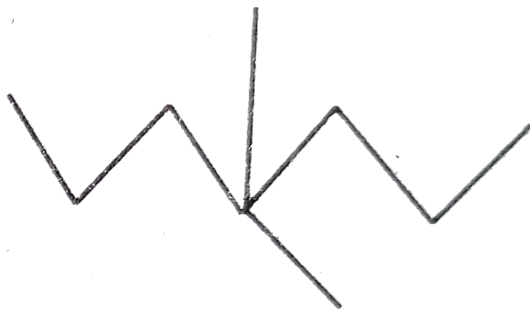
alcohols from appropriate alkenes ?

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40. Show how you would synthesize the

**OH**

**ii)**



alcohols from

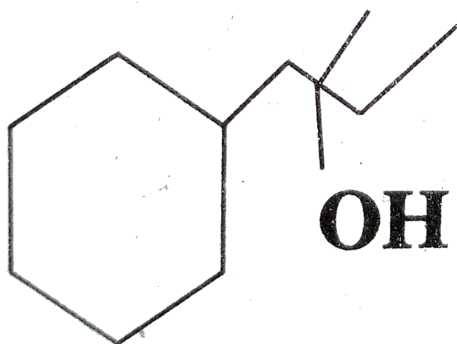
appropriate alkenes ?



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41. Show how you would synthesize the

iii)



alcohols from

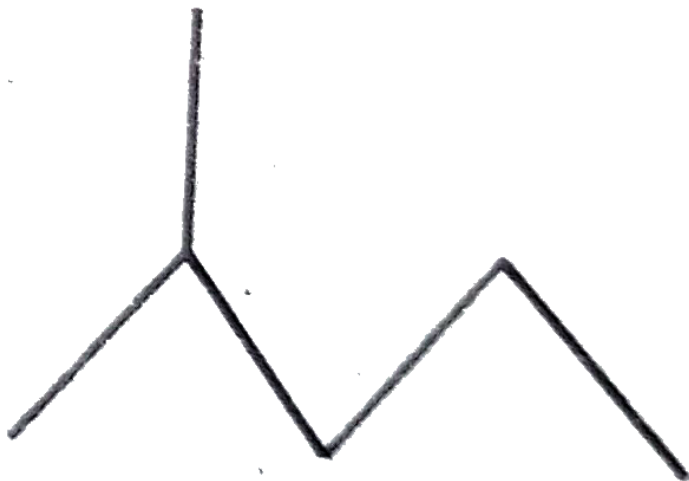
appropriate alkenes ?



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42. Show how you would synthesize the

OH



alcohols from

appropriate alkenes ?



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43. Explain why phenol with bromine water forms 2,4,6-tribromophenol while on reaction with bromine in  $CS_2$  at low temperature forms para-

bromophenol as the major product .

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44. Explain the Cyanohydrin term. Give an example of the reaction .

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45. Explain the Acetal term. Give an example of the reaction .

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46. Explain the Semicarbazone term. Give an example of the reaction .

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47. Explain the Aldol term. Give an example of the reaction .

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48. Explain the Hemiacetal term. Give an example of the reaction .

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49. Explain the Oxime term. Give an example of the reaction .

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50. Write structures of the  $CH_3CH(CH_3)CH_2CH_2CHO$  compound according to IUPAC system of nomenclature .

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51. Write structures of the  $CH_3CH_2COCH(C_2H_5)CH_2CH_2Cl$  compound according to IUPAC system of nomenclature .

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52. Write structures of the  $CH_3CH = CHCHO$  compound according to IUPAC system of nomenclature .

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53. Write structures of the  $CH_3COCH_2COCH_3$  compound according to IUPAC system of nomenclature .

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54. Draw the structure of the 3-Methylbutanal compound.

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55. Draw the structure of p-Nitropropioophenone compound.

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56. Draw the structure of p-Methylbenzaldehyde compound.

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57. Draw the structure of 3-Bromo-4-phenylpentanoic acid compound.

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58. Write the IUPAC names of the  $CH_3CO(CH_2)_4CH_3$  ketones and Aldehydes. Wherever possible, give also common names.

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59. Write the IUPAC names of the  $CH_3CH_2CHBrCH_2CH(CH_3)CHO$  ketones and Aldehydes. Wherever possible, give also common names.

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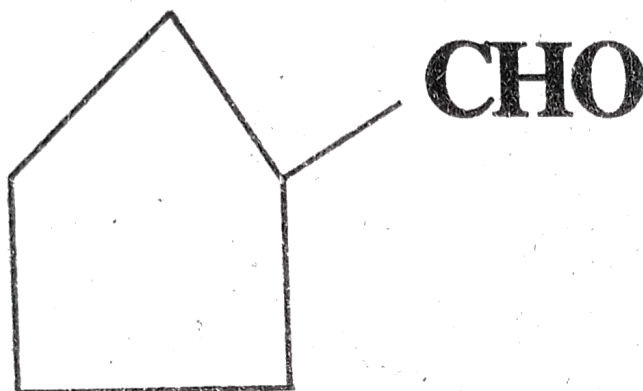
60. Write the IUPAC names of the  $CH_3(CH_2)_5CHO$  ketones and Aldehydes. Wherever possible, give also common names.

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61. Write the IUPAC names of the  $PhCH = CHCHO$  ketones and Aldehydes. Wherever possible, give also common names.

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62. Write the IUPAC names of the



ketones and

Aldehydes. Wherever possible , give also common names.

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**63.** Write the IUPAC names of the PhCOPh ketones and Aldehydes.

Wherever possible , give also common names.

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**64.** Draw the structures of the 2,4-dinitrophenylhydrazone of benzaldehyde derivatives.

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**65.** Draw the structures of the Cyclopropanone oxime derivatives.

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66. Draw the structures of the Acetaldehyde hemiacetal derivatives.

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67. Draw the structure of the Semicarbazone of cyclobutanone derivatives.

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68. Predict the products formed when Cyclohexanecarbaldehyde reacts with  $\text{PhMgBr}$  and then  $\text{H}_2\text{O}^+$  reagents.

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69. Predict the products formed when cyclohexanecarbaldehyde reacts with following reagents.

(i)  $\text{PhMgBr}$  and then  $\text{H}_3\text{O}^+$

(ii) Tollens' reagent

(iii) Semicarbazide and weak acid

(iv) Excess ethanol and acid

(v) Zinc amalgam and dilute hydrochloric acid

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**70.** Predict the products formed when Cyclohexanecarbaldehyde reacts with Semicarbazide and weak acid reagents.

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**71.** Predict the products formed when Cyclohexanecarbaldehyde reacts with Zinc amalgam and dilute HCl reagents.

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72. Which of the following compounds would undergo aldol condensatio ? Write structures of the products expected.

i) 2-Methylpentanal ii) 1-Phenylpropanone

iii) Phenyl acetaldehyde iv) 2,2-Dimethylbutanal

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73. An organic compound with the molecular formula  $C_9H_{10}O$  forms 2,4-DNP derivative, reduces Tollens' reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1,2-benzenedicarboxylic acid. Identify the compound.

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74. How do you distinguish the Propanal and propanone pairs of compound .

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75. How do you distinguish acetophenone and benzophenone ?

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76. How do you distinguish the Phenol and benzoic acid pairs of compound .

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77. How do you distinguish the Pentan-2-one and pentan-3-one pairs of compound .

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78. How are the Ethanol to 3-hydroxybutanal conversions carried in not more than two steps ?

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79. How are the Bromobenzene to 1-Phenylethanol conversions carried in not more than two steps ?

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80. How are the Benzaldehyde to  $\pm$  Hydroxyphenylacetic acid conversions carried in not more than two steps ?

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81. How are the Benzaldehyde to benzophenone conversions carried in not more than two steps ?

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82. Describe the Acetylation .

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**83.** Describe the Cannizaro reaction



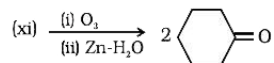
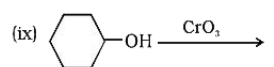
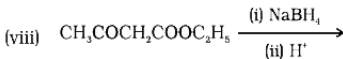
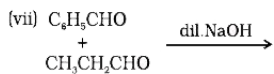
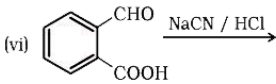
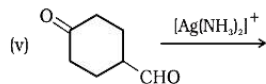
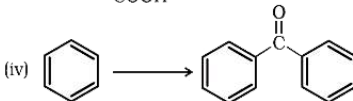
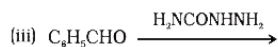
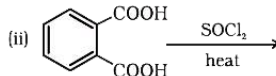
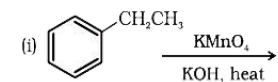
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**84.** Describe the Decarboxylation.



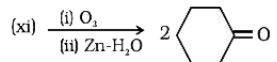
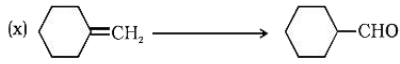
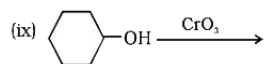
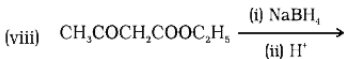
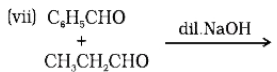
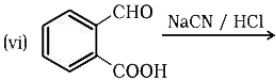
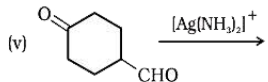
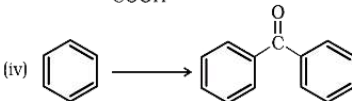
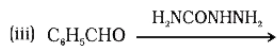
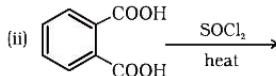
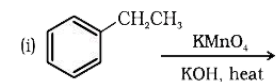
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**85.** Complete each synthesis by giving missing starting material, reagent or products



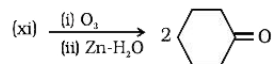
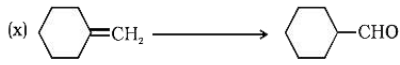
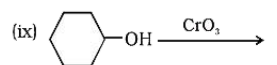
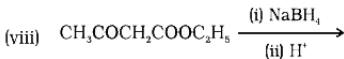
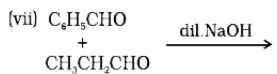
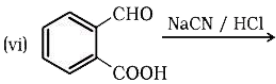
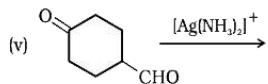
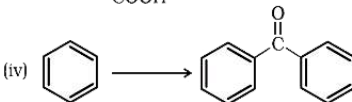
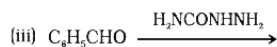
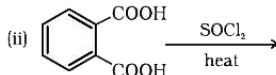
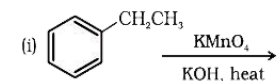
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**86.** Complete each synthesis by giving missing starting material, reagent or products



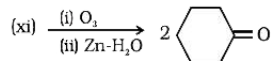
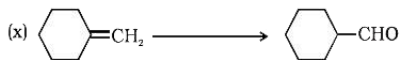
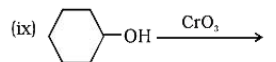
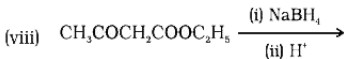
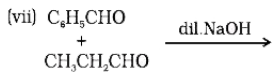
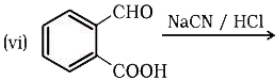
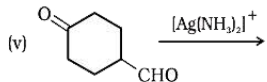
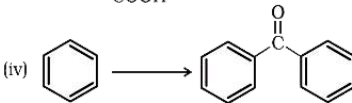
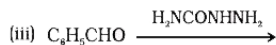
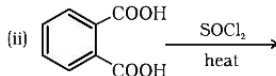
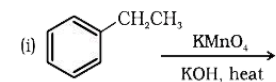
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**87.** Complete each synthesis by giving missing starting material, reagent or products



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**88.** Complete each synthesis by giving missing starting material, reagent or products



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## Intext Questions

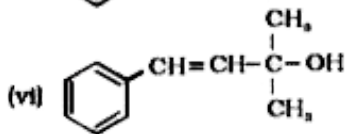
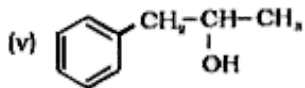
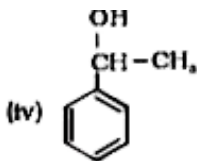
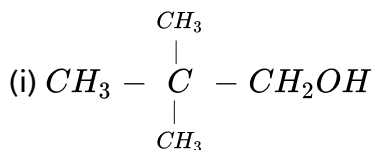
1. Classify the  $CH_3 - \overset{\overset{CH_3}{|}}{C} - CH_2OH$  as primary, secondary and tertiary alcohols.

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2. Classify the  $H_2C = CH - CH_2OH$  as primary, secondary and tertiary alcohols.

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3. Classify the following as primary, secondary and tertiary alcohols:

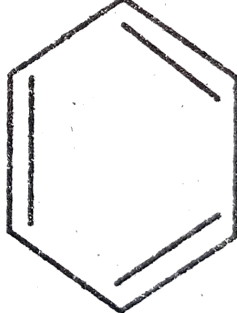


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OH



CH - CH<sub>3</sub>

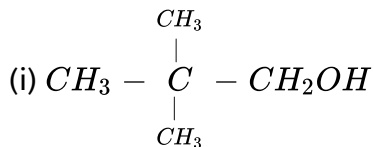


iv)

4. Classify the  
as primary, secondary and tertiary alcohols.

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5. Classify the following as primary, secondary and tertiary alcohols:







7. Identify the allylic alcohols in the above examples.

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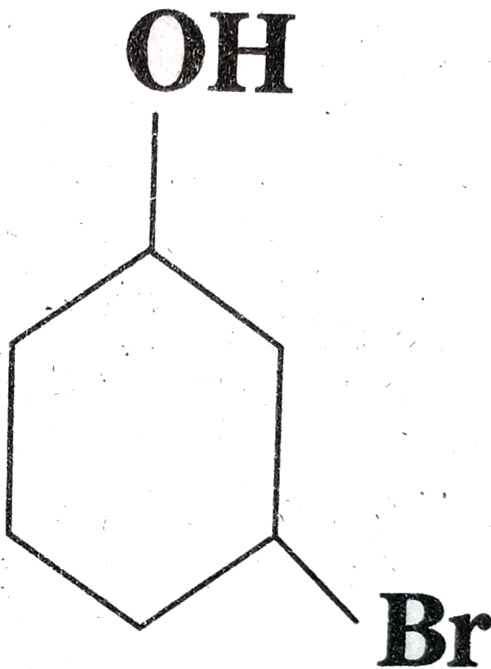
8. Name the  $CH_3 - CH_2 - \underset{\underset{CH_2Cl}{|}}{C}H - \overset{\overset{CH_2OH}{|}}{C}H - \underset{\underset{CH_3}{|}}{C}H - CH_3$  compound according to IUPAC system.

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9. Name the  $CH_3 - \underset{\underset{CH_3}{|}}{C}H - CH_2 - \underset{\underset{OH}{|}}{C}H - \overset{\overset{CH_2OH}{|}}{C}H - CH_3$  compound according to IUPAC system.

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iii)



10. Name the compound according to IUPAC system.

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11. Name the  $H_2C = CH - \underset{\substack{| \\ OH}}{CH} - CH_2 - CH_2 - CH_3$  compound according to IUPAC system.

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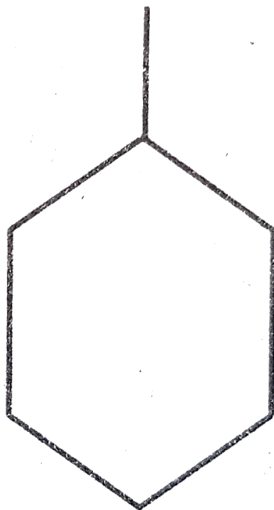
12. Name the  $CH_3 - \underset{\substack{| \\ CH_3}}{C} = \underset{\substack{| \\ Br}}{C} - CH_2OH$  compound according to IUPAC system.

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13. Show how are the  $CH_3 - \underset{\substack{| \\ CH_3}}{C}H - CH_2OH$  alcohol prepared by the reaction of a suitable Grignard reagent of methanol ?

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14. Show how are the



ii)

alcohol

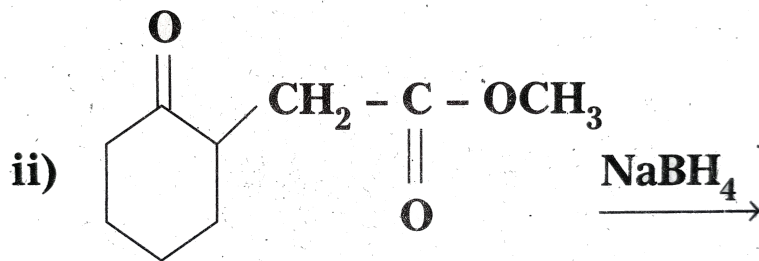
prepared by the reaction of a suitable Grignard reagent of methanol ?

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15. Write structure of the products of the  $\text{CH}_3 - \text{CH} = \text{CH}_2 \xrightarrow[\text{H}^+]{\text{H}_2}$

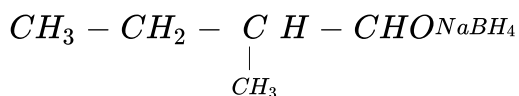
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16. Write structure of the products of the



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17. Write structure of the products of the



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18. Predict the major product of acid catalysed dehydration of 1-methylcyclohexanol

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19. Predict the major product of acid catalysed dehydration of butan-1-ol.

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20. Write the reactions of Williamson synthesis of 2-ethoxy-3-methylpentane starting from ethanol and 3-methylpentan-2-ol.

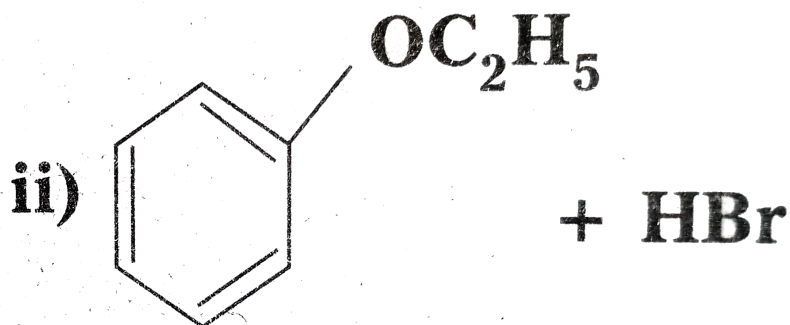
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21. Predict the products of the



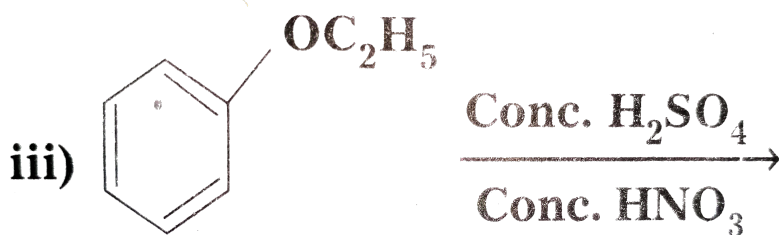
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22. Predict the products of the



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23. Predict the products of the

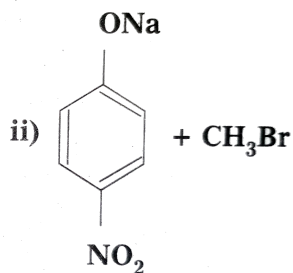
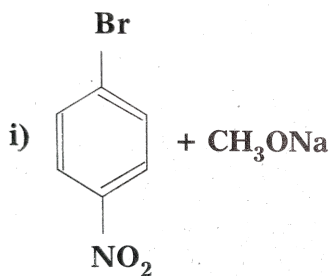


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24. Predict the products of the  $(CH_3)_3C - OC_2H_5 \xrightarrow{HI}$

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25. Which of the following is an appropriate set of reactants for the preparation of 1-methoxy-4-nitrobenzene ?



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26. Write the structures of the  $\alpha$ -Methoxypropionaldehyde compound.

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27. Write the structures of the 3-Hydroxybutanal compound.

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28. Write the structures of the 2-Hydroxycyclopentane carbaldehyde compound.

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29. Write the structures of the 4-Oxapentanal compound.

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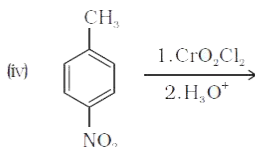
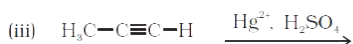
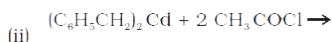
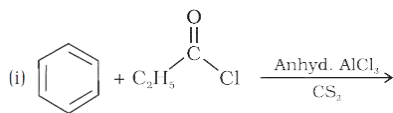
30. Write the structures of the Di-Sec. butyl ketone compound.

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31. Write the structures of the 4-Fluoroacetophenone compound.

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32. Write the structures of products of the following reactions,

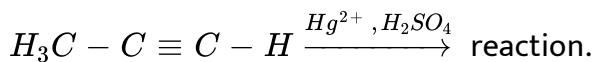


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33. Write the structure of products of the  $(\text{C}_6\text{H}_5\text{CH}_2)_2\text{Cd} + 2\text{CH}_3\text{COCl} \rightarrow$  reaction.

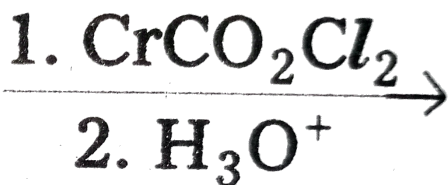
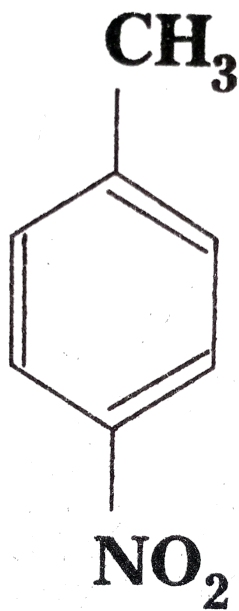
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34. Write the structure of products of the



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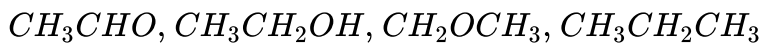
35. Write the structure of products of the



reaction.

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36. Arrange the following compounds in increasing order of their boiling points.



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37. Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions.

Ethanol , Porpanal, Propanone , Butanone .

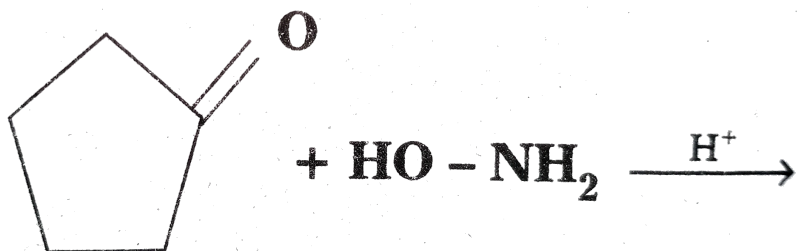
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38. Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions.

Benzaldehyde , p-Toualdehyde, p-Nitrobenzaldehyde , Acetophenone.

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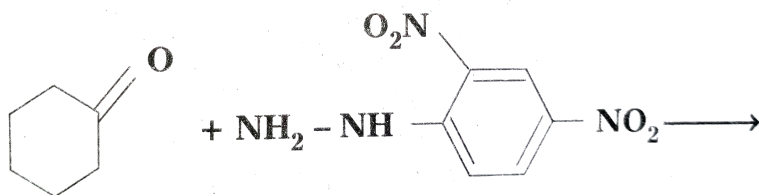
39. Predict the products of the



reaction.

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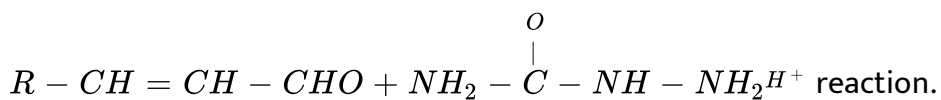
40. Predict the products of the



reaction.

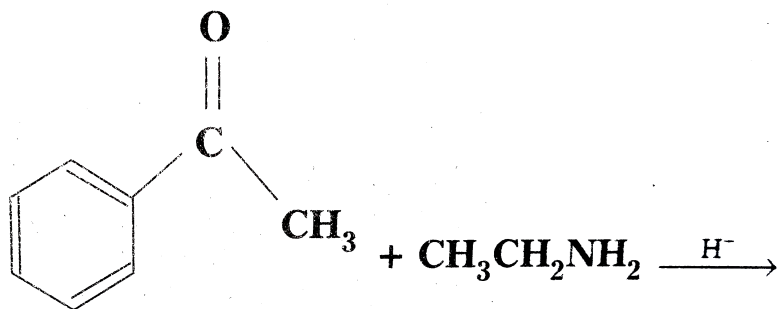
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41. Predict the products of the



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42. Predict the products of the



reaction.

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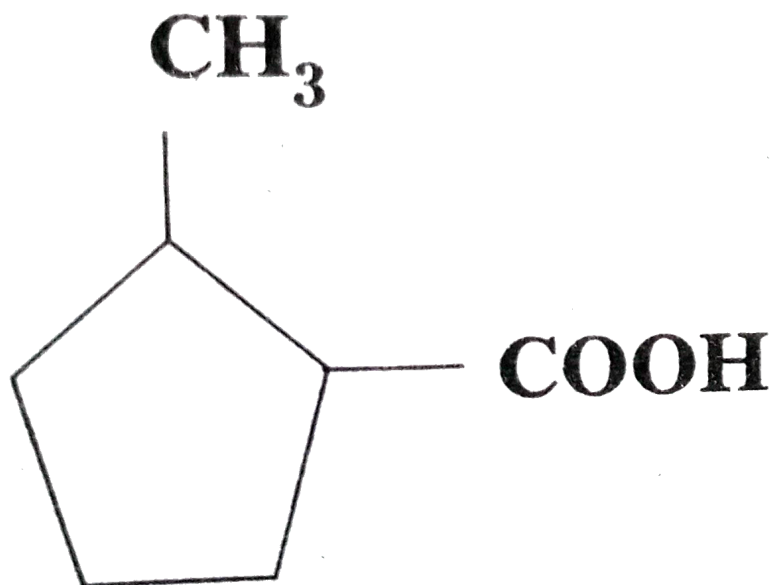
43. Give the IUPAC name of the  $PhCH_2CH_2COOH$  compound.

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44. Give the IUPAC name of the  $(CH_3)_2C = CHCOOH$  compound.

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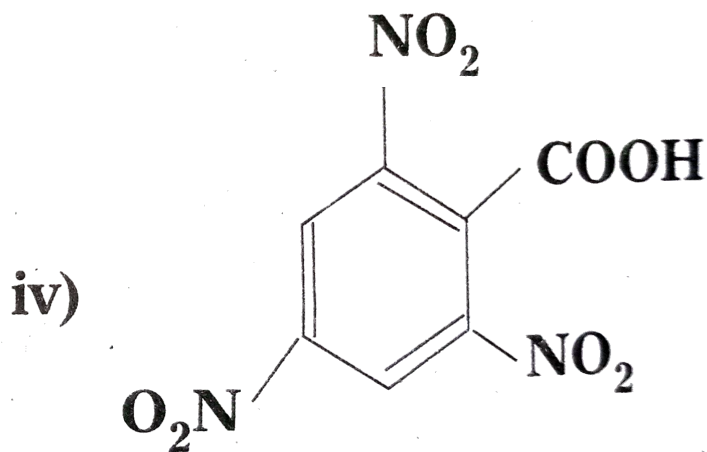
45. Give the IUPAC name of the



compound.

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46. Give the IUPAC name of the



compound.

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47. Show how Ethylbenzene compound can be converted to benzoic acid.

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48. Show how Acetophenone compound can be converted to benzoic acid.

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49. Show how Bromobenzene compound can be converted to benzoic acid.

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50. Show how Phenylethene (Styrene) compound can be converted to benzoic acid.

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51. Which acid of each pair shown here would you expect to be stronger?

$CH_3CO_2H$  or  $CH_2FCO_2H$

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52. Which acid of each pair shown here would you expect to be stronger?

$CH_2FCO_2H$  or  $CH_2ClCO_2H$



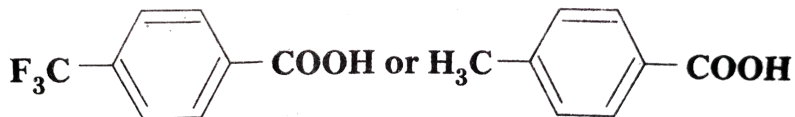
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53. Which acid of each pair shown here would you expect to be stronger?



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54. Which acid of each pair shown here would you expect to be stronger?



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