CHEMISTRY

BOOKS - CHETANA PUBLICATION

Aldehydes, Ketones and Carboxylic Acids

Example

1. What are the carbonyl compounds? Write example of organic compounds containing carbonyl group.

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2. What are aldehydes and ketones?

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3. What are carboxylic acids ?

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4. Draw the structures of the following compounds the carbonyl C are same and classify them on the basis of C-O single bond and C = O double bond present in them: (i) Ethyl alcohol (ii) acetaldehyde (iii) o-nitrophenol (iv) Diethyl ether (v) isopropyl alcohol (vi) acetone.

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5. Explain classification of aldehydes.

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6. Explain classification of ketones.

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7. Explain classification of carboxylic aids.

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8. Classify the following as Aliphatic and aromatic Aromatic aldehydes.

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9. Classify the following as simple and mixed ketones.

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10. Name the aldehydes / ketones that or write structure of are responsible for the following flavours / odour:

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11. Name the carbonyl compound that gives popcorn its butter flavour.

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12. Name two hormones that contain carbonyl compounds.

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13. Give an example of a side chain aromatic acid.

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14. Name the carboxylic acids present in curd, lemon and vinegar.

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15. What are aromatic ketones?

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16. Is phenyl acetic acid an aromatic carboxylic acid.

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17. Which suffix appears in the IUPAC names of aldehydes and carboxylic acids?

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18. What do you call an aldehyde / carboxylic acid, that have two / more functional groups in the ring?

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19. Give common and IUPAC names of the following aldehydes and carboxylic Acids.

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20. Draw structures of the following:

2-Methylpentanal

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21. Draw structures of the following:

Hexan-2-one

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22. Write the structures and IUPAC names of all the metamers represented by the formula $C_5H_{10}O$.

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23. Write the structures and IUPAC names of

Adipic acid

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24. Write the structures and IUPAC names of

$\alpha - methyl$ butyraldehyde

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25. Write the structure and IUPAC names of isomeric aldehydes having molecular formula $C_5H_{10}O$

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26. Write chemical reactions showing preparation of:

Aldehyde using $Pd - BaSO_4$

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27. Which is the reagent which oxidizes primary alcohols to only aldehydes and does not oxidize aldehydes further into carboxylic acid?

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28. What is ozonolysis?

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29. What is the role of zinc dust in ozonolysis?

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30. Write chemical reactions showing preparation of:

Aldehyde using $Pd - BaSO_4$

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31. Write chemical reactions showing preparation of:

Ketone using $CdCl_2 / RMgX$

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32. Write chemical reactions showing preparation of:

Acetonphenone by Friedel Crafts Acylation

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33. Write the structure of the product formed on Rosenmund reduction of ethanoyl chloride and benzoyl chloride.

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34. Prepare Acetophenone from:

$CdCl_2 / CH_3MgBr$

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35. Prepare Acetophenone from:

Benzene and acetic anhydride

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36. Write the balanced chemical reaction for:

ethanoyl chloride reacts with dimethyl cadmium

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37. Write the balanced chemical reaction for:

Benzoyl chloride reacts with benzene.

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38. Name the compounds which are used for the preparation of benzophenone by Friedel-Crafts acylation reaction. Draw their structures.

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39. Write a note on STEPHEN'S reaction.

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40. Write the reaction for preparing a ketone from a nitrile.

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41. Write the reaction showing conversion of ethane nitrile into ethanol.

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42. Write the chemical reactions for conversion of:

Benzonitrile to benzaldehyde

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43. Write the chemical reactions for conversion of:

Pent-3-enenitrile to pent-3-enal

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44. Write the chemical reactions for conversion of:

Benzonitrile to benzophenone

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45. Explain Etard Reaction.

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46. What is the action of the following reagents on toluene?

$CrO_2Cl_2 \in CS_2$

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47. What is the action of the following reagents on toluene?

Acetyl chloride in presence of anhy $AlCl_3$ or Acetic anhydride

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48. Write the chemical reactions for the action of the following reagents on toluene/methyl benzene.

$Cl_2 / uv + H_2O$

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49. Write the chemical reactions for the action of the following reagents on toluene/methyl benzene.

Chromium oxide in acetic anhydride

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50. Explain Gatterman - Koch Formylation.

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51. GaAs is used to prepare

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52. Convert an ester to an aldehyde.

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53. Draw the structure of the product formed by the combination of carbonmonoxide and HCL.

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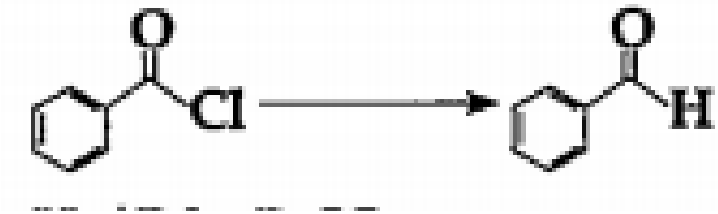
54. Identify the reagents necessary to achieve each of the following transformation.



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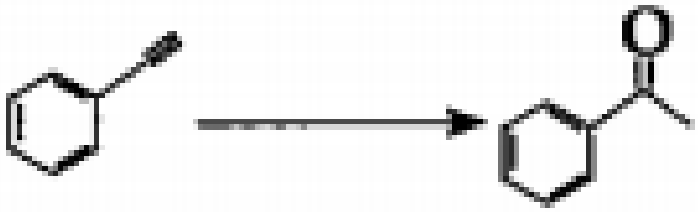
55. Identify the reagents necessary to achieve each of the following transformation.



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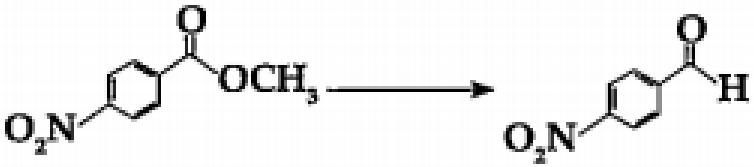
56. Identify the reagents necessary to achieve each of the following transformation.



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57. Name the product obtained by reacting toluene with carbon monoxide and hydrogen chloride in presence of anhy Aluminium

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58. Write the reaction for the preparation of carboxylic acid by hydrolysis of:

Cyanide/nitrile

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59. Write the reaction for the preparation of carboxylic acid by hydrolysis of:

Acid chloride

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60. Write the reaction for the preparation of carboxylic acid by hydrolysis of:

Anhydride

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61. Write the reaction for the preparation of carboxylic acid by hydrolysis of:

Ester

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62. Write a note on saponification (OR) Why is alkaline hydrolysis of esters known as saponification?

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63. Write the reactionfor the preparationof benzoic acid from:

Toluene

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64. Write the reactionfor the preparationof benzoic acid from:

Cumene

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65. Write the reactionfor the preparationof benzoic acid from:

Phenylethene

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66. Write the structure and name of the product obtained when cyclohexene reacts with $KMnO_4 / dilH_2SO_4$.

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67. Prepare:

Carboxylic acid from Grignard reagent

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68. Prepare:

Ethanoic acid from dry ice

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69. Predict the products structure in the following reactions:

$$CH_3CH_2CN \xrightarrow[dil.HCl]{\Delta} ?$$

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70. Predict the products structure in the following reactions:

$$CH_3 - CONH_2 \xrightarrow[dil.HCl]{\Delta} ?$$

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71. Predict the products structure in the following reactions:

$$C_6H_5 - CH_2 - CH_3 \xrightarrow[\Delta]{dil.KMnO_4} ?$$

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72. Predict the products structure in the following reactions:

$$C_6H_5 - COO - C_2H_5 \xrightarrow[dil.H_2SO_4]{\Delta} ?$$

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73. Predict the products structure in the following reactions:

$$CH_3MgBr \xrightarrow[dil.HCl]{(j)\,dryice/dryether} ?$$

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74. Write reaction showing conversion of benzonitrile into benzoic acid.

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75. Name the product obtained by the oxidation of 1,2,3,4- tetra hydro naphthalene with acidified potassium permanganate.

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76. Acetic acid is prepared from methyl magnesium bromide and dry ice in presence of dry ether. Name the compound that serves not only as reagent but also as cooling agent in the reaction.

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77. Write reaction showing the action of the following reagent on propane nitrile.

Dil NaOH

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78. Write reaction showing the action of the following reagent on propane nitrile.

dil HCl

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79. What is the action of alkaline $KMnO_4$ dil HCl and heat on toluene?

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80. Write reaction showing conversion of p-bromoisopropyl benzene into p-isopropyl benzoic acid (3 steps).

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81. Tertbutyl benzene is not oxidized by dil $KMnO_4$ to benzoic acid. Give reason.

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82. Write the preparation of benzoic acid from the following:

Styrene

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83. Write the preparation of benzoic acid from the following:

Benzamide

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84. Write the preparation of benzoic acid from the following:

Dry ice

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85. Write balanced reaction for conversion of acyl chloride to benzyl methyl ketone using dialkyl cadmium.

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86. Arrange the following in the increasing order of the boiling points.

Formaldehyde, ethane, methyl alcohol

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87. Arrange the following in the increasing order of the boiling points.

Butanal, diethyl ether, butan-1-ol,pentane

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88. Arrange the following in the increasing order of the boiling points.

Acetone, propane-1-ol,n-butane, methoxyethane,propanal

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89. Give reason:

The boiling point of carbonyl compound is greater than alkanes / ethers of comparable molecular masses

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90. Give reason:

The boiling point of carboxylic acids are greater than that of aldehydes and ketones of comparable molecular masses.

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91. Give reason:

Lower members of aldehyde and ketone series are water soluble, but not the higher homologues.

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92. Arrange the following in the order of their decreasing boiling points and state the reason for the same:

Ether, Alkane, Alcohol,Ketone, and aldehyde

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93. What is:

Paraformaldehyde

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94. What is:

Trioxane

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95. What is:

Formalin. Write one use of formalin.

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96. Name the following:

The solid trimer of Acetaldehyde

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97. Name the following:

Tetramer of acetaldehyde

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98. Why are lower aliphatic carboxylic acids water miscible?

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99. Higher homologues of carboxylic acids are water insoluble. Give reason.

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100. Give Reason: Explain why aldehydes are more reactive than ketones towards nucleophitic attack

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101. Give Reason: Aldehydes are easily oxidized by mild oxidizing agents, but not ketones.

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102. Write chemical reactions to distinguish an aldehyde from a ketone.

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103. What is Schiff's reagent? What is the action of Schiff's reagent on ethanal and propanone?

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104. Write chemical reaction for the action of the following on ethanal:

Tollen's Reagent

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105. Write chemical reaction for the action of the following on ethanal:

Fehling's solution

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106. Why is benzaldehyde not oxidized by Fehling solution?

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107. Explain the Sodium nitroprusside test. Write its use.

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108. Observe the following equations of reaction of Tollen's reagent with aldehyde. How do we know that a redox reaction has taken place. Explain.

$$R-CHO+2Ag(NH_3)_2\cdot+3OH^-\xrightarrow{\Delta}R-COO^{o+}+2Ag\downarrow+4NH_3$$

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109. What are the products df reaction of

$CH_3-CHOwithHCN$

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110. Write chemical reactions for the action of following reagents on Ethanal.

Sodium bisulphite $(NaHSO_3)$

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111. Write chemical reactions for the action of following reagents on Ethanal.

CH_3MgBr / HOH

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112. Write chemical reactions for the action of following reagents on Ethanal.

Ethanol

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113. Convert Propanone/ Acetone to:

Acetone cyanohydrin

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114. Convert Propanone/ Acetone to:

Bisulphite adduct

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115. Convert Propanone/ Acetone to:

2,2-diethoxy propane

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116. Convert Propanone/ Acetone to:

Cyclic ketal

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117. Convert Propanone/ Acetone to:

2-Methylpropan-2-ol/tert butyl alcohol

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118. Write reaction showing conversion of acetaldehyde into acetaldehyde dimethyl acetal.

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119. Identify A, B and C in the following reaction:

$$CH_3CH_2OH \xrightarrow{PCC} A \xrightarrow[OH^-]{HCN} B \xrightarrow[H^+]{2H_2O} C$$

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120. Sodium bisulfite is sodium salt of sulfurous acid, write down its detailed bond structure.

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121. Identify A/B in the following reaction and complete the reaction.

$$(CH_3)_2CO \xrightarrow{HCN} A \xrightarrow[alc]{Na} B$$

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122. Writechemical reactions toconvert acetaldehyde to the following:

acetaldoxine

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123. Writechemical reactions toconvert acetaldehyde to the following:

semicarbazone

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124. Writechemical reactions toconvert acetaldehyde to the following:

its hydrazone

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125. Write the structure of the product obtained by the action of the following reagents on propanone:

Hydrogen cyanide

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126. Write the structure of the product obtained by the action of the following reagents on propanone:

hydrazine

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127. Write the structure of the product obtained by the action of the following reagents on propane:

phenylhydrazine

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128. Write the structure of the product obtained by the action of the following reagents on propanal :

Sodium bisulfite

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129. Complete and write the balanced chemical equation:

$$Bu\tan o \neq +2,4-d \in itro-phenylhydraz \in e \xrightarrow{H^+}$$

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130. Complete and write the balanced chemical equation:

$$Ace \rightarrow \neq + Phenylhydraz \in e \xrightarrow{H^+}$$

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131. Draw structures of:

The semicarbazone of cyclohexanone

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132. Draw structures of:

The imine formed in the reaction between 2-methylhexanal and ethyl amine

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133. Draw structures of:

2, 4 - dinitrophenylhydrazone of acetaldehyde.

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134. Write a note on Haloform reaction.

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135. Name a test to distinguish between Pentan-2-one and Pentan-3-one.

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136. Identify the compounds from the following that will give a positive Haloform reaction.

(a) propan-1-ol (b) propanone (c) Iso-propyl alcohol (d) pentan-3-ol (e) But-2-enal (f) ethanol (g) propanol (h) butanone

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137. Explain Aldol Condensation. OR Write a note on Aldol Condensation.

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138. Write balanced chemical reactions for:

action of dil NaOH on ethanal

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139. Write balanced chemical reactions for:

Barium hydroxide on acetone OR How I 40methylpent-3-en-2-one obtained from propane?

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140. Write a reaction showing Aldol condensation of cyclohexanone.

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141. What is Cross Aldol Condensation?

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142. Write the structure of all the products obtained when: ethanal and propanal react in presence of dil NaOH followed by heating

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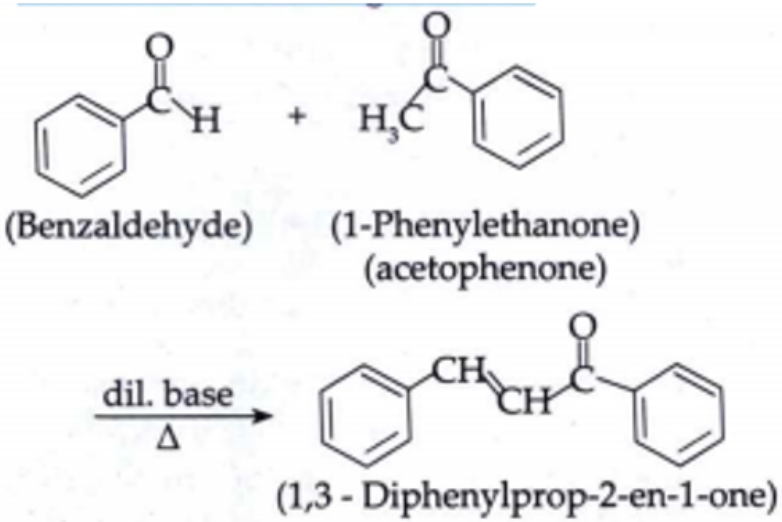
143. Observe the following reaction:



Will this reaction give a mixture of products like a cross aldol reaction?

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144. Write the structure of all the products obtained when: ehtanal and propanal react in presence of dil NaOH followed by heating

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145. Write a note on self oxidation-reduction reaction of aldehyde with suitable example.

Write a note on Cannizaro reaction.

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146. Complete and rewrite the balanced chemical equation for the following reaction.

$Benzaldehyde \xrightarrow{50\% KOH}$

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147. Complete and rewrite the balanced chemical equation for the following reaction.

$Isobutyraldehyde \xrightarrow{50\% KOH}$

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148. Complete and write this reaction. Also name this reaction.

F or $maldehyde + Benzeldehyde \xrightarrow[H_3O^{\oplus}]{concNaOH}$

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149. Write the structures and IUPAC names of the products obtained in the following rections:

$CH_3 - CHO \xrightarrow[dil\,H_2SO_4]{K_2Cr_3O_7}$

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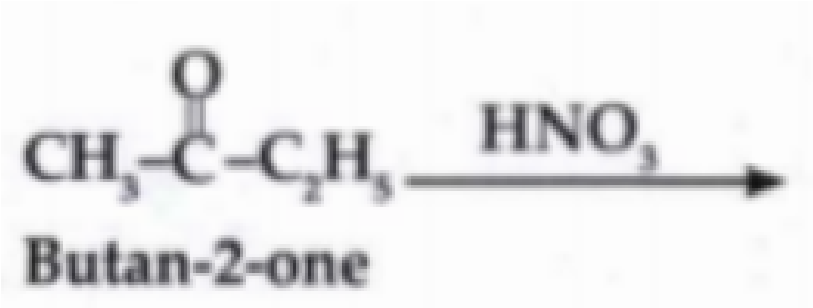
150. Write the structures and IUPAC names of the products obtained in the following rections:



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151. Aldehydes on oxidation give the corresponding carboxylic acid, but ketones give a lower carboxylic acid. Explain

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152. Write two uses of formaldehyde.

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153. Write a note on:

Clemmensen reduction

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154. Write a note on:

Wolf-Kishner reduction

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155. Write the balanced equation for the following conversion.

Action of Zn-Hg+conc HCl on porpanal

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156. Write the balanced equation for the following conversion.

Hydrazine + KOH on ethyl phenyl ketone

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157. Write the balanced equation for the following conversion.

Hydrazine /H+ on ehtanal

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158. Write the balanced equation for the following conversion.

Hydrazine + KOH - ethylene glycol on propanone

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159. Write the balanced equation for the following conversion.

Hydrazine in presence of KOH-ethylene glycol on cyclopentanone

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160. Write the resonance structures of carboxylate ion.

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161. Explain acidic nature of carboxylic acid.

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162. What is the numerical parameter to express acid strength?

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163. Arrange the following acids in the order of their decreasing acidity.

$I - CH_2COOH, Br - ch_2 - COOH, Cl - CH_2 - COOH, CH_3COOH,$

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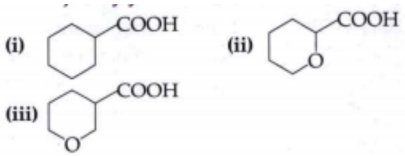
164. Arrange the folloiwng carboxylic acid with increasing order of their acidic strength abnd justify you answer.



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165. Identify and write the least acidic and the most acidic in the following.

$C_6H_5CH_2COOH, CH_3COOH, CH_3CH_2COOH. C_6H_5COOH$

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166. Identify and write the least acidic and the most acidic in the following.

4-methoxy benzoic acid, benzoic acid 4-nitrobenzoic acid

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167. Formic acid is stronger than acetic acid. Explain.

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168. Alcohols (R-OH), phenols (Ar-OH) and carboxylic acids (R-COOH) can undergo ionization of O-H bond to give away proton H^+, yet they have different pK_4 values, which are 16, 10 and 4.5 respectively. Explain.

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169. Arrange the following in an increasing order of acid strength.

$Cl_3\mathbb{C}COOH, ClCH_2COOH, CH_3COOH, Cl_2CHCOOH$

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170. Draw structures of conjugate bases of monochloroacetic acid and dichloroacetic acid? Which one is more stabilized by-I effect?

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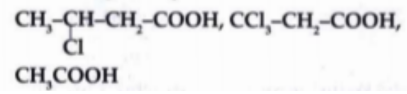
171. Arrange the following acids in order of their decreasing acidity.



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172. Arrange the following carboxylic acids in order of increasing acidity.

m-Nitrobenzoic acid, Trichloroacetic acid, benzoic acid, $\alpha - Chl$ or $obutyric$ acid.

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173. Given are Benzoic acid, 4-Methylbenzoic acid and 4-nitrobenzoic acid. Write their structures and arrange them in the decreasing order of their acidic strength.

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174. Write two laboratory tests for identifying-COOH group.

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175. Explain the Ester test.

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176. Write balanced chemical reactions for the following:

Ethanoic acid +Phosphorous trichloride

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177. Write balanced chemical reactions for the following:

Propionic acid + thionyl chloride

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178. Write balanced chemical reactions for the following:

Ethanoic acid + phosphorous pentachloride

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179. Write balanced chemical reactions for the following:

Action of heat on ethanoic acid

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180. Convert COOH to $CONH_2$

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181. Convert COOH to $CH2OH$

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182. Convert COOH to lower alkane

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183. Identify A,B and C and write the complete balanced reaction.

$Phthalicacid \xrightarrow{NH_3} A \xrightarrow{\triangle} B \xrightarrow{-NH_3} C$

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184. Fill in the blanks and rewrite the balanced equations.

CH3COOH+ thionyl chloride ----------> .....+.....+.....

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185. Fill in the blanks and rewrite the balanced equations.

$CH_3 - CH_2 - COOH + \ldots . \xrightarrow{\delta} \ldots . + H_3PO_3.$

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186. Fill in the blanks and rewrite the balanced equations.

C6H5-COOH + ... --------->.....+ phosphorous oxychloride + HCl

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187. Fill in the blanks and rewrite the balanced equations.

CH3-COOH + phosphorous trichloride ---------> .....+.....

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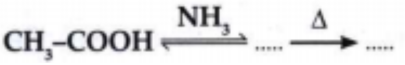
188. Fill in the blanks and rewrite the balanced equations.



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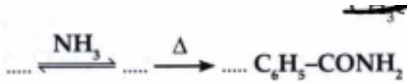
189. Fill in the blanks and rewrite the balanced equations.



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190. What is the term used for elimination of water molecule?

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191. Which molecule is eliminated in a decarboxylation?

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192. Explain decarboxylation reaction of propanoic acids.

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193. Compound A' reacts with thionyl chloride to give 'B'. A reacts with sodium hydroxide to give C, B and C, when heated together gave acetic anhydride. Identify A, B and C and write the complete reactions involved.

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194. Aromatic Aldehydes and Ketones, undergo Electrophilic substitution reaction.

What is the major product obtained when benzaldehyde reacts with cone nitric acid?

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195. Aromatic Aldehydes and Ketones, undergo Electrophilic substitution reaction.

Write the electrophils generated.

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196. Aromatic Aldehydes and Ketones, undergo Electrophilic substitution reaction.

Which position in the aromatic ring are deacivated?

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Exercise

1. Write the structure and IUPAC names of the functional isomer of Isobutyraldehyde.

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2. Give the names of the reagents used to bring about the following conversions.

But-2-ene to ethanal

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3. Give the names of the reagents used to bring about the following conversions.

Cyclohexanol to cyclohexanone

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4. Give the names of the reagents used to bring about the following conversions.

butan-1-ol and butanal

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5. Arrange the following in the increasing order of their boiling points.

$CH_3CH_2OH, CH_3CH_2CH_3, CH_3OCH_3, CH_3CHO$

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6. Arrange the following in the increasing order of reactivity in nudeophilic addition reaction

propanone, methanal, propanal, ethanal

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7. Write a chemical reaction to distinguish between propanal and propanone.

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8. Give a simple chemical test to distinguish between

phenol and benzoic acid

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9. Name a test to distinguish between Pentan-2-one and Pentan-3-one.

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10. Convert the following in not more than 2 steps

Benzene to m-nitroacetophenone

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11. Convert the following in not more than 2 steps

Ethanol to 3-hydroxybutanal

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12. Convert the following in not more than 2 steps

Benzoic acid to m-nitrobenzyl alcohol

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13. Convert the following in not more than 2 steps

Benzeldehyde to 3-phenyl propan-1-ol

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14. Write preparation of acetic acid from

dry ice

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15. Write preparation of acetic acid from

methyl cyanide

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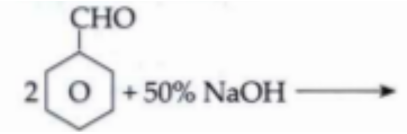
16. Write the structure of the final product and name the reaction.



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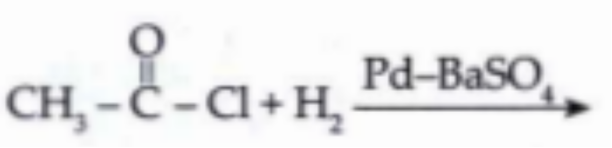
17. Write the structure of the final product and name the reaction.



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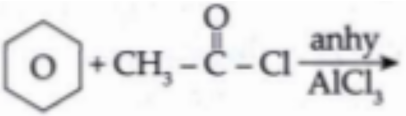
18. Write the structure of the final product and name the reaction.



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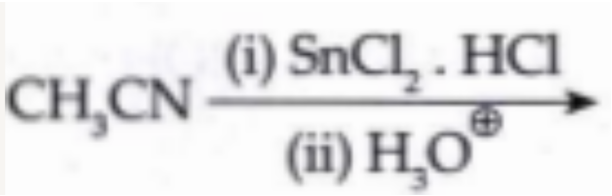
19. Write the structure of the final product and name the reaction.



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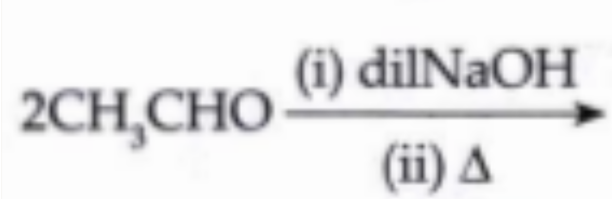
20. Write the structure of the final product and name the reaction.



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21. Draw and complete the following reaction scheme which starts with acetaldehyde. In each empty box, write the structural formula of the organic compound.

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22. Identify the structure of the compounds A, B and C in the following reactions.

$$CH_3Br \xrightarrow{Mg/ether} A \xrightarrow[(ii)\,Water]{(i)\,CO_2} B \xrightarrow[\delta]{CH_3OH/H^{o+}} C$$

Watch Video Solution

23. Identify the structure of the compounds A, B and C in the following reactions.

$$CH_3 - \underset{C}{\overset{O}{||}} - CH_3 \xrightarrow[H_2O^{o+}]{CH_3MgBr} A \xrightarrow{Na-m\eta l} B$$

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24. Identify the structure of the compounds A, B and C in the following reactions.

$$CH_3 - CHO \xrightarrow[(ii)\,H_2O^{o+}]{(i)\,CH_3MgX} A \xrightarrow[573K]{cu} B \underset{H^{o+}}{^{NH_2-NH_2}}$$

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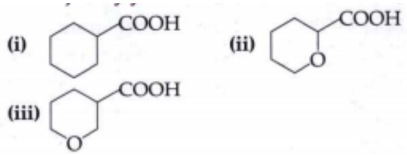
25. Arrange the folloiwng carboxylic acid with increasing order of their acidic strength abnd justify you answer.



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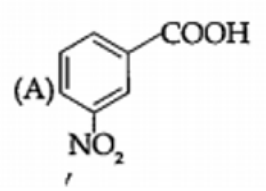
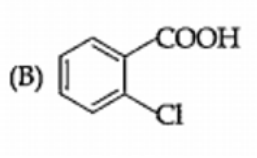
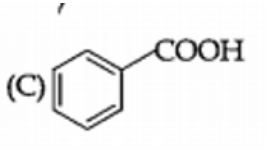
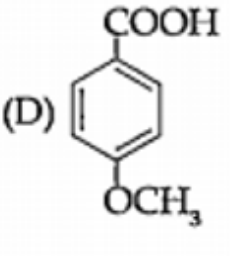
26. Which one of the following has lowest acidity?

A. 

B. 

C. 

D. 

Answer:

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27. Diborane reduces

A. ester group

B. nitro group

C. halo group

D. acid group

Answer:

Watch Video Solution

28. Benzaldehyde does NOT show positive test with

A. Schiff reagent

B. Tollens' reagent

C. Sodium bisulphite solution

D. Fehling solution

Answer:

Watch Video Solution

29. Which of the following carbonyl compounds undergoes aldol condensation?

A. Benzaldehyde

B. Benzophenone

C. Acetophenone

D. tert-Butyl-phenyl ketone

Answer:

Watch Video Solution

30. Which of the following carbonyl compounds undergoes self redox reaction in presence of concentrated base?

A. 3-Methylpentanal

B. 2-Chlorobutanal

C. 2, 2-Dimethylpropanal

D. tert-butyl methyl ketone

Answer:

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31. The smell of bitter almond is given by the compound:

A. A. Benzoic acid

B. B. Benzaldehyde

C. C. Vanillin

D. D. Cinnamaldehyde

Answer:

Watch Video Solution

32. A beta-hydroxyl carbonyl compound is obtained by the action of NaOH on:

A. A. HCHO

B. B. C5H5CHO

C. C. CR3CHO

D. D. CH3CHO

Answer:

Watch Video Solution

33. Para aldehyde is obtained by polymerization of :

A. HCHO

B. CH_3CHO

C. CH_3HO

D. $CH_3CH_2 - CHO$

Answer:

Watch Video Solution

34. Metaldehyde is a:

A. tetramer of acetaldehyde

B. dimer of acetone

C. trimer of acetaldehyde

D. trimer of formaldehyde

Answer:

Watch Video Solution

35. The reaction of $C_6H_5CH = CHCHO$ with $LiAlH_4$ gives:

A. $C_6H_5CH_2CH_2CH_2OH$

B. $C_6H_5CH_2CH_2CHO$

C. $C_6H_5CH=CHCH_2OH$

D. $C_6H_5CH_2CHOHCH_3$

Answer:

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36. A mixture of sodium benzoate and sodalime on heating yields:

A. methane

B. benzene

C. sodium benzoate

D. calcium benzoate

Answer:

Watch Video Solution

37. Which is the strongest acid?

A. CH_3COOH

B. CH_3CH_2COOH

C. $(CH_3)_3\mathbb{C}OOH$

D. $ClCH_2COOH$

Answer:

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38. Benzaldehyde when treated with alkaline $KMnO_4$ yields:

A. Benzyl alcohol

B. Benzoic acid

C. CO_2 and H_2O

D. Salicylic acid

Answer:

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39. Acetonitrile on acidic hydrolysis gives:

A. HCOOH

B. CH_3NC

C. CH_3COONa

D. CH_3COOH

Answer:

Watch Video Solution

40. The organic compounds A and B reacts with sodium metal and liberates hydrogen gas. A and B reacts together to give ethyl acetate. Then A and B are

A. CH_3COOH and C_2H_5OH

B. $HCOOH$ and C_2H_5OH

C. CH_3COOH and HCOOH

D. CH_3COOH and CH_3OH

Answer:

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41. The compound used as synthetic lemonade is:

A. tartaric acid

B. benzoic acid

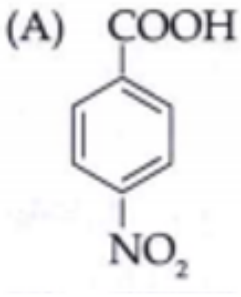
C. acetic acid

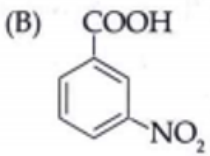
D. cirtic acid

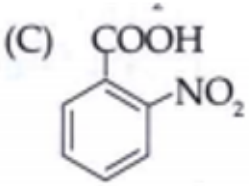
Answer:

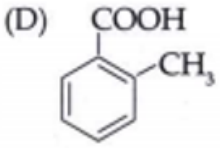
Watch Video Solution

42. The strongest acid is:

A. 

B. 

C. 

D. 

Answer:

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43. Carbonyl carbon is:

A. sp^3 hybridised

B. sp hybridised

C. sp^2 hybridised

D. dsp^2 hybridised

Answer:

Watch Video Solution

44. Wthylidene dichloride when boiled with aqueous NaOH gives:

A. Formaldehyde

B. Acetone

C. Butanone

D. Acetaldehyde

Answer:

Watch Video Solution

45. Benzoyl chloride is obtained from benzoic acid by:

A. $SOCl_2$

B. Cl_2H_2O

C. SO_2Cl_2

D. Cl_2hv

Answer:

Watch Video Solution

46. Grignard reagent when reacted with alkyl cyanide followed by hydrolysis gives:

A. an aldehyde

B. a ketone

C. a 1° alcohol

D. a 2° alcohol

Answer:

Watch Video Solution

47. Which compound on oxidation gives acetone?

A. acetic acid

B. methyl alcohol

C. propan-1-ol

D. propan-2-ol

Answer:

Watch Video Solution

48. The reagent used toconvert a carbonylcompound into an oxime is

A. hydrazine

B. phenyl hydrazine

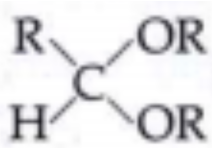
C. hydroxyl amine

D. sodium bisulphate

Answer:

Watch Video Solution

49. Compound having general formula

 is called

A. diester

B. acid anhydride

C. hemiacetal

D. acetal

Answer:

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50. IUPAC name of

$$C_6H_5 - CH_2 - \underset{\underset{C}{||}}{\overset{O}{}} - CH_2 - CH_2 - CH_2 - CH_3$$

A. 1-phenylhexan-2-one

B. 6-phenylhexan-5-one

C. 1-benzylhexan-5-one

D. Dodeon-5-one

Answer:

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51. Formalin is 40% aqueous solution of. ..... .

A. methanal

B. methanoic acid

C. methanol

D. methonamine

Answer:

Watch Video Solution

52. General formula of carbonyl compounds is

A. $C_nH_{2n}O_2$

B. $C_nH_{2n}O$

C. $C_nH_{2n+1}O$

D. $C_nH_{2n+2}O$

Answer:

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53. Which group is present in all aldehydes and ketones?

A. Alkyl

B. Carbonyl

C. Ester

D. Carboxyl

Answer:

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54. The compound that does not possess carbonyl group is

A. CH_3CHO

B. CH_3COCH_3

C. CH_3COOH and HCOOH

D. $CH_3 - CH_2 - O - CH_2 - CH_3$

Answer:

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55. Hybridization of the oxygen atom of carbonyl group is

A. sp

B. sp^2

C. sp^3

D. sp^3d^2

Answer:

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56. The Aldehydic group can occur

A. anywhere in the carbon chain

B. in the middle of carbon chain

C. only at the second carbon atom of the chain

D. only at the end carbon atom of the chain

Answer:

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57. Iso propyl alcohol in presence of Cu at $300^\circ C$ gives the following

A. Acetaldehyde

B. Acetone

C. Formaldehyde

D. Benzaldehyde

Answer:

Watch Video Solution

58. $CH_3OH \xrightarrow[573K]{Cu}$

A. Acetone

B. Acetaldehyde

C. Acetic anhydride

D. Formaldehyde

Answer:

Watch Video Solution

59. Compound formed when vapours of Butan-2 ol passed over 'Cu' at $300^{\circ} C$ is

A. Acetone

B. Acetaldehyde

C. Acetic chloride

D. Butanone

Answer:

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60. Alkaline hydrolysis of gem dihalides gives

A. aldehydes only

B. ketones only

C. carbonyl compounds

D. Ethers

Answer:

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61. The first oxidation product of secondary alcohol is

A. acid

B. aldehyde

C. ketone

D. ether

Answer:

Watch Video Solution

62. PCC is

A. $C_5H_5\overset{+}{N}HCrO_3Cl^-$

B. $C_6H_3\overset{+}{N}HCrO_3Cl^-$

C. $C_5H_{11}\overset{+}{N}HCrO_3Cl^-$

D. $C_6H_{13}\overset{+}{N}HCrO_3Cl^-$

Answer:

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63. CH_3CHO is obtained by the dehydrogenation of

A. C_2H_5OH

B. CH_3Cl

C. CH_3OH

D. CH_3COCl

Answer:

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64. Controlled oxidation of primary alcohols give

A. aldehydes only

B. ketones only

C. carboxylic acids

D. ethers

Answer:

Watch Video Solution

65. Controlled oxidation of ethyl alcohol gives

A. C_2H_4

B. CH_3COCH_3

C. CH_3CHO

D. $CH_3COOC_2H_5$

Answer:

Watch Video Solution

66. Isopropyl alcohol on oxidation forms

A. Acetaldehyde

B. Ethylene

C. Ether

D. Acetone

Answer:

Watch Video Solution

67. When ethyl alcohol is passed over red hot copper at $300^{\circ}C$ the formula of the product formed is

A. CH_3CHO

B. CH_3COCH_3

C. C_2H_4

D. CH_3COOH

Answer:

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68. IUPAC name of $C_6H_5 - CH_2 - CH_2 - NH_2$ is

A. 4-methyl hexanal-3

B. 3-ethyl-2methyl pentanal

C. 2-ethyl-3methyl pentanal

D. 4-methyl heptanal

Answer:

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69. Oxidation of tolune with CrO_3, in the presence of $(CH_3CO)_2O$ gives a product A which on treatment with aq. NaOH produce

A. C_6H_5CHO

B. C_6H_5COONa

C. $(C_6H_5CO)_2O$

D. $(CH_3CO)_2O$

Answer:

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70. Hydrogenation of benzoyl chloride in the presence of Pd and $BaS0_4$ gives

A. Benzyl Alcohol

B. Benzaldehyde

C. Benzoic acid

D. Phenol

Answer:

Watch Video Solution

71. Benzaldehyde is obtained from tolune by

A. Rosenmund's reduction

B. Cannizzaro reaction

C. Kolbe's reaction

D. Etard reaction

Answer:

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72. The formation of cyanohydrin with aceton is an example for

A. nucleophilic addition

B. nucleophilic substitution

C. electrophilic addition

D. electrophilic substitution

Answer:

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73. Acetone adds up the following without the formation of water molecule

A. NH_3

B. 2,4-DNP

C. H_2NOH

D. HCN

Answer:

Watch Video Solution

74. Acetaldehyde and acetone differ in their reaction with

A. NH_3

B. $NaHSO_3$

C. $C_6H_5CNHNH_2$

D. HCN

Answer:

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75. Aromatic aldehydes react with aromatic primary amines to give

A. Amides

B. Schiff's bases

C. Oximes

D. Cyanohydrins

Answer:

Watch Video Solution

76. Which of the following does not posses alpha hydrogen

A. Acetaldehyde

B. Formaldehyde

C. Acetone

D. Phenyl acetaldehyde

Answer:

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77. The following does not undergo aldol condensation in the presence of alkali

A. CH_3CHO

B. CH_3COCH_3

C. CH_3CH_2CHO

D. $\mathbb{C}l_3CHO$

Answer:

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78. When acetone is treated with $Ba(OH)_2$ it gives

A. Mesitylene

B. Diacetone alcohol

C. Urotropine

D. Mercapto

Answer:

Watch Video Solution

79. $2CH_3COCH_3 \xrightarrow{dryHCl} X'$ is

A. Mesityl oxide

B. Phorone

C. Acetic acid

D. Mesitylene

Answer:

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80. Haloform test is given by the compound

A. CH_3COCH_3

B. $C_2H_5COOC_2H_5$

C. HCHO

D. CH_3CH_2Cl

Answer:

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81. Acetaldehyde reacts with chlorine to form

A. Chloral

B. Acetyl chloride

C. Chloric acid

D. Chloretone

Answer:

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82. Aldeydes can be oxidized by

A. Benedicts sodium

B. Tollen's reagent

C. Fehling's solution

D. All of these

Answer:

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83. An aldehyde on oxidation gives

A. An acid

B. An alcohol

C. An ether

D. A ketone

Answer:

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84. Aldehydes are

A. Dehydration products of alcohols

B. Reducing agents

C. Oxidizing agents

D. Dehydrating agents

Answer:

Watch Video Solution

85. Isobutyraldehyde on oxidation gives

A. 2-methyl propanoic acid

B. 2-methyl propanone

C. Propanoic acid

D. 2-methyl butanoic acid

Answer:

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86. Silver mirror test is for

A. Amines

B. Thioalcohols

C. Ethers

D. Aldehyde

Answer:

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87. Tollen's reagent can be obtained by mixing aqueous $AgNO_3$ with aqueous NH_3 solution. The reagent mainly contains

A. $\left[Ag(NH_3)_2\right]$

B. AgOH

C. Ag

D. CH_3CHO

Answer:

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88. Which of the following is used as solvent for cellulose acetate, nail polish

A. Acetaldehyde

B. Ethyl alcohol

C. Formalin

D. Acetone

Answer:

Watch Video Solution

89. Cordite is a smokeless explosive powder. It is manufactured from

A. Acetaldehyde

B. Acetone

C. Paraldehyde

D. Mesitylene

Answer:

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90. Benzyl alcohol is obtained from benzaldehyde by

A. Fittig's reaction

B. Cannizzaro's reaction

C. Kolbe's reaction

D. Wurtz's reaction

Answer:

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91. Benzaldehyde undergoes oxidation and reduction in the presence of

A. $NaHCO_3$

B. NaOH

C. Na_2CO_3

D. HCl

Answer:

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92. The enol form of acetone contains

A. 9σ, 9π bonds

B. 10σ, 8π

C. 8σ, 10π

D. 9σ, 1π

Answer:

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93. The IUPAC name of methyl isopropyl ketone

A. 3-methyl-2-pentanone

B. 3-methyl butan-2-one

C. 2-pentanone

D. 2-methyl pantanone

Answer:

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94. 2-Pentanone and 3-Methylbutan-2-one are

A. optical isomers

B. geometrical isomers

C. metamers

D. tautomers

Answer:

Watch Video Solution

95. The IUPAC name of $\beta - methyl$ valeraldehyde is

A. 2-methyl pentanal

B. 3-methylpentanal

C. 2-methyl butanal

D. 3-methyl butanal

Answer:

Watch Video Solution

96. The IUPAC name of crotonaldehyde is .....

A. Butanal

B. But-2-enal

C. But-1-enal

D. none of these

Answer:

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97. For benzaldehyde, which of the following is incorrect

A. It is an aromatic aldehyde

B. It undergoes Aldol condensation

C. On oxidation it yields benzoic acid

D. On reduction it yields phenol

Answer:

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98. Ketones are isomeric with

A. Cyclic ethers

B. Unsaturated alcohols

C. Aldehydes

D. All of above

Answer:

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99. A compound 'X' has the formula C_2Cl_3OH. It give a red precipitate of Cu_2O with Fehling solution. Then 'X' is

A. Chloral

B. Chloretone

C. Chloropicrin

D. Chloroform

Answer:

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100. The main point of similarity between Etard's reaction and Gattermann-Koch reaction is

A. Starting reagent is benzene

B. Final product in both is benzaldehyde

C. Oxidizing agent in both is chromyl chloride

D.)Both form ketone as product

Answer:

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101. When formaldehyde is heated with ammonia, the product is

A. amino formaldehyde

B. formalive

C. methyl amine

D. hexamethylene tetramine

Answer:

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102. An organic compound $CH_3CH(OH)CH_3$ on treatment with acidified $K_2Cr_2O_7$ gives compound 'Y' which reacts with I_2 and sodium carbonate to form triiodo methane. The compound 'Y' is

A. CH_3OH

B. CH_3COCH_3

C. CH_3CHO

D. $CH_3CH(OH)CH_3$

Answer:

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103. A water soluble compound 'A' having molecular formula C_3H_6O gives yellow crystalline solid on heating with iodine and sodium carbonate. The compound 'A' is

A. $CH_2OCH = CH_2$

B. CH_3CH_2CHO

C. CH_3COCH_3

D. $CH_2 = CHCH_2OH$

Answer:

Watch Video Solution

104. The molecular weight of acetone is M. The molecular weight of diacetone alcohol is

A. M

B. $M/2$

C. 2M

D. 3M

Answer:

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105. Which of the following will undergo aldol condensation?

(I) acetaldehyde (II) Propionaldehyde (III) benzaldehyde (IV) chloral

A. I and II only

B. III only

C. IV only

D. I and IV only

Answer:

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106. Compound $A(C_5H_{10}O)$ forms a phenyl hydrazone and gives a negative Tollen's test and negative lodoform test. On reducing A with $Zn - Hg/HCl$ n-pentane is formed. The compound A is

A. 1° alcohol

B. an aldehyde

C. seconday school

D. a ketone

Answer:

Watch Video Solution

107. Clemmensen's reduction will convert cyclobutanone to

A. Cyclobutanol

B. Cyclobutyraldehyde

C. n-Butane

D. Cyclobutane

Answer:

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108. HCHO with conc, Alkali forms two compounds. The change in oxidation number would be

A. (o to-2) in both the compounds

B. (0 to +2) in both the compounds

C. (0 to +2) in one compound and (0 to -2) in the second compound

D. all the correct

Answer:

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109. Benzaldehyde reacts with NH_3 to give

A. Phenyl Cyanide

B. Hydrobenzamide

C. Aniline

D. Benzamide

Answer:

Watch Video Solution

110. Reaction of C_6H_5CHO with CH_3NH_2 gives

A. C_6H_5COOH

B. $C_6H_5 - N = NCl + 2H_2O$

C. $C_6H_5 - CH = N - CH_3$

D. $C_6H_5NH_2$

Answer:

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111. Nitration of acetophenone using nitrating mixture on produces mainly

A. o- nitro acetophenone

B. p-nitor acetophenone

C. m- nitro acetophenone

D. m - nitrobenzoic acid

Answer:

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112. A substance A containing three carbon atoms gives white crystalline precipitate with sodium bisulphite solution . but does not give red precipitate with Fehling solution. A on treatment with $NH_2 - NH_2 / KOH$ will yield.

A. Propene

B. Propanone

C. Butan

D. Propionic acid

Answer:

Watch Video Solution

113. Which of the following is most reactive to give nucleophilic addition?

A. FCH_2CHO

B. $ClCH_2CHO$

C. $BrCH_2CHO$

D. ICH_2CHO

Answer:

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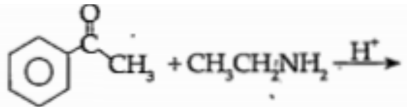
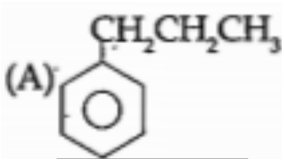
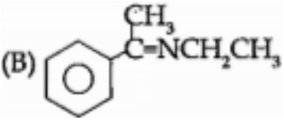
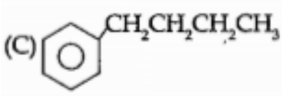
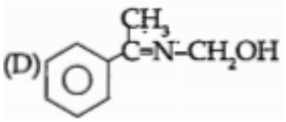
114. Find the final product of the reaction.



A. 

B. 

C. 

D. 

Answer:

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115. What is the best test to differentiate between pentan-2-one and pentan-3-one?

A. both pentan-2-one give positive iodoform test pentan-3-one give positive iodoform test

B. Formaldehyde reacts with methyl magnesium bromide to form ethanol

C. $LiAlH_4$ convers ketones to set-alcohols

D. pentan-2-one give positive iodoform test pentan-3-one does not give positive iodoform test

Answer:

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116. Identify X,Y and Z in the given reaction

$$CH_3COCH_3 \xrightarrow[dil.\,H_2SO_4]{K_2Cr_2O_7} X \xrightarrow{PCl_5} T(Pd - BaSO_4) \rightarrow Z$$

A. $X = CH_3COOH, Y = CH_3COCl, Z = CH_3CHO$

B. $X = CH_3CH_2OH, Y = CH_3CH_2Cl, Z = CH_3CH_3$

C. $X = CH_3COCl, Y = CH_3CHO, Z = CH_3COOH$

D. $X = CH_3COOH, Y = CH_3CHCH_2, Z = CH_3CH_3$

Answer:

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117. The enolic form of acetone contain

A. 9 sigma bonds, 1 pi bond and 2 Lone pair

B. 8 sigma bonds, 2 pi bonds and 2 Lone pair

C. 10 sigma bonds, 1 pi bond and 2 Lone pair

D. 9 sigma bonds, 1 pi bond and 1 Lone pair

Answer:

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118. The IUPAC name of crotonaldehyde is .....

A. 3-hydroxybutanol

B. but-2-enal

C. but-i-enal

D. but-3-enal

Answer:

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119. Benzene can be conveniently converted into n-propyl benzene by

A. Friedel crafts alkylation with n-propyl chloride

B. Friedel crafts alkylation with propionyl chloride followed by wolff - kisher reduction

C. Friedel crafts catalytic hydrogeneration

D. Friedel crafts acylation with propionyl chloride followed by reduction with $LiAlH_4$

Answer:

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120. Which of the following compounds when treated with dibenzylcadmium yields benzyl methyl ketone?

A. Acetone

B. Acetaldehyde

C. Acetic acid

D. Acetyl chloride

Answer:

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121. Which of the following is most reactive to addition reaction with HCN

A. Acetone

B. Methanal

C. Ethanol

D. pentan-3-one

Answer:

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122. $A \xrightarrow{(O)} B \xrightarrow{NH_2OH} (CH_3)_2C = NOH$ Identify A

A. $CH_3 - \underset{\underset{O}{||}}{C} - CH_3$

B. CH_3OH

C. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_3$

D. CH_3OH

Answer:

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123. Acetaldehydes reacting with phenylhydrazine, is a type of.....reaction

A. eliminatin

B. condensation

C. hydrolysis

D. addition

Answer:

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124. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?

A. 

B. 

C. 

D. 

Answer:

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125. Cannizzaro reaction is not shown by

A. HCHO

B. C_6H_5CHO

C. CH_3CHO

D. $\mathbb{C}l_3CHO$

Answer:

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126. Which of the following compounds is the most acidic in nature?

A. 4-chlorobutanoic acid

B. 3-chlorobutanoic acid

C. 2-chlorobutanoic acid

D. butanoic acid

Answer:

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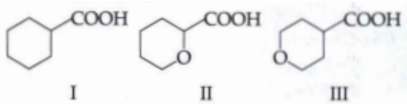
127. The correct order of acidic strength for the following carboxylic acid is



A. IIgtIgtIII

B. IIgtIIIgtI

C. IgtIIgtIII

D. IIIgtIIgtI

Answer:

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128. Which reagent converts -COOH to -COOR

A. C_2H_5OH

B. dry HCl + C_2H_5OH

C. $LiAIH_4$

D. $Al(OC_2H_5)_3$

Answer:

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129. Acetic anhydride is obtained from acetyl chloride by the reaction of with

A. F_2O_5

B. H_SO_4

C. CH_3COONa

D. CH_3COOH

Answer:

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130. Which of the following has a frostly color?

A. aniline

B. ethanol

C. ethyl acetate

D. acetaldehyde

Answer:

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131. In the reaction,

$CH_3COOH \xrightarrow{LiAlH_4} A \xrightarrow{PCl_3} B(alkKOH) \rightarrow C,$ the product C is

A. acetaldehyde

B. acetylene

C. ethylene

D. acetyl chloride

Answer:

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132. The correct order of increasing acidic strength is

A. Phenol

B. Ethanol

C. Ethanol

D. Chloroacetic acid< Acetic acid

Answer:

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133. Which of the following is Clemmenson's reduction?

A. benzeldehyde to benzyl alcohol

B. cyclohexanone to cyclohexane

C. benzeldehyde to benzoic acid

D. benzeldehyde to acetophenone

Answer:

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134. $CH_3 - C \equiv CH \xrightarrow{H_1^+ Hg^{+2}} A \xrightarrow{Rearran \geq ment} B$

A and B are

A. prop-1-en-2-ol and propanol

B. prop-1-en-1-ol and propa-1-ol

C. prop-2-en-2-ol and propa-2-ol

D. prop-1-en-2-ol and propanone

Answer:

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135. Which of the following reactions will result in an increase in the length of the C chain?

A. Grignard reaction

B. Cannizaro 's reaction

C. Aldol condensation

D. HVZ reaction

Answer:

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136. Write IUPAC name of $CH_3CH = CH - CHO$

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137. Identify A and B

$$CH_3MgBr \xrightarrow[(ii)\,H_2O]{(i)\,CO_2} A \xrightarrow{CH_3OH\,/\,H^+} B$$

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138. Write the reaction to convert benzene to benzeldehyde.

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139. Write the structure of the product obtained in the following:

Acid hydrolysis of ethyl acetate

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140. Write the structure of the product obtained in the following:

Action of nitrating mixture on benzoic acid

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141. Write a chemical reaction to distinguish between propanal and propanone.

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142. Name the reagent used in ETARD reaction to convert toluene to benzeldehyde:

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143. Write a functional isomer of propanoic acid and its IUPAC name.

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144. Give reason:

The boiling point of carboxylic acids are greater than that of aldehydes and ketones of comparable molecular masses.

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145. Convert acetic acid to:

acetyl chloride

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146. Convert acetic acid to:

acetamide

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147. Write the structure of the product obtained in the following reaction

Acetyl chloride + Dimethyl cadmium

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148. Write the structure of the product obtained in the following reaction

Toluene+Chromyl chloride

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149. Write a note on Cannizaro reaction.

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150. Prepare Acetophenone from:

$CdCl_2 / CH_3MgBr$

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151. Prepare Acetophenone from:

Benzene and acetic anhydride

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152. Explain the Ester test.

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153. Write balanced chemical reactions for

Action of conc NaOH on formaldehyde

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154. Write balanced chemical reactions for

$Ba(OH)_2$ on ethanal, followed by heating

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155. Write balanced chemical reactions for

Action of NH_3 and heat on benzoic acid

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