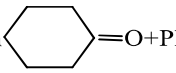
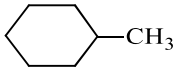
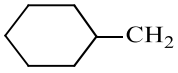
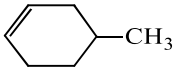
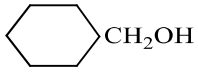
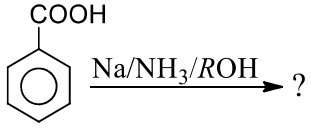
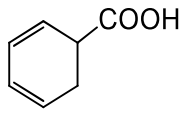
# GPLUS EDUCATION

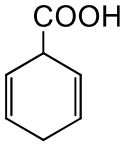
**Date :**
**Time :** **CHEMISTRY**
**Marks :**

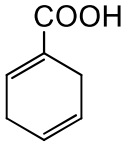
## ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

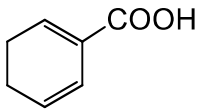
### Single Correct Answer Type

1. On heating with aqueous alkali, chloroform yields:
   a) HCHO b) HCOOH c) $CH_3OH$ d) $CO_2$ and $H_2O$
2. A keto ester ($A$) with molecular formula $C_6H_{10}O_3$ on treatment with $NaOH + I_2$ does not give iodoform but on boiling with dilute KOH gives a compound ($B$) with molecular formula $C_4H_5O_3K$ which upon acidification followed by heating undergoes decarboxylation to give acetone. The keto ester ($A$) is
   a) $CH_3COCH_2CH_2COOCH_3$ b) $CH_3COCH_2COOC_2H_5$
   c) $CH_3CH_2OCH_2COOCH_3$ d) $CH_3 - COCH(CH_3)COOCH_3$
3. In the reaction, $HCHO + NH_3 \rightarrow X, X$ is
   a) *meta*-formaldehyde b) *para*-formaldehyde c) urotropine d) None of these
4. $CH_3CH_2 - CHO \xrightarrow[\text{alkali}]{\text{Dil.}}$ product
   The product in the above reaction is
   a) $CH_3CH_2COOH$ b) $CH_3CH_2 - CH_2OH$
   c) $CH_3-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-CHO$ d) $CH_3-CH_2-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CHO$
5. One mole of an organic compound requires 0.5 mole of oxygen to produce an acid. The compound may be:
   a) Alcohol b) Ether c) Ketone d) Aldehyde
6. Acetic acid reacts with $PCl_5$ to form
   a) $CH_2ClCOOH$ b) $CHCl_2COOH$ c) $CH_3COCl$ d) $CH_3COOCl$
7. The calcium salt of the final oxidation product of ethanol on dry distillation gives:
   a) Formaldehyde b) Acetaldehyde c) Acetone d) Formic acid
8. Coal-tar is obtained as by product during :
   a) Destructive distillation of wood
   b) Destructive distillation of coal
   c) Destructive distillation of bones
   d) None of the above
9. $CH_3COOH$ and $C_6H_5COOH$ can be distinguished by:
   a) Flame test b) Solubility in water c) Physical state d) All of these
10. The reaction  produces:
    a)  b)  c)  d) 
11. Methylene chloride on hydrolysis yields:
    a) HCHO b) $CH_3CHO$ c) $CH_3COCl$ d) None of these
12. 
    Product is

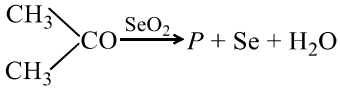
a) 

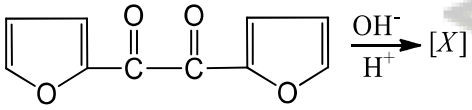

b) 


c) 

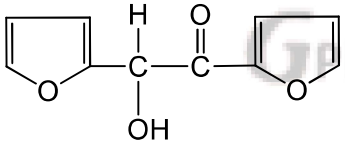

d) 

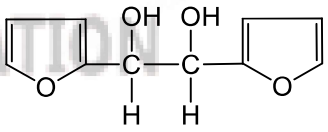

13. Which of the following compounds does not have a carboxyl group?
    a) Methanoic acid  b) Ethanoic acid  c) Picric acid  d) Benzoic acid
14. 2,4-dichlorophenoxy acetic acid is used as a:
    a) Fungicide  b) Insecticide  c) Herbicide  d) Moth repellent
15. Which one of the following is reduced with zinc and hydrochloric acid to give the corresponding hydrocarbon?
    a) Ethyl acetate  b) Acetic acid  c) Acetamide  d) Butan-2-one
16. 3-pentanol on reaction with aluminium tertiary butoxide in the presence of acetone gives
    a) 3-pentanal  b) 2-pentanal  c) 3-pentanone  d) 2-pentanone
17. Bakelite is obtained from phenol by reacting with:
    a) HCHO  b) $(CH_2OH)_2$  c) $CH_3CHO$  d) $CH_3COCH_3$
18. The silver salt of a fatty acid on refluxing with an alkyl halide gives an
    a) Acid  b) Ester  c) Ether  d) Amine
19. In the reaction, *P* is:

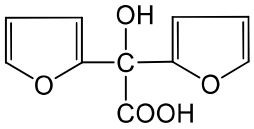


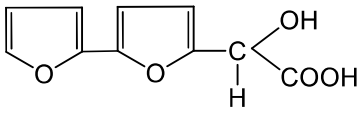

    a) $CH_3COCHO$  b) $CH_3COOCH_3$  c) $CH_3COCH_2OH$  d) None of these
20. 


    Product is

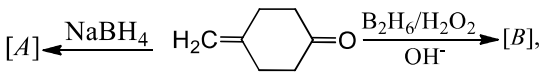
    a) 


    b) 

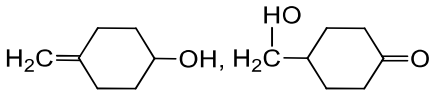

    c) 

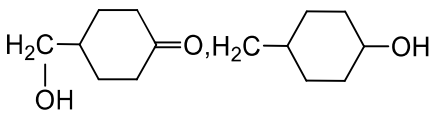

    d) 

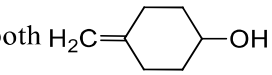

21. Which will give Hofmann bromamide reaction?
    a) 

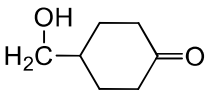
    b) $CH_3CONH_2$  c) $H_2NCONH_2$  d) All of these
22. Distillation involves all the following processes except:
    a) Change of state  b) Boling  c) Condensation  d) Evaporation
23. 


    [*A*] and [*B*] are

    a) 


    b) 

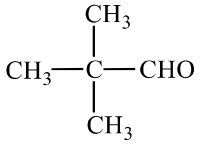

    c) both 


    d) both 

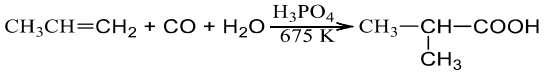

24. The reaction,
    $CH_3CHO + H_2N—NH_2 \rightarrow CH_3CH=N\cdot NH_2$ is:

a) Elimination b) Addition c) Addition-elimination d) None of these

25. Which of the following would undergo aldol condensation?

a) $CCl_3CHO$ b)  c) $CH_3CH_2CHO$ d) HCHO

26. Acetalsehyde reacts with:
a) Only nucleophiles
b) Both electrophiles and nucleophiles
c) Only electrophiles
d) Only free radicals

27. 

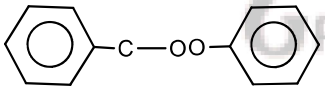
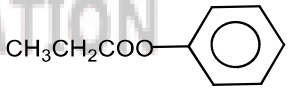
This reaction is called
a) The Stevens reaction b) The carbonylation reactionc
c) The Koch reaction d) Oxidation

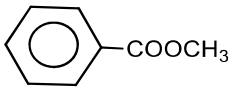
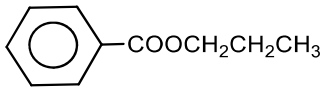
28. Which of the following statement is correct?
a) Acidity increases with increase in carbon atoms in carboxylic acids.
b) Solubility of carboxylic acid increases with increase in carbon atoms.
c) Boiling points of acids are higher than corresponding alcohols.
d) None of the above.

29. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is
a) Pyridinium chloro-chromate b) Chromic anhydride in glacial acetic acid
c) Acidic dichromate d) Acidic permanganate

30. The catalyst used in Rosenmund reaction is
a) Zn/Hg b) $Pd/BaSO_4$ c) Raney Ni d) Na in ethanol

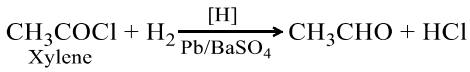
31. Claisen condensation is not given by

a)  b) 

c)  d) 

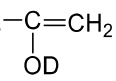
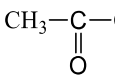
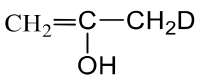
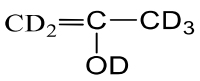
32. Which of the following is a flavouring agent called 'oil of winter green'?
a) Olive oil b) Vinegar c) Methyl acetate d) Methyl salicylate

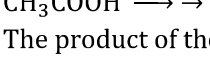
33. The following reaction is known by the name of:



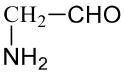
a) Stephen's reduction
b) Rosenmund's reaction
c) Cannizzaro's reaction
d) None of these

34. The enol form of acetone, after treatment with $D_2O$ gives

a)  b)  c)  d) 

35. 

The product of the reaction is isomeric with

a)  b) $CH_3CH = NHO$ c) $HCONH - CH_3$ d) All of these

36. The acid formed when propyl magnesium bromide is treated with $CO_2$ is:

a) $C_3H_7COOH$ b) $C_2H_5COOH$ c) Both (a) and (b) d) None of these

37. Tamarind contains
a) (+) tartaric acid b) (−) tartaric acid c) ± tartaric acid d) None of the above

38. The splitting of an ester by an alcohol is known as:
a) Acidolysis b) Alcoholysis c) Ammonolysis d) Hydrolysis

39. The product formed when hydroxylamine condenses with a carbonyl compound is called
a) Hydrazide b) Oxime c) Hydrazine d) Hydrazone

40. ΦCHO undergoes Claisen condensation with another aldehyde to give cinnamaldehyde. The aldehyde is
a) Formaldehyde b) Acetaldehyde
c) Crotonaldehyde d) Propanaldehyde

41. Two mole of acetic acid are heated with $P_2O_5$. The product formed is:
a) 2 mole of ethyl alcohol
b) Formic anhydride
c) Acetic anhydride
d) 2 mole of methyl cyanide

42. The nitrogen content in the proteins can be quantitatively estimated by:
a) Carius method
b) Kjeldahl's method
c) Victor Meyer's method
d) Rast method

43. Correct order of reducing power of the following carbonyl compounds
a) $HCHO > CH_3COCH_3 > \phi CHO$ b) $CH_3COCH_3 > \phi CHO > HCHO$
c) $HCHO > \phi CHO > CH_3COCH_3$ d) $CH_3COCH_3 > HCHO > \phi CHO$

44. Cyanohydrin of which of the following forms lactic acid?
a) HCHO b) $CH_3COCH_3$ c) $CH_3CHO$ d) $CH_3CH_2CHO$

45. Ethyl acetate on reaction with a Grignard reagent gives,
a) Alcohol b) Aldehyde c) Acid d) Ketone

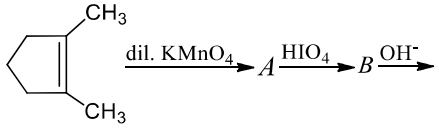
46. Acetaldehyde reacts with HCN followed by hydrolysis forms a compound which shows:
a) Optical isomerism
b) Geometrical isomerism
c) Metamerism
d) Tautomerism

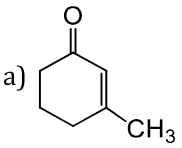
47. Carboxylic acids dissolve in *aq*. NaOH because the acids undergo:
a) Protonation b) Deprotonation c) Carboxylation d) Decarboxylation

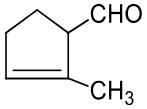
48. Which of the acids cannot be prepared by Grignard reagent?
a) Acetic acid b) Succinic acid c) Formic acid d) All of these

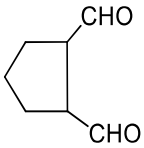
49. Compound *A* when treated with ethyl magnesim iodide in dry ether forms an addition compound which on hydrolysis form compound *B*. The compound *B* on oxidation form 3-pentanone. Hence, the compound *A* and *B* are
a) Propanol, 3-pentanol b) Pentanol, 3-pentanol c) Ethanal, pentanal d) Acetone, 3-pentanol

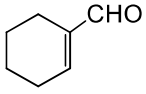
50. Suggest appropriate structures for the missing final compound. (The number of carbon atom remains the same throughout the reaction.)




a) 


b) 


c) 


d) 


51. Lactic acid on heating with conc. $H_2SO_4$ gives

a) Acetic acid b) Formic acid c) Acrylic acid d) Propionic acid

52. Urea can be detected by
a) Benedict test b) Molisch test c) Ninhydrine test d) Biurate test

53. Which of the following does not give brick red precipitate with Fehling's solution?
a) Acetaldehyde b) Formalin c) D-glucose d) Acetone

54. Which of the following statements is wrong?
a) Formic acid is stronger than acetic acid
b) *o*-bromobenzoic acid is weaker than *o*-chlorobenzoic acid
c) Lactic acid does not answer the silver mirror test
d) Benzaldehyde does not reduce Fehling's solution

55. Pick out the reaction in which formic and acetic acid differs from each other:
a) Sodium replaces hydrogen from the compound
b) Forms esters with alcohols
c) Reduces solution of ammoniacal silver nitrate or Fehling's solution of dil. acid $KMnO_4$
d) Turns red litmus blue

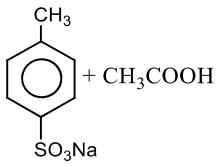
56. An organic substance from its aqueous solution can be separated by:
a) Solvent extraction b) Steam distillation c) Distillation d) Fractional distillation

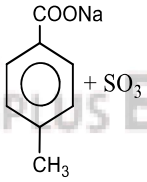
57. The strongest acid amongst the following compounds is
a) $CH_3COOH$ b) $HCOOH$ c) $CH_3CH_2CH(Cl)CO_2H$ d) $ClCH_2CH_2CH_2COOH$

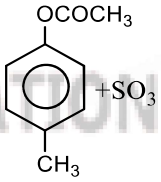
58. What is obtained what acetyl chloride is heated with benzene in presence of anhydrous $AlCl_3$
a) Acetyl benzoic acid b) Anisol c) Acetonephenone d) Chlolorobenzene

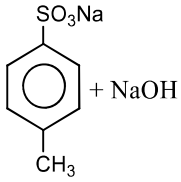
59. Reaction of formaldehyde and ammonia gives
a) Hexamethylene tetramine b) Bakelite
c) Urea d) Triethylene tetramine

60. 4-methyl benzene sulphonic acid reacts with sodium acetate to give

a) 


b) 


c) 


d) 


61. An acyl halide is formed when $PCl_5$ reacts with an:
a) Acid b) Alcohol c) Amine d) Ester

62. Generally it is more difficult to purify organic compounds than inorganic compounds because:
a) They are very unstable
b) Their m. p. and b. p. are low
c) Organic compounds have low solubility
d) Physical constants of organic compounds and the impurities associated with them are very close to each other

63. The acetophenone can be converted to ethylbenzene by reaction with
a) $LiAlH_4$ b) $H_2NOH$ c) $Pd/BaSO_4 - H_2$ d) $Zn - Hg/HCl$

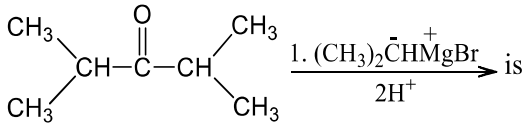
64. When propionic acid is treated with aqueous sodium bicarbonate, $CO_2$ is liberated. The C from $CO_2$ comes from
a) Methyl group b) Carboxylic acid group
c) Methylene group d) Bicarbonate

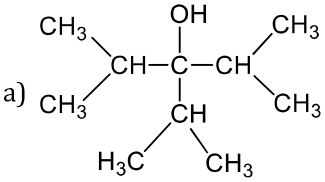
65. Boiling points of carboxylic acid are:
a) Lower than corresponding alcohols
b) Higher than corresponding alcohols
c) Equal to that of corresponding alcohols
d) None of the above

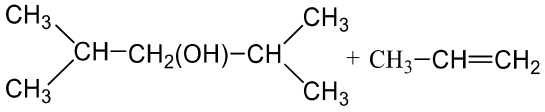
66. The —COOH group in a carboxylic acid can be replaced by 'H' by heating the acid with:

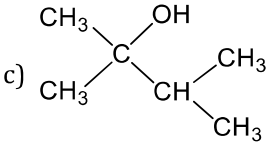
a) Zn with HCl
b) $H_2$ in presence of nickel
c) Sodalime
d) Bromine and concentrated aqueous alkali

67. The product obtained in the reaction




a) 


b) 


c) 


d) There is no reaction

68. Which of the following would produce secondary alcohol?

a) $C_6H_5COCH_3 \xrightarrow[2.\ H^+]{1.\ CH_3MgBr}$

b) $C_6H_5COCH_3 \xrightarrow[2.\ H^+]{1.\ LiAlH_4}$

c) $C_6H_5CHO \xrightarrow[2.\ H^+]{1.\ CH_3MgBr}$

d) $CH_3CHO \xrightarrow[2.\ H^+]{1.\ LiAlH_4}$

69. Which factor/s will increase the reactivity of >C=O group?

I. Presence of a group with positive inductive effect.
II. Presence of a group with negative inductive effect.
III. Presence of large alkyl group.

a) Only (i) b) Only (ii) c) (i)and(iii) d) (ii)and (iii)

70. $CH_3CH_2CH_2COOH \xrightarrow{Red\ P/Br_2} CH_3CH_2\underset{\underset{Br}{|}}{CH}-COOH$

This reaction is called the

a) Cannizaro reaction b) Schrodinger reaction
c) Hell-Volhard-Zelinsky reaction d) Reimer-Tiemann reaction

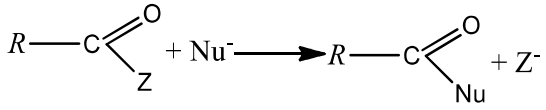
71. $(CH_3)_2C=CHCOCH_3$ can be oxidised to $(CH_3)_2C=CHCOOH$ by:

a) Cu at 300°C b) $KMnO_4$ c) Chromic acid d) NaOI

72. The correct order of decreasing boiling points of $CH_3CONH_2$ $(A)$, $CH_3COCl$ $(B)$, $CH_3COOH$ $(C)$ and $(CH_3CO)_2O$ (D) is:

a) $A > D > C > B$ b) $A > B > C > D$ c) $D > C > B > A$ d) None of these

73. Rate of reaction,




is fastest when $Z$ is

a) Cl b) $NH_2$ c) $OC_2H_5$ d) $OCOCH_3$

74. Which is useful for separating benzoic acid from a mixture of benzoic acid and methyl benzoate?

a) $NaHCO_3(aq.)$ b) Dil. HCl c) Dil. $H_2SO_4$ d) Dil. $HNO_3$

75. The compound *X*, in the reaction is

$X \xrightarrow{CH_3CHO} Y \xrightarrow{\text{Hydrolysis}} Mg(OH)I + CH_3COOH$

a) $CH_3CHO$ b) $CO_2$ c) $(CH_3)_2CO$ d) HCHO

76. Which of the following does not undergo polymerization?

a) $CH_3CHO$ b) HCHO c) $CH_3COCH_3$ d) None of these

77. The reaction ,

$RCOOAg + Br_2 \xrightarrow{CCl_4} RBr + AgBr + CO_2$ is called:

a) HVZ reaction b) Hunsdiecker reaction c) Hofmann's reaction d) Carbylamine reaction

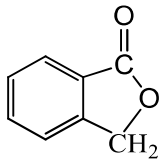
78. Methyl ketones are characterised through:

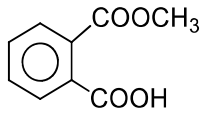
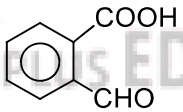
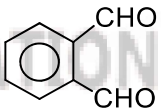
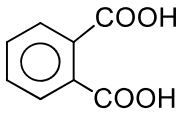
a) The Tollen's reagent
b) The iodoform test
c) The Schiff's test
d) The Benedict's reagent

79. An organic compound *X* contains *Y* and *Z* impurities. Their solubility differs slightly. They may be separated by:

a) Simple crystallization
b) Fractional crystallization
c) Sublimation
d) Fractional distillation

80. Which of the following reactants on reaction with conc. NaOH followed by acidification gives following lactone as the product



a)  b)  c)  d) 

81. An ester (*A*) with molecular formula $C_9H_{10}O_2$ was treated with excess of $CH_3MgBr$ and the complex so formed was treated with $H_2SO_4$ to give an olefin (*B*). Ozonolysis of (*B*) gave a ketone with molecular formul$C_8H_8O$ which shows positive iodoform test. The structure of (*A*) is

a) $C_6H_5COOC_2H_5$ b) $C_6H_5COOC_6H_5$
c) $C_6H_5COOCH_3$ d) *p*-$H_3CO - C_6H_4 - COCH_3$

82. Acetone reacts with Grignard reagent to form

a) 3° alcohol b) 2° alcohol c) Ether d) No reaction

83. When petroleum is heated gradually, first batch of vapours evolved will be rich in:

a) Kerosene b) Petroleum ether c) Diesel d) Lubrication oil

84. Decarboxylation of malonic acid gives

a) $CH_4$ b) $CH_3COOH$ c) Both (a) and (b) d) None of these

85. What is the product in the reaction

$CH_3CONH_2 \xrightarrow{NaOH_2/HCl} X$ ?

a) $CH_3COOH$ b) $CH_3CONH_3Cl^-$ c) $CH_3NH_2$ d) $CH_3CHO$

86. Which of the following substances cannot be used for the replacement of —OH group in organic compounds by Cl?

a) $S_2Cl_2$ b) $SOCl_2$ c) $PCl_3$ d) $PCl_5$

87. Acetyl nitrate is formed when acetic anhydride reacts with

a) Nitrogen pentoxide b) Nitric acid c) Nitrous acid d) Potassium nitrate

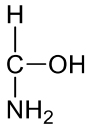
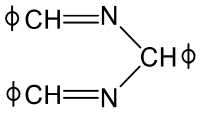
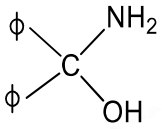
88. Which one is not prepared from tartaric acid?
a) Tartar emetic b) Fenton's reagent c) Fehling's solution d) Rochelle salt

89. The reagent used in Clemmensen's reduction is
a) Conc. $H_2SO_4$ b) Zn−Hg /conc.HCl c) aq. KOH d) alc.KOH

90. In the reaction, $C_6H_5COOH + CH_3\overset{*}{O}H \xrightarrow{H^+}$ Ester + water
a) Isotopically labeled oxygen ($O^{18}$) is present in water b) $O^{18}$ is present with ester
c) $O^{18}$ shifts from acid to alcohol d) No reaction takes place

91. The technique of gas chromatography is suitable for compounds which are:
a) Liquids
b) Highly volatile
c) Soluble in water
d) Vaporise without decomposition

92. There are several criteria of purity of organic compounds. Which is considered to be the best?
a) Melting point
b) Mixed melting point
c) Colour
d) Microscopic examination

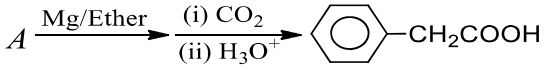
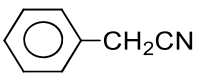
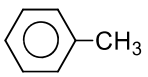
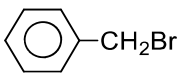
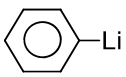
93. $\phi CHO + NH_3 \rightarrow$? Product is
a)  b) $\phi$ CH = NH c)  d) 

94. The ease of hydrolysis with an alkali in the compounds
$CH_3COCl$ (I) $CH_3CO-O-COCH_3$ (II)
$CH_3COOC_2H_5$ (III) $CH_3CONH_2$ (IV)
Is of the order
a) I>II>III>IV b) IV>III>II>I c) I>II>IV>III d) II>I>IV>III

95. What is the formula of adipic acid?
a) $COOH(CH_2)_4COOH$ b) $CH_2(COOH)CH_2COOH$ c) $COOH(CH_2)_3COOH$ d) None of the above

96. $CH_3CHO$ and $C_6H_5CH_2CHO$ can be distinguished chemically by:
a) Tollen's reagent test b) Fehling solution test c) Benedict test d) Iodoform test

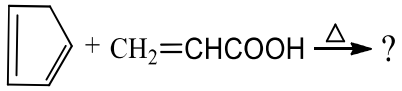
97. Acrolein on complete reduction gives:
a) Allyl alcohol b) Propanol c) Propanal d) None of these

98. Identify the starting material of the following reaction

a)  b)  c)  d) 

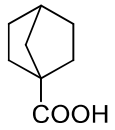
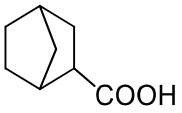
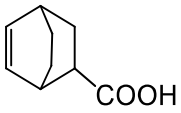
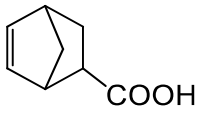
99. Which one of the following is not a fatty acid?
a) Stearic acid b) Palmitic acid c) Oleic acid d) Phenyl acetic acid

100. $CH_3CN \xrightarrow{H_2O} A \xrightarrow{\text{diazomethane}} B$
$A$ and $B$ are
a) Acetamide, N-methyl acetamide b) Acetic acid, ethyl ethanoate
c) Acetic acid, methyl acetate d) Acetamide, acetone

101. Tartronic acid is obtained from tartaric acid by:
a) HBr b) HI c) Tollen's reagent d) $PCl_5$

102. 

Product is

a) 
b) 
c) 
d) 

103. A compound, containing only carbon, hydrogen and oxygen, has a molecular weight of 44. On complete oxidation it is converted into a compound of molecular weight 60. The original compound is
a) An aldehyde b) An acid c) An alcohol d) An ether

104. Which of the following reagents is useful for separating aniline from a mixture of aniline and nitrobenzene?
a) $NaOH(aq.)$ b) $H_2O$ c) $NaHCO_3(aq.)$ d) $HCl(aq.)$

105. How will you separate a miscible mixture of $C_6H_6 + CHCl_3$?
a) Sublimation b) Filtration c) Distillation d) Crystallization

106. An organic compound has C and H percentage in the ratio 6 : 1 and C and O percentage in the ration 3 : 4. The compound is:
a) HCHO b) $CH_3OH$ c) $CH_3CH_2OH$ d) $(COOH)_2$

107. Potassium cyanate is heated with ammonium sulphate. The product formed is
a) Urea b) Ammonia c) Potassium sulphate d) Ammonium cyanide

108. 2-pentanone and 3-petanone can be distinguished by
a) Cannizaro's reaction b) Aldol condensation
c) Iodoform reaction d) Clemmensen's reduction

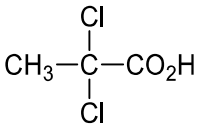
109. Acetyl bromide reacts with excess of $CH_3MgI$ followed by treatment with a saturated solution of $NH_4Cl$ gives
a) Acetone b) Acetamide c) 2-methyl-2-propanol d) Acetyl iodide

110. Formalin is
a) Solution of fructose b) 40% aq. sol. Of HCHO
c) 40% HCHO + 60% $CH_3CHO$ d) None of the above

111. Aldol condensation is given by
a) Trimethylacetaldehyde b) Acetaldehyde
c) Benzaldehyde d) Formaldehyde

112. Which reaction is used for detecting the presence of carbonyl group?
a) Reaction with hydrazine
b) Reaction with phenyl hydrazine
c) Reaction wit hydroxylamine
d) All of the above

113. The product obtained in the reaction
$CH_3CH_2CO_2H \xrightarrow{Cl_2/P}$ is

a) $\underset{\displaystyle Cl}{\overset{\displaystyle CH_3CHCO_2H}{|}}$ b) $ClCH_2CH_2CO_2H$ c)  d) $Cl_2CHCH_2CO_2H$

114. An organic compound contains carbon, hydrogen and oxygen. Its elemental analysis gave, C, 38.71% and H, 9.67%. The empirical formula of the compound would be:
a) $CH_2O$ b) CHO c) $CH_4O$ d) $CH_3O$

115. $CH_3COCl \xrightarrow[[H_2]]{Pd/BaSO_4} A$

The isomers of $CH_3COCl$ and $A$ will be respectively

a) $CH_2ClCHO$, oxirane
b) Chloral, vinyl alcohol
c) $\alpha$-chloro ethyl alcohol, epoxy ethane
d) None of the above

116. Acid chlorides react with Grignard's reagents to give:
a) Esters
b) Ethers
c) Carbonyl compounds
d) None of these

117. Which of the following give an explosive RDX, on nitration?
a) Toluene
b) Benzene
c) Guanidine
d) Urotropine

118. The conversion of —COOH group to $—NH_2$ group can be made by:
a) Wurtz reaction
b) Claisen condensation
c) Stephen's reduction
d) Schmidt reaction

119. In question 178 step (2) can be thought of an/a:
a) Neutralization
b) Electrophilic attack at the carbonyl carbon
c) Nucleophilic attack of *N*-lone pair at the carbonyl carbon leading to substitution
d) Nucleophilic addition reaction

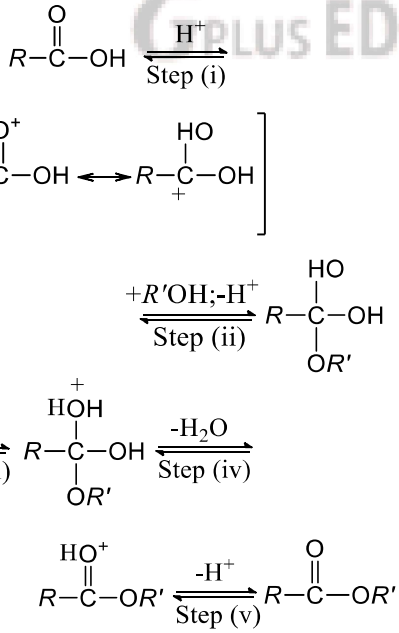
120. Acetaldehyde forms a white crystalline precipitate on mixing with a …..solution of ….
a) Acidic,Zn − Hg
b) Alcoholic, $Na_2SO_3$
c) Saturated aqueous, $NaHSO_3$
d) Aqueous, NaCl

121. Fehling's solution is:
a) Acidified copper sulphate solution
b) Ammoniacal cuprous chloride solution
c) Copper sulphate, Rochelle salt + NaOH
d) None of the above

122. Stephen's reduction is used to prepare aldehyde from
a) Alcohol
b) Alkyl cyanides
c) Alkanones
d) Acid chlorides

123. Benzyl alcohol can be prepared from benzaldehyde by
a) Friedel-Craft's reaction
b) Cannizaro's reaction
c) Kolbe's reaction
d) Reimer-Tiemann reaction

124. The mechanism of ester formation in acidic medium is as follows




The slowest step in the above mechanism is
a) Step (i)
b) Stem (ii)
c) Step (iii)
d) Step (iv)

125. Ammonolysis of an ester gives:
a) Amine
b) Amide
c) Uride
d) None of these

126. Acetic anhydride can easily be prepared by:
a) Distilling a mixture of anhydrous sodium acetate and acetyl chloride

b) Heating acetic acid
c) Partial hydrolysis of acetyl chloride
d) Oxidation of ethanol

127. When one of the following hydrocarbons is burnt in excess of oxygen, the volume of $CO_2$ evolved is just double to that of hydrocarbon taken. The hydrocarbon is:
a) $CH_4$ b) $C_2H_6$ c) $C_3H_8$ d) $C_3H_6$

128. Identify the compound Z. In this reaction sequence
$CH_3CH_2COOH \xrightarrow{NH_3} X \xrightarrow{Br_2+KOH} Y \xrightarrow{HNO_2} Z$;
a) $CH_3OH$ b) $CH_3CH_2NH_2$ c) $CH_3CH_2OH$ d) $CH_3CH_2CH_2OH$

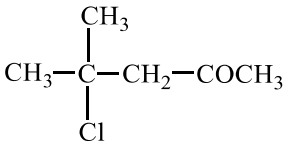
129. Arrange the following carboxylic acids in order of decreasing acidity

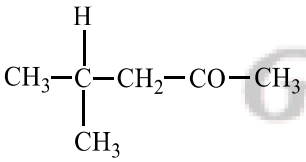
| **Oxalic acid** | **Malonic acid** | **Succinic acid** |
|---|---|---|
| I | II | III |

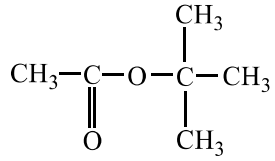
a) I > II > III b) III > II > I c) I > III > II d) II > III > I

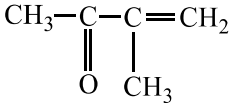
130. Oppenauer oxidation is the reverse process of:
a) Wolff-Kishner's reduction
b) Rosenmund's reduction
c) Clemmensen's reduction
d) Meerwein-Ponndorf Verley reduction

131. Indicate the organic structure for product expected when 2-methyl propene is heated with acetyl chloride in presence of anhydrous $ZnCl_2$ :

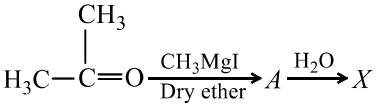
a) 

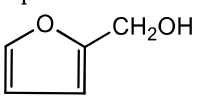
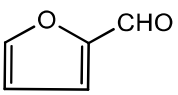
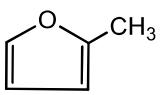
b) 

c) 

d) 

132. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives
a) Benzyl alcohol and sodium formate
b) Sodium benzoate and methyl alcohol
c) Sodium benzoate and sodium formate
d) Benzyl alcohol and methyl alcohol

133. Identify $X$;

a) $CH_3OH$ b) $CH_3CH_2OH$ c) $CH_3CHOHCH_3$ d) $CH_3C(OH)(CH_3)_2$

134. $X \xrightarrow{\text{Conc.NaOH}}$ Furoic acid + Furyl alcohol.
Compound $X$ is
a)  b)  c)  d) 

135. Decarboxylation of which will yield 1,1,2,2-tetra bromoethane:
a) $CH_3COOH$ b) $CH_2BrCBr_2COOH$ c) $HCBr_2CBr_2COOH$ d) $CH_2BrCHBrCOOH$

136. Fehling's solution is used in the detection of:
a) Ketonic group b) Alcoholic group c) Aldehydic group d) Carboxylic group

137. $RCOOH + N_3H \xrightarrow[\text{conc.}]{H_2SO_4} RNH_2 + CO_2 + N_2$

The above reaction is called:
a) HVZ reaction
b) Hunsdiecker reaction
c) Schmidt reaction
d) Decarboxylation reaction

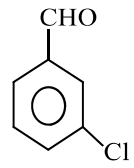
138. Butanol on reaction with one of the following will produce banana odour:
a) $PCl_5$ b) $CH_3COCl$ c) $CH_3OCH_3$ d) $NH_3$

139. $\begin{matrix}CHO\\|\\CHO\end{matrix} \xrightarrow{OH^-} X$; the product $X$ is :
a) $CH_3OH + CH_3OH$ b) $CH_2OH—COO^-$ c) $CH_3OH + HCOOH$ d) $OOC—COO^-$

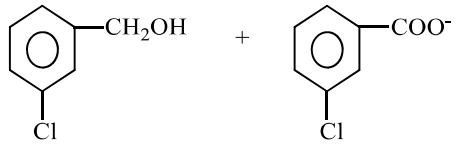
140. Some organic compounds are purified by distillation at low pressure because the compounds are:
a) Low boiling liquids
b) High boiling liquids
c) Highly volatile
d) Dissociated before reaching their boiling points

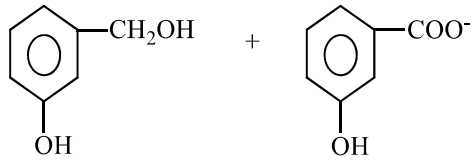
141. A compound `$A'$ has a molecular formula $C_2Cl_3OH$. $A$ reduces Fehling solution and on oxidation produces a monocarboxylic acid $B$. $A$ can also be obtained by the action of $Cl_2$ on ethanol. $A$ is
a) Chloral b) $CHCl_3$ c) $CH_3Cl$ d) Chloroacetic acid

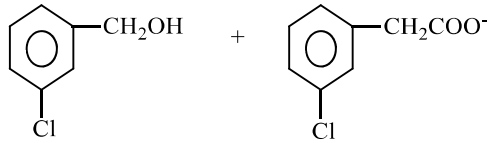
142. Predict the products in the given reaction.

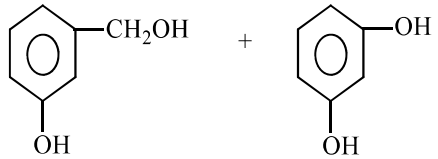



50% KOH → ?

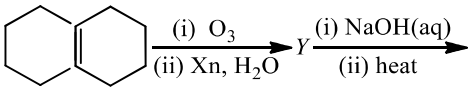
a) 


b) 


c) 


d) 


143. In the scheme given below, the total number of intramolecular aldol condensation products formed from $''Y''$ is




a) 1 b) 2 c) 3 d) 4

144. Calcium propanoate on refluxing yields:
a) Propanol-2 b) Propanone-2 c) Pentanone-3 d) Pentanone-2

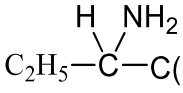
145. When a mixture of one mole of benzoic acid and one mole of phenol in water is treated with one mole of $NaHCO_3$, the product formed will consist of
a) $\phi COOH + \phi ONa$ b) $\phi COONa + \phi ONa$ c) $\phi COONa + \phi OH$ d) $\phi COO\phi + \phi COOCO\phi$

146. Aldehyde not showing Cannizaro's reaction is
a) Paraldehyde b) Chloral c) Formaldehyde d) Acetaldehyde

147. Compound (*A*) (molecular formula $C_3H_8O$) is treated with acidified potassium dichromate to form a product B (molecular formula $C_3H_6O$).'*B*'forms a shining silver mirror on warming with ammonical silver nitrate.'*B*'when treated with an aqueous solution of $H_2NCONHNH_2.HCl$ and sodium acetate gives a product '*C*'. Identify the structure of '*C*'.
a) $CH_3CH_2CH = NNHCONH_2$ b) $(CH_3)_2C = NNHCONH_2$
c) $(CH_3)_2C = NCONHNH_2$ d) $CH_3CH_2CH = NCONHNH_2$

148. Methyl cyanide can be converted into acetic acid by:
a) Reduction b) Hydrolysis c) Electrolysis d) Decarboxylation

149. A product obtained by the reaction of *X* with hydroxylamine and on further reduction gives



Hence, the compound *X* can be
a) 2,2-dimethyl-3-pentanone b) 3,3-dimethyl-3-butanone
c) 1-methyl-3-pentanone d) Diethyl ketone

150. The main reason for the fact than carboxylic acids can undergo ionization is:
a) Absence of α-H-atom
b) Resonance stabilization of carboxylate ion
c) High reactivity of α-H-atom
d) Hydrogen bonding

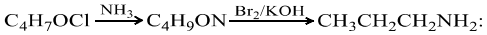
151. Acetamide reacts with maximum ease with:
a) $C_2H_5OH$ b) $C_2H_5NH_2$ c) $H_2O$ d) *aq*. NaOH

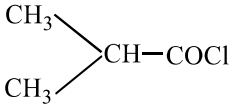
152. Formalin is the commercial name of
a) Formic acid b) Fluroform
c) 40% aqueous solution of methanal d) *para* formaldehyde

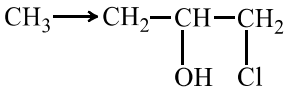
153. Which of the following carboxylic acids is not reduced to the corresponding 1° alcohol by$LiAlH_4$ ?
a) $BrCH_2CH_2CH_2COOH$ b) Cyclohexane carboxylic acid
c) $(Z) - CH_3CH = CHCH_2COOH$ d) $CH_3CH(CH_3)CH_2COOH$

154. The weakest acid amongst the following is
a) $ClCH_2COOH$ b) HCOOH c) $FCH_2CH_2COOH$ d) $CH_2(I)COOH$

155. Identify (*X*) in the sequence,




a) 

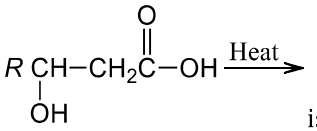
b) 

c) $CH_3—CH_2—CH_2—COCl$
d) $OHC—CH_2—CH_2—CH_2—Cl$

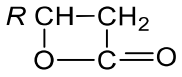
156. Which compound is oxidised to prepare ethyl methyl ketone?

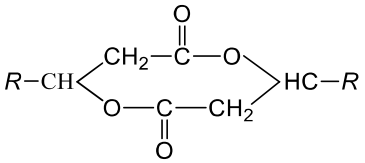
a) Propanol-2 b) Butanol-1 c) Butanol-2 d) Tert-butyl alcohol

157. The product obtained in the reaction

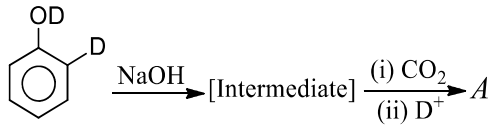


is

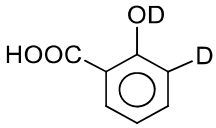
a) 

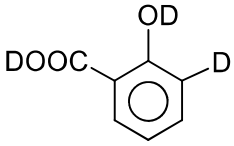
b) 

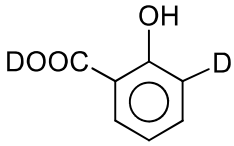
c) $RCH = CHCOOH$ d) None of the above

158. 

Here, $A$ is

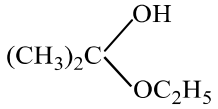
a) 

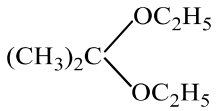
b) 

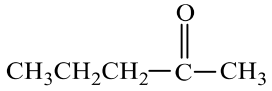
c) 

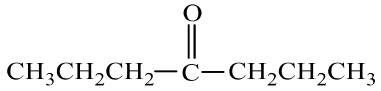
d) Reaction not possible

159. Acetone is treated with excess of ethanol in the presence of hydrochloric acid. The product obtained is:

a) 

b) 

c) 

d) 

160. When acetaldehyde is heated with Fehling's solution, it gives a red precipitate of:

a) Cu b) CuO c) $Cu + Cu_2O + CuO$ d) $Cu_2O$

161. Simple distillation can be used to separate:

a) A mixture of benzene ( b. p. 80 °C) and toluene (b. p. 110°C)

b) A mixture of ether (b. p. 35°C) and toluene (b. p. 110°C)

c) A mixture of ethanol (b. p. 78°C) and water(b. p. 100°C)

d) None of the above

162. Acetyl bromide reacts with excess of $CH_3MgI$ followed by treatment with a saturated solution of $NH_4Cl$ gives

a) Acetone b) Acetamide c) 2-methyl-2-propanol d) Acetyl iodide

163. Aldol condensation between the following compounds followed by dehydration gives methyl vinyl ketone:

a) HCHO and $CH_3COCH_3$

b) HCHO and $CH_3CHO$

c) Two molecules of $CH_3CHO$
d) Two molecules of $CH_3COCH_3$

164. $R-CH_2-CH_2OH$ / $R-CH_2-CH_2-H$ can be converted into The correct sequence of reagent is,
a) $KCN, H^+$ b) $PBr_3, KCN, H_2$ c) $HCN, PBr_3, H^+$ d) $PBr, KCN, H^+$

165. The acid which does not form an anhydride when treated with $P_2O_5$ is:
a) Formic acid b) Acetic acid c) Propionic acid d) Benzoic acid

166. Prior to the seventeenth century people knew the processes except:
a) Dyeing b) Preparation of wines c) Organic synthesis d) Fermentation

167. Molecular weight of acetic acid is 60. Its empirical formula is:
a) $CH_2O$ b) $C_2H_4O_2$ c) $C_3H_6O_3$ d) $C_2H_4O_3$

168. Ketones can be obtained in one step by:
a) Hydrolysis of ester
b) Oxidation of primary alcohols
c) Reaction of acid halide with alcohols
d) Oxidation of secondary alcohol

169. The scientist who gave chromatography concept:
a) Berzelius b) Avogadro c) Tswett d) Lavoisier

170. $RCOOH \rightarrow RCH_2COOH$. This conversion is known as reaction
a) Arndt-Eistert reaction b) Favorskii reaction
c) Mannich reaction d) Schmidt reaction

171. Nucleophilic addition reaction will be most favoured in:
a) $CH_3CH_2CHO$
b) $CH_3CHO$
c) $CH_3 \cdot CH_2 \cdot CH_2COCH_3$
d) $(CH_3)_2C{=}O$

172. 0.2 g of an organic compound containing C, H and O on combustion yielded 0.147 g $CO_2$ and 0.12 g water. The percentage of oxygen in it is:
a) 73.34% b) 78.45% c) 83.23% d) 89.50%

173. Aliphatic aldehydes react with Fehling's solution to give red ppt. but benzaldehyde does not produce red precipitate with Fehling's solution because:
a) Of a bulky ring, —CHO is hinderer
b) Or resonance, oxidation of benzaldehyde is difficult
c) —CHO is present in cyclic structure
d) Of all the above statements

174. The identical C—O bond lengths in carboxylate ions are due to:
a) Resonance
b) Presence of carbonyl group
c) Presence of alkyl group
d) None of the above

175. Which one of following can be oxidised to the corresponding carbonyl compound?
a) 2-hydroxypropane b) *Ortho*-nitrophenol
c) Phenol d) 2-methyl-2-hydroxypropane

176. A compound does not react with 2, 4 dinitrophenyl hydrazine, compound is
a) Acetone b) Acetaldehyde c) $CH_3OH$ d) $CH_3CH_2COCH_3$

177. When $CH_3COOH$ reacts with $CH_3-MgX$
a) $CH_3COX$ is formed b) Hydrocarbon is formed
c) Acetone is formed d) Alcohol is formed

178. 13 g of a hydrocarbon contains 1.0 g of hydrogen. Its formula is:
a) $C_2H_2$ b) $C_2H_3$ c) $C_3H_4$ d) $C_4H_7$

179. 2-pentanone and 3-pentanone can be distinguished by one of the following:
a) Tollen's reagent b) Fehling's solution c) Schiff's test d) Iodoform test

180. Ethyl acetate is obtained by acetaldehyde in one step process by
a) Condensation using $Ba(OH)_2$ b) Using aluminium ethoxide
c) Oxidation d) Reduction

181. On reaction with hydroxylamine, aldehydes produce
a) Ketoxime b) Hydrazone c) Semicarbazone d) Aldoxime

182. The solvent which can dissolve all the carboxylic acids is:
a) Water b) Dilute HCl c) Conc. $H_2SO_4$ d) Dilute NaOH

183. 0.759 g of a silver salt of a dibasic organic acid on ignition left 0.463 g metallic silver. The equivalent weight of acid is:
a) 70 b) 108 c) 60 d) 50

184. Acetone and acetaldehyde can be distinguished by
a) Molisch test b) Tollen's test c) Schiff's test d) Iodoform test

185. Hydroxamic acid test is employed to detect
a) Ketones b) Aldehydes c) Esters d) amides

186. When $CH_2 = CH - COOH$ is reduced with $LiAlH_4$, the compound obtained will be
a) $CH_3 - CH_2 - COOH$ b) $CH_2 = CH - CH_2OH$ c) $CH_3CH_2CH_2OH$ d) $CH_3CH_2CHO$

187. Conversion of benzaldehyde to 3-phenylprop-2-en-1-oic acid is
a) Perkin condensation b) Claisen condensation c) Oxidative addition d) Aldol condensation

188. Dry distillation of calcium formate and subsequent treatment with conc KOH gives the mixture of
a) $CH_3OH$, HCOOK b) $CH_3CHO$, HCOOK c) HCHO, HCOOK d) None of these

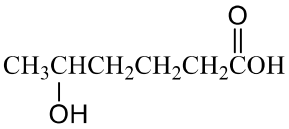
189. The main component of oil of winter green is
a) Salicylic acid b) Methyl salicylate c) Acetyl salicylic acid d) salicylaldehyde

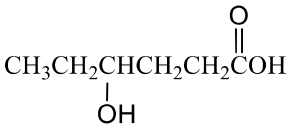
190. Acetic acid is manufactured by the fermentation of:
a) Ethanol b) Methanol c) Ethanal d) Methanal

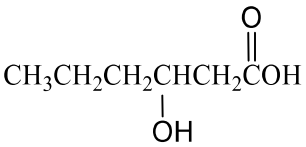
191. Which is/are hydroxy acid (s)?
a) Lactic acid b) Tartaric acid c) Citric acid d) All of these

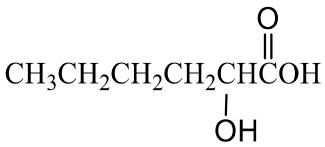
192. When cyclohexanone is treated with $N_3H$ (hydrazoic acid)
a) Caprolactum is obtained b) Caprolactone is obtained
c) Caproserum is obtained d) No reaction

193. Which of the following will not give cyclic products upon being heated or being treated by an acid?

a) 

b) 

c) 

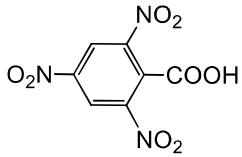
d) 

194. $CH_3CHO + CO_2(COOH)_2 \xrightarrow[\Delta]{\text{Pyridine}} X$; $X$ is:
a) $CH_3COOH$
b) $C_2H_5COOH$
c) $CH_3CH{=}CHCOOH$
d) $(COOH)CH{=}CH(COOH)$

195. The most suitable reagent for the conversion of primary alcohol into aldehyde with the same number of carbon is
a) Acidified $K_2Cr_2O_7$ b) Acidified $KMnO_4$
c) Alkaline $KMnO_4$ d) Pyridinium chlorochromate

196. Give the order of ease of decarboxylation of the following acids

$CH_3COOH$ (I) $CH_2{=}CH{-}CH_2COOH$ (II) $CH_2(COOH)_2$ (III)



IV

C

a) I > *II* > *III* > *IV* b) III > *IV* > *II* > *I* c) IV > *III* > *II* > *I* d) I > *III* > *II* > *IV*

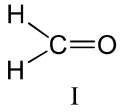
197. Which is used as a preservative for biological specimens?

a) Formalin b) Formic acid c) Liquid $NH_3$ d) Acetic acid

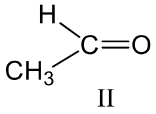
198. Carbon forms a very large number of compounds because:

a) It is a non-metal
b) It forms covalent bonds
c) It has a strong tendency of catenation
d) Compounds are combustible

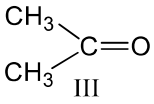
199. What will be the order of reactivity of the following carbonyl compounds with Grignard's reagent?



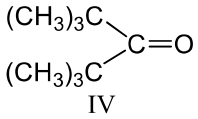
I



II



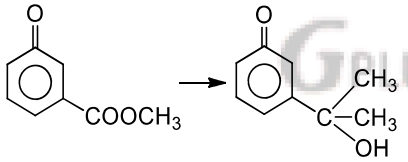
III



IV

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

200. By which of the following reagents can the following conversion be affected?



a) $2CH_3MgBr$ and $H_3O^+$

b) $HOCH_2 - CH_2OH, H^+, LiAlH_4$, ether, $2CH_3MgBr, H_3O^+$

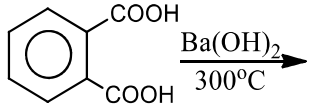
c) $HOCH_2 - CH_2OH, H^+, 2CH_3MgBr, H_3O^+$

d) $HOCH_2 - CH_2OH, H^+, H_2, Pt, CH_3OH, H^+$

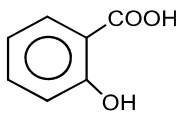
201. Which of the following does not give HVZ reaction?

a) $CH_3CH_2COOH$ b) $CH_3COOH$ c) HCOOH d) $(CH_3)_2CHOH$

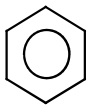
202.



a)



b)



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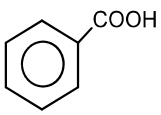
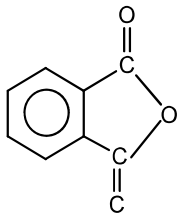


d)



203. Which of the following on treatment with Baeyer's reagent will give *meso*-tartaric acid?

a) Fumaric acid b) Maleric acid c) Both (a) and (b) d) None of these

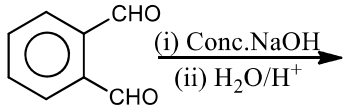
204. Wolff-Kishner's reaction is:

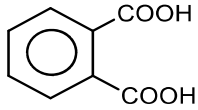
a) Reduction of carbonyl compound into hydrocarbons
b) Reduction of carbonyl compound into alcohols
c) Reduction of nitrobenzene into aniline

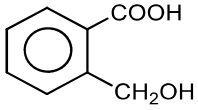
d) Reduction of carbohydrates to alcohols

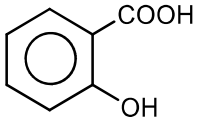
205. Colouration of $Br_2/CCl_4$ will be discharged by

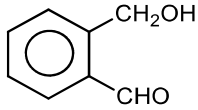
a) Cinnamic acid b) Benzoic acid c) *o*-phthalic acid d) acetophenone

206. 


a) 

b) 

c) 

d) 


207. Aldehydes and ketones both give addition reaction with:

a) HCN b) $NaHSO_3$ c) Both (a) and (b) d) None of these

208. Identify the organic compound which, on heating with strong solution of NaOH, partly converted into an, acid salt and partly into alcohol.

a) Benzyl alcohol b) Acetaldehyde c) Acetone d) Benzaldehyde

209. Which of the following will undergo Cannizzaro's reaction?

a) $CH_3CHO$ b) $CH_3CH_2CHO$ c) $(CH_3)_2CHCHO$ d) None of these

210. Long chain carboxylic acids are called fatty acids because:

a) The molecule is very fatty

b) The molecules were first found in natural fat

c) They have fattering effect

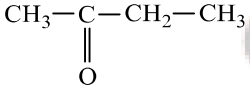
d) None of the above

211. Which of the following reagents can form a hydrazone with alkanone?

a) $NH_3OHCl$ b) $PhNHNH_2$ c) $NH_2NHCONH_2$ d) HCN

212. Identify *X* in the sequence:

$$X \xrightarrow[2.\ H_2O/H^+]{1.\ CH_3MgCl} C_5H_{12}O \xrightarrow[575\ K]{Cu} C_5H_{10}:$$

a)  b) $CH_3CH_2CH_2CHO$ c) $(CH_3)_2CHCHO$ d) $CH_3CH_2CH_2CH_2OH$

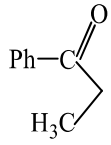
213. The reaction of HCOOH with conc. $H_2SO_4$ gives:

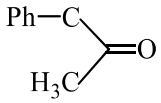
a) $CO_2$ b) CO c) Oxalic acid d) Acetic acid

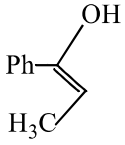
214. Which of the following will react with water?

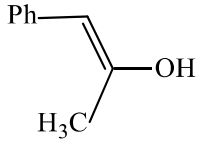
a) $CHCl_3$ b) $CCl_3CHO$ c) $CCl_4$ d) $CH_2Cl \cdot CH_2Cl$

215. $Ph{-}C{\equiv}C{-}CH_3 \xrightarrow{Hg^{2+}/H^+} A$, *A* is:

a) 

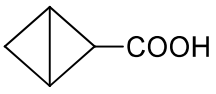
b) 

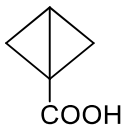
c) 

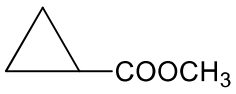
d) 

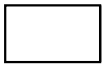

216. 


Product is

a) 

b) 

c) 

d) 

217. Ketones are first oxidation product of:

a) Primary alcohols b) Secondary alcohols c) Dihydric alcohols d) Trihydric alcohols

218. Which does not react with Fehling's solution?

a) $CH_3CHO$ b) $C_6H_5CHO$ c) $C_6H_{12}O_6$ d) HCOOH

219. When sucrose is heated with conc. $HNO_3$,the product is:
a) Sucrose nitrate b) Formic acid c) Oxalic acid d) Citric acid

220. Amides are formed by the reaction of acid chloride with
a) $NH_2NH_2$ b) $NH_3$ c) $NH_2OH$ d) $C_6H_5NHNH_2$

221. The product formed in aldol condensation is:
a) A β-hydroxy aldehyde or a β-hydroxy ketone
b) An α-hydroxy aldehyde or ketone
c) An α,β-unsaturated ester
d) A β-hydroxy acid

222. Tartaric acid is not used in :
a) Dyeing of clothes b) Cosmetics c) Photography d) Medicines

223. Acetaldehyde on treatment of few drops of $H_2SO_4$ gives:
a) Ethyl acetate b) Ethyl alcohol c) Ethyl methylamine d) Paraldehyde

224. Salt can be obtained from a concentrated seawater by:
a) Catalysis b) Decomposition c) Hydrolysis d) Crystallization

225. Liquid obtained by distillation of red ant is
a) Formaline b) Formaldehyde c) Formic acid d) Formyl chloride

226. Monocarboxylic acids show functional isomerism with :
a) Esters b) Alcohols c) Ethers d) Aldehydes

227. $CH_3CH = CHCHO \xrightarrow[+(CH_3)_2CHOH]{[(CH_3)_2CHO]_3Al} CH_3CH = CHCH_2OH$ is
a) Baeyer-Villiger reaction b) Meerwein-Ponndorff Verley reduction
c) Vilsmeier-Hack reaction d) None of the above

228. The product formed in the reaction *n*-hexanamide $+Br_2 + KOH$, is
a) Hexanamine b) Propanamine c) Butanamine d) pentanamine

229. Semicarbazide is:
a) $NH_2CONH_2$ b) $NH_2—NH_2$ c) $NH_2CONHNH_2$ d) None of these

230. Which statement is correct?
a) *R*COOOH is stronger acid than *R*COOH b) Maleic acid is stronger than fumaric acid
c) Both (a) and (b) d) None of the above

231. Which gives lactic acid on hydrolysis after reacting with *HCN*?
a) HCHO b) $CH_3CHO$ c) $C_6H_5CHO$ d) $CH_3COCH_3$

232. The IUPAC name of the $CH_3COCH(CH_3)_2$ is:
a) 4-methyl isopropyl ketone
b) 3-methyl-2-butanone
c) Isopropylmethyl ketone
d) 2-methyl-3-butanone

233. Which of the following will give readily a hydrocarbon?
a) $RCOOK \xrightarrow{\text{Electrolysis}}$ b) $RCOOAg \xrightarrow{I_2}$ c) $CH_3CH_3 \xrightarrow[h\nu]{Cl_2}$ d) $(CH_3)_2CCl_2 \xrightarrow{C_2H_2OH}$

234. In which of the following $\rangle C=O$ and $\rangle C=C\langle$ reactions are not similar?
a) Hydrogenation b) Elimination c) Oxidation d) None of these

235. Hydrogenation of benzoyl chloride in presence of Pd on $BaSO_4$ gives
a) Benzyl alcohol b) Benzaldehyde c) Benzonic acid d) Phenol

236. On treatment of citric acid with fuming $H_2SO_4$, which of the following is produced?
a) Acetone
b) Dihydroxy acetone
c) Citraconic anhydride
d) Acetone dicarboxylic acid

237. Base catalysed aldol condensation occurs with:
   a) Propionaldehyde
   b) Benzaldehyde
   c) 2,2-dimethyl propionaldehyde
   d) None of the above

238. When HCHO is treated with $C_6H_5CHO$ in presence of NaOH, the products are:
   a) $CH_3OH$ and HCOONa  b) $C_6H_5CH_2OH$ and $C_6H_5C$(c) $CH_3OH$ and $C_6H_5COONa$d) HCOONa and $C_6H_5CH_2O$

239. When formaldehyde is heated with ammonia the compound formed is:
   a) Methyl amine
   b) Amino formaldehyde
   c) Hexamethylene tetramine
   d) Formalin

240. $CH_3CHO + HCHO \xrightarrow[\text{Heat}]{\text{Dil.NaOH}} A \xrightarrow[H_3O^+]{\text{HCN}} B$ .
   The structure of compound $B$ is
   a) $CH_2 = CH - \underset{\displaystyle OH}{\underset{|}{CH}} - COOH$
   b) $CH_2 = CH - \underset{\displaystyle CN}{\underset{|}{CH}} - OH$
   c) $CH_3CH_2 - \underset{\displaystyle OH}{\underset{|}{CH}} - COOH$
   d) $CH_3 - \underset{\displaystyle OH}{\underset{|}{CH}} - COOH$

241. $CH_3CH_2 \xrightarrow[Fe]{Cl_2} X \xrightarrow[KOH]{\text{Alc.}} Y$ The compound $Y$ is:
   a) $CH_3CH_2OH$  b) $CH_3CH_2CN$  c) $CH_2$= CH.COOH  d) $CH_2CHClCOOH$

242. The reaction of acetamide with water is an example of:
   a) Alcoholysis  b) Hydrolysis  c) Ammonolysis  d) Saponification

243. The most acidic among the following is:
   a) $CH_3CH_2OH$  b) $C_6H_5OH$  c) $CH_3COOH$  d) $CH_3CH_2CH_2OH$

244. $A \xrightarrow{HCl} (CH_3)_2C = CHCOCH_3$, $A$ is
   a) Acetone  b) Acetaldehyde  c) Propionaldehyde  d) Formaldehyde

245. When citric acid is heated at 150°C, the main product formed is:
   a) Acetone  b) Aconitic acid  c) Ethanal  d) None of these

246. The general formula $(RCO)_2O$ represents:
   a) A ketone  b) An ether  c) An acid anhydride  d) An ester

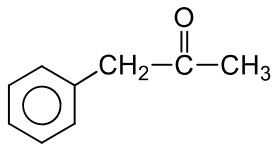
247. Formaldehyde on condensation in presence of $Ca(OH)_2$ gives:
   a) Formose  b) Fructose  c) Maltose  d) Xylose

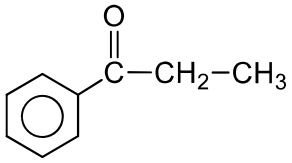
248. The correct formula of the product of reaction between ϕCHO and propanoic anhydride in presence of sodium propionate is
   a) $\phi - CH = CHCH_2COOH$
   b) $\phi CH = CH - CH_2COOC_2H_5$
   c) $\phi - CH = \underset{\displaystyle CH_3}{\underset{|}{C}} - COOH$
   d) $\phi - CH = \underset{\displaystyle CH_3}{\underset{|}{C}} - COOC_2H_5$

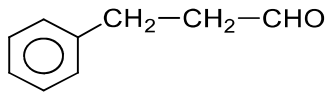
249. Which of the following compounds neither forms semicarbazone nor oxime?
   a) $H - \underset{\displaystyle O}{\underset{\|}{C}} - H$
   b) $CH_3 - \underset{\displaystyle O}{\underset{\|}{C}} - NH - CH_3$
   c) $CH_3 - \underset{\displaystyle O}{\underset{\|}{C}} - CH_2Cl$
   d) $CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CHO$

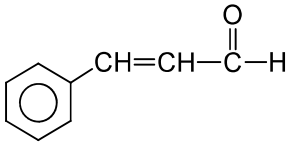
250. When a mixture of calcium benzoate and calcium acetate is dry distilled, the resulting compound is
   a) Acetophenone  b) Benzaldehyde  c) Benzophenone  d) Acetaldehyde

251. An organic compound $(A)$ with molecular formula $C_9H_{10}O$ forms an orange-red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with iodine and NaOH. It does not reduce Tollen reagent or Fehling solution nor it decolourises bromine water as Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid having molecular formula $C_7H_6O_2$. Identify the compound $(A)$`

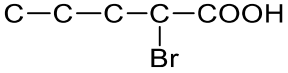
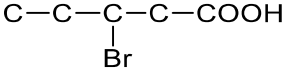
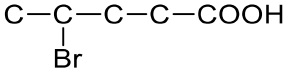
a) 

b) 

c) 

d) 

252. Ethanoic acid or $CH_3COOH$ is a weak acid because:
   a) It is highly ionized
   b) It has no replaceable hydrogen
   c) It is slightly ionized
   d) It is insoluble in water
253. Paraldehyde is:
   a) A trimer of formaldehyde
   b) A trimer of acetaldehyde
   c) A hexamer of formaldehyde
   d) A hexamer of acetaldehyde
254. Calcium formate on distillation gives
   a) HCOOH  b) $CH_3COOH$  c) $CH_3CHO$  d) HCHO
255. Alkaline hydrolysis of 1,1-dichloroalkane yields:
   a) Alkanal  b) Alkanol  c) Alkanone  d) Alkyne
256. Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in the above reaction is
   a) Diethyl ether  b) 2-butanone  c) Ethyl chloride  d) Ethyl ethanoate
257. Which of the following carboxylic acids undergoes decarboxylation easily?
   a) $C_6H_5COCH_2COOH$  b) $C_6H_5COCOOH$  c) $C_6H_5CH(OH)COOH$  d) $C_6H_5CH(NH_2)COOH$

258. Which of the following compound cannot formed an optically active cyanohydrins on reaction with HCN?
   a) $CH_3CHO$  b) Benzaldehyde  c) 2-pentanone  d) 3-pentanone
259. The weakest acid among the following is:
   a) $CH_3COOH$  b) $CH_3CH_2COOH$  c) $(CH_3)_2CHCOOH$  d) $(CH_3)_3C.COOH$
260. Reaction of acid with alcohols is also known as
   a) Esterification  b) Saponification  c) Alkalisation  d) None of these
261. Cinnamic acid is formed when $C_6H_5-CHO$ condenses with $(CH_3CO)_2O$ in presence of
   a) Concentrated $H_2SO_4$  b) Sodium acetate  c) Sodium metal  d) Anhydrous $ZnCl_2$
262. A mixture of water and NaCl can be separated by:
   a) Sublimation  b) Evaporation  c) Filtration  d) Decantation
263. 500 mL of a hydrocarbon gas burnt in excess of oxygen yielded 2500 mL of $CO_2$ and 3.0 litre of water vapour (all volumes measured at the same temperature and pressure). The formula of the hydrocarbon is:
   a) $C_3H_6$  b) $C_2H_4$  c) $C_5H_{12}$  d) $CH_4$
264. Which halo acid gives cyclic ester on treatment with aq.NaOH?
   a) 
   b) 
   c) 
   d) All of these

265. Which reduces carboxylic acid directly to primary alcohols?

a) $LiAlH_4$ b) $Na + C_2H_5OH$ c) $NaBH_4$ d) All of these

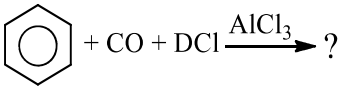
266. Which of the product is formed when acetone is reacted with barium hydroxide solution?

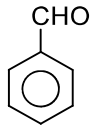
a) $CH_3-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}}-CH_3$

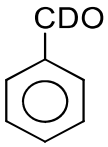
b) $CH_3-\overset{\overset{O}{\|}}{C}-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-CH_3$

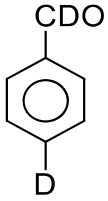
c) $CH_3-\overset{\overset{O}{\|}}{C}-\underset{\underset{OH}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

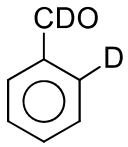
d) $CH_3-\overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}}-\overset{\overset{OH}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_3$

267. In Gattermann Koch reaction  the product formed is

a) 

b) 

c) 

d) 

268. A colourless water soluble organic liquid decomposes sodium carbonate and liberates $CO_2$. It produces black precipitate with Tollen's reagent. The liquid is:

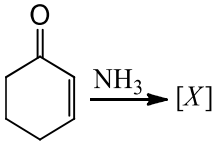
a) $CH_3CHO$ b) $CH_3COOH$ c) HCHO d) HCOOH

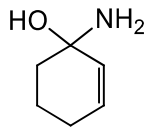
269. The formation of cyanohydrin from a ketones is an example of:

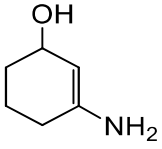
a) Electrophilic addition
b) Nucleophilic addition
c) Nucleophilic substitution
d) Electrophilic substitution

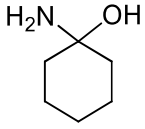
270. Aldehyde are the first oxidation product of

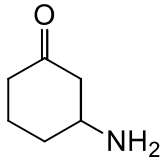
a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) Dihydric alcohols

271.  . Product is

a) 

b) 

c) 

d) 

272. Urea is preferred to ammonium sulphate as a nitrogenous fertilizer because

a) It is more soluble in water
b) It is cheaper than ammonium sulphate
c) It is quite stable
d) It does not cause acidity in the soil

273. Boiling point of acetone is:

a) 100 °C b) 60 °C c) 56°C d) 90°C

274. Which of the following is correct?

a) All aldehydes undergo Cannizzaro's reaction
b) Aldehydes are less susceptible to oxidation than ketones
c) Aldehydes are more susceptible to oxidation than ketones
d) Formaldehyde forms $CH_2(OH)NH_2$ with $NH_3$

275. Acetone may be produced from starch by the action of:

a) Acid b) Certain bacteria c) Oxidising agents d) None of these

276. Benzaldehyde condense with acetaldehyde to produce
a) Cinnamic acid b) Benzoic acid c) Cinnamaldehyde d) Acetic anhydride

277. Formic acid cannot be halogenated with chlorine in presence of red P, but acetic acid can be halogenated in the same way, because:
a) Formic acid is weaker than acetic acid
b) Formic acid has no α-H-atom in its molecule
c) Both (a) and (b)
d) None of the above

278. Treatment of acetaldehyde with ethyl magnesium bromide and subsequent hydrolysis gives:
a) l-butanol b) 2-butanol c) l-propanol d) *tert*.-butanol

279. $C_2H_5CHO$ and $CH_3COCH_3$ can be distinguished by testing with:
a) Phenyl hydrazine b) Hydroxylamine c) Fehling's solution d) Sodium bisulphate

280. Kjeldahl's method cannot be used for the estimation of nitrogen in:
a) Pyridine b) Nitrocompounds c) Azo compounds d) All of these

281. Acetic anhydride reacts with diethyl ether in the presence of anhydrous $AlCl_3$ to give:
a) Ethyl acetate b) Methyl propionate c) Methyl acetate d) Propionic acid

282. Formaldehyde is not used in:
a) Adhesives b) Bakelite c) Tooth powders d) Explosives

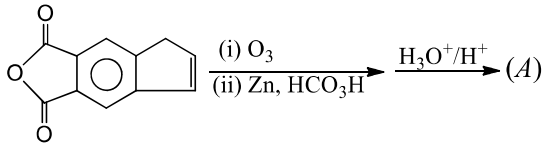
283. Acetic acid will be obtained on oxidation of
a) Ethanol b) Propanal c) Methanal d) Glyoxal

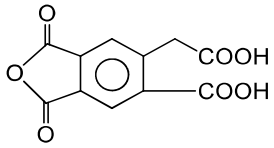
284. Acetamide is
a) Highly acidic b) Highly basic c) Neutral d) Amphoteric

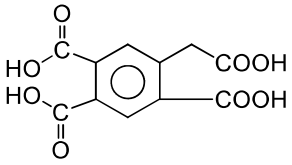
285. Which reagent can convert acetic acid into ethanol?
a) Na + alcohol b) $LiAlH_4$ + ether c) $H_2 + Pt$ d) Sn + HCl

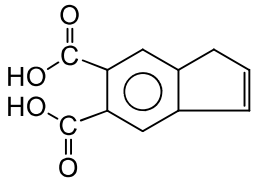
286. Which reaction, intermediate is formed during the condensation reaction between acetaldehyde and formaldehyde?
a) $:\bar{C}H_2CHO$ b) $\overset{+}{C}H_2CHO$ c) $\overset{+}{C}H_2OH$ d) $:\bar{C}HCHO$

287. Write the product of the following reaction



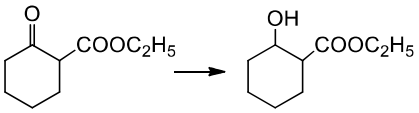

a) 


b) 


c) 


d) None of the above

288. Which of the following regent can effectively carried out the following conversion?




a) $LiAlH_4$ b) $NaBH_4$ c) $H_2/Pd - C$ d) $H_2$/Raney Ni

289. Which of the following on heating with aqueous KOH, produces acetaldehyde?
a) $CH_3CH_2Cl$ b) $CH_2ClCH_2Cl$ c) $CH_3CHCl_2$ d) $CH_3COCl$

290. Which carbonyl compound does not undergo aldol condensation?
a) HCHO b) $CH_3CHO$ c) $CH_3CH_2CHO$ d) $CH_3COCH_3$

291. Which of the following reagents reacts in same manner with HCHO, $CH_3CHO$, $CH_3COCH_3$?
a) HCN b) $NH_2OH$ c) $C_6H_5NHNH_2$ d) All of these

292. Which of the following has most acidic proton?
a) $CH_3COCH_3$
b) $(CH_3)_2C{=}CH_2$
c) $CH_3COCH_2COCH_3$
d) $(CH_3.CO)_3CH$

293. What are the organic products formed in the following reaction?

$$C_6H_5-COO-CH_3 \xrightarrow[2.\ H_3O^+]{1.\ LiAlH_4} .....$$

a) $C_6H_5$—$CH_2$—OH and $CH_3$—OH
b) $C_6H_5$—OH and $CH_3$—OH
c) $C_6H_5$—$CH_3$ and $CH_3$—OH
d) $C_6H_5$—$CH_2$—OH and $CH_4$

294. Which on oxidation will not give a carboxylic acid with the replacement of carbon atoms?
a) $CH_3COCH_3$ b) $CCl_3CH_2CHO$ c) $CH_3CH_2CH_2OH$ d) $CH_3CH_2CHO$

295.

$$3CH_3COCH_3 \xrightarrow{dil.HCl} \begin{matrix}(CH_3)_2C{=}CH\\ |\\ CO\\ |\\ (CH_3)_2C{=}CH\end{matrix} + 2H_2O$$

This polymer is obtained when acetone is saturated with hydrogen chloride gas. Polymer is:
a) Phorone b) Formose c) Diacetonyl alcohol d) Mesityl oxide

296. Which of the following does not react with $NaHSO_3$?
a) $CH_3COCH_3$ b) $CH_3CHO$ c) HCHO d) None of these

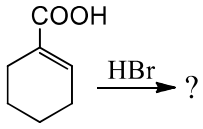
297. Which one is a polyprotic acid?
a) Acetic acid b) Oxalic acid c) Benzoic acid d) Salicylic acid

298. Halogens can be estimated by:
a) Duma's method b) Carius method c) Liebig's method d) None of these

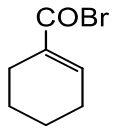
299. Ethyl isocyanide on acidic hydrolysis generates
a) Ethylamine salt and methanoic acid b) Propanoic acid and ammonium salt
c) ethanoic acid and ammonium salt d) Methyl amine salt and ethanoic acid

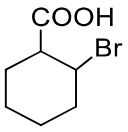
300. A carbonyl compound reacts with hydrogen cyanide to form cyanohydrin which on hydrolysis forms a racemic mixture of α-hydroxy acid. The carbonyl compound is:
a) Diethyl ketone b) Formaldehyde c) Acetaldehyde d) Acetone

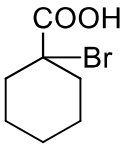
301. Which would undergo aldol condensation?
a) $\phi CHO + CH_3COCH_3 \xrightarrow{OH^-}$
b) $CCl_3CHO + HCHO \xrightarrow{OH^-}$
c) $\phi-\underset{\underset{O}{\|}}{C}-\underset{\underset{O}{\|}}{C}-\phi \xrightarrow{OH^-}$
d) $\begin{matrix}CHO\\ |\\ CHO\end{matrix} \xrightarrow{OH^-}$

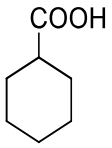
302. 

Product is

a) 


b) 


c) 

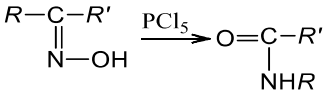

d) 


303. Aldehydes can be oxidised by
a) Tollen's reagent b) Fehling solution c) Benedict solution d) All of these

304. Which can be oxidised to the corresponding carbonyl compound?
a) Propan-2-ol b) Ortho-nitro-phenol c) Phenol d) 2-methylpropan-2-ol

305. When ethanal reacts with $CH_3MgBr$ and $C_2H_5OH$ /dry HCl, the product formed are
a) Ethyl alcohol and 2-propanol b) Ethane and hemiacetal
c) 2-propanol and acetal d) Propane and methyl acetate

306. In the context of the rearrangement of an oxime of a ketone to an amide (represented below)



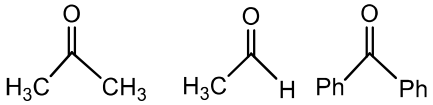

Which of the following statement is/are correct?
a) It is the *cis* hydrocarbon radical (*R*) with respect to the OH group that migrates
b) The group that migrates never gets completely detached from the remainder of the molecule during the transformation
c) The rearrangement is intermolecular
d) None of the above

307. In presence of dry HCl gas, $CH_3CHO$ condenses with $C_2H_5OH$ to give:
a) Aldol b) Paraldehyde c) Ethyl acetate d) Acetal

308. Which of the following acids combines the properties of acid and aldehyde?
a) Acetic acid b) Formic acid c) Benzoic acid d) Oxalic acid

309. Stephen's reaction is reduction of:
a) Alkyl cyanide with $LiAlH_4$
b) Alkyl cyanide with $SnCl_2$ and HCl
c) Alkyl isocyanide with Na and alcohol
d) Acyl halide in the presence of $Pd/BaSO_4$

310. The order or reactivity of phenyl magnesium bromide with the following compound is

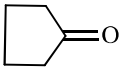


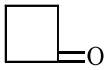

a) (II)>(III)>(I) b) (I)>(III)>(II)
c) (II)>(I)>(III) d) All react with the same rate

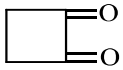
311. Alkaline hydrolysis of $R_2C.Cl_2$ forms:
a) Propanone b) Propane c) Alkanone d) Alkanal

312. Dry distillation of barium salt of Hexane-1,2-dicarboxylic acid gives:

a) 


b) 

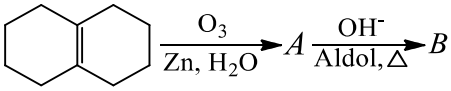

c) 

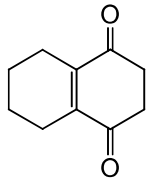

d) 

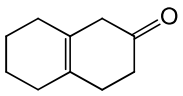

313. Which is liquid at room temperature?
a) Acetamide b) Formamide c) Methane thiol d) $CH_3Cl$

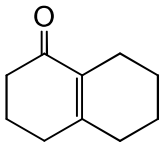
314. The key step in Cannizaro's reaction is the intermolecular shift of
a) Proton b) Hydride ion c) Hydronium ion d) Hydrogen band

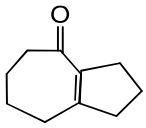
315. Identify the final product of the reaction



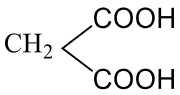
a) 

b) 

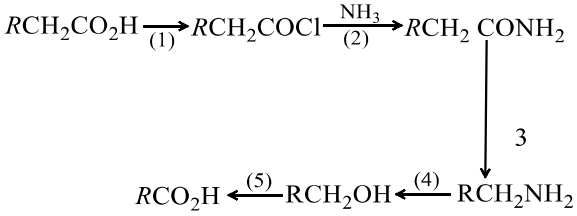
c) 

d) 

316. Which acid on heating gives CO and $CO_2$ both?

a) HCOOH b) $CH_3COOH$ c)  d) 

317. A sequential reaction may be performed as represented below,



The appropriate reagent for step (3) is:

a) Bromine alone b) Bromine and alkali c) HBr d) $P_2O_5$

318. Osazone formation is used to characterise:

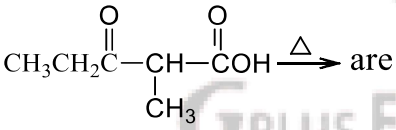
a) Polymers b) Sugars c) Carboxylic acid d) Alcohol

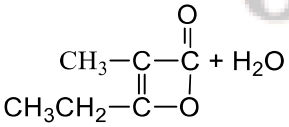
319. $C_8H_6O_4 \xrightarrow{\Delta} X \xrightarrow{NH_3} Y$

The compound $X$ is

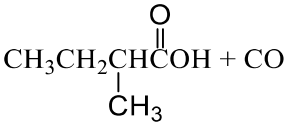
a) *o*-xylene b) Phthalic acid c) Phthalic anhydride d) Salicylic acid

320. The products obtained in the reaction



a) 

b) 

c) 

d) None of the above

321. Acetic acid vapours when passed over aluminium phosphate forms:

a) $CH_3CHO$ b) Ketene c) $C_2H_6$ d) $C_2H_4$

322. A mixture contains four solid organic compounds *A,B,C,D*. On heating only *C* changes from solid to vapour state. *C* can be separated from others present in a mixture by:

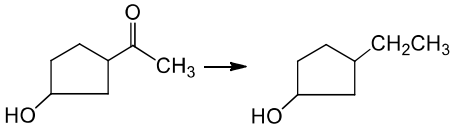
a) Distillation b) Crystallization c) Sublimation d) Fractional distillation

323. What is the end product in the following sequences of operations;

Acetamide $\xrightarrow{P_2O_5} A \xrightarrow{4H} B$ ?

a) $CH_3NH_2$ b) $C_2H_5NH_2$ c) $CH_3CN$ d) $CH_3COONH_4$

324. The appropriate reagent for the transformation



is

a) Zn(Hg), HCl b) $NH_2\ NH_2, OH^-$ c) $H_2/Ni$ d) $NaBH_4$

325. Which of the following compounds will undergo self aldol condensation in presence of cold dilute alkali?
a) $C_6H_5CHO$ b) $CH_2{=}CH{-}CHO$ c) $CH_3CH_2CHO$ d) None of these

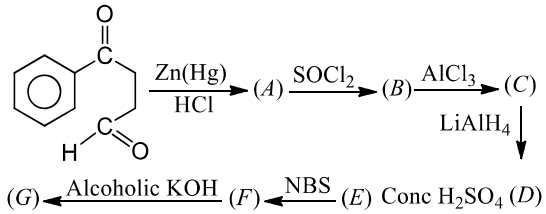
326. Which of the following would undergo Hofmann reaction to give a primary amine?
a) $RCOCl$ b) $RCONHCH_3$ c) $RCONH_2$ d) $RCOOR'$

327. In kjeldahl's method, nitrogen present is estimated as:
a) $N_2$ b) $NH_3$ c) $NO_2$ d) None of these

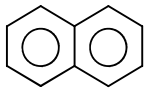
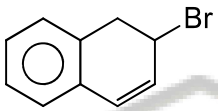
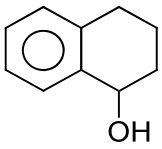
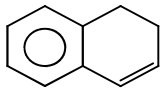
328. Correct order of reactivity of acid derivatives towards a nucleophile is
a) $RCOCl > (RCO)_2O > RCOOR > RCONH_2$ b) $RCOOR > RCOCl > RCONH_2 > (RCO)_2O$
c) $RCONH_2 > (RCO)_2O > RCOOR > RCOCl$ d) $(RCO)_2O > RCOCl > RCOOR > RCONH_2$

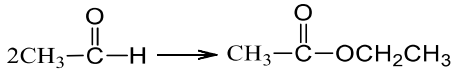
329. Methylethyl ketone can be reduced to *n*-butane by
a) The Meerwein-Ponndroff reduction b) The Wolf-Kishner reduction
c) $Mg - Hg, H_2O$ d) All of the above

330.




Show the final product of the reaction

a)  b)  c)  d) 

331. 

The name of the reaction and reagent used for it is
a) Cannizaro reaction, NaOH b) Aldon condensation, $OH^-$
c) Tischenko reaction, $Al(OC_2H_5)_3$ d) Perkin reaction, $(CH_3CO)_2O$

332. Which statement is incorrect in the case of acetaldehyde and acetone?
a) Both react with hydroxylamine to form oximes
b) Both react with sodium bisulphite to form addition product
c) Both reduce ammoniacal silver nitrate to silver
d) Both react with hydrazine to form hydrazones

333. A compound '*A*' having the molecular formula $C_5H_{12}O$, on oxidation gives a compound '*B*' with molecular formula $C_5H_{12}O$. Compound '*B*' gave a 2, 4-dinitrophenylhydrazine derivative but did not answer haloform test or silver mirror test. The structure of compound '*A*'

a) $CH_3-CH_2-CH_2-CH_2-CH_2-OH$ b) $CH_3-CH_2-CH_2CH(OH)-CH_3$

c) $CH_3-CH_2-CH(OH)-CH_2-CH_3$ d) $CH_3-CH_2-CH(CH_3)-CH_2-OH$

334. Acetone is used:
a) As a solvent
b) In nail polishes
c) For storing acetylene under pressure
d) All are correct

335. Which of the following will form two isomers with semi carbazide?
a) Benzaldehyde b) Acetone c) Benzoquinone d) Benzophenone

336. 15 mL of a gaseous hydrocarbon required 45mL of oxygen for complete combustion. 30 mL of $CO_2$ is formed. The formula of the hydrocarbon is:
a) $C_2H_6$ b) $C_2H_4$ c) $C_3H_6$ d) $C_2H_2$

337. First Noble Prize winner in chemistry is:
a) Van't Hoff b) Rutherford c) Pasteur d) Madam Curie

338. Which cannot be used as acylating agent?
a) $RCOBr$ b) $(RCO)_2O$ c) $RCH_2COCl$ d) $RCONH_2$

339. Malonic acid $H_2C(COOH)_2$ on heating gives:
a) Formic acid b) Acetic acid $+CO_2$ c) Oxalic acid d) Acetaldehyde

340. With hot conc. KOH brown black resinous product is given by:
a) $CH_3CHO$ b) $C_2H_5OH$ c) $HCHO$ d) $CH_3COCH_3$

341. Acetamide and ethyl amine are distinguished by reacting with
a) $Br_2$ water b) Acidic $KMnO_4$ c) aq. NaOH and heat d) aq. HCl and heat

342. General formula of saturated carboxylic acid is:
a) $C_nH_{2n+1}COOH$ b) $C_nH_{2n}O_2$ c) Both (a) and (b) d) None of these

343. The reagent which can be used to distinguish acetophenone from benzophenone is :
a) 2,4-dinitrophenyl hydrazine
b) Aqueous $NaHSO_3$
c) Benedict's solution
d) $I_2$ and $Na_2CO_3$

344. Acetaldehyde is not obtained in the reactions
a) $CH_2 = CH - CH_2 \xrightarrow[2.Zn,H_2O]{1.O_3}$ b) $CH_3CH=$  $\xrightarrow[2.\ Zn,\ H_2O]{1.\ O_3}$
c) $HC \equiv CH + H_2O \xrightarrow[H_2SO_4]{HgSO_4}$ d) $CH_3COCl + H_2 \xrightarrow{Pd-BaSO_4}$

345. The acid present in tomatoes is:
a) Lactic acid b) Oxalic acid c) Citric acid d) Tartaric acid

346. Identify $A$ and $B$ in the following reaction
$CH_3 - CH_3 \xleftarrow{B} CH_3COOH \xrightarrow{A} CH_3CH_2OH$
A B
a) HI + red P $LiAlH_4$ b) Ni/Δ $LiAlH_4$
c) $LiAlH_4$ HI + red P d) Pd − $BaSO_4$ Zn + HCl

347. A ketone reacted with $C_2H_5MgBr$ reagent followed by hydrolysis gave a product which on dehydration gives an alkene. The alkene on ozonolysis gave diethyl ketone and acetaldehyde. The ketone is:
a) Dimethyl ketone b) Ethyl methyl ketone c) Diethyl ketone d) Ethyl propyl ketone

348. Cross aldol condensation occurs between
a) Two same aldehydes b) Two same ketones
c) Two different aldehydes and ketones d) None of the above

349. The increasing order of the rate of HCN addition to compounds $A$-$D$ is:
$(A)$ HCHO $(B)$ $CH_3COCH_3$
$(C)$ $PhCOCH_3$ $(D)$ PhCOPh
a) $A < B < C < D$ b) $D < B < C < A$ c) $D < C < B < A$ d) $C < D < B < A$

350. $CH_3MgX \xrightarrow[H^+,H_2O]{CH_3-\overset{\overset{O}{\|}}{C}-OC_2H_5} A \xrightarrow{Na} B \xrightarrow{C_2H_5OH} C$
$C$ is
a) $\overset{\overset{O}{\|}}{}$ b) $(CH_3)_3C - O - C_2H_5$ c) $C_2H_5OC_2H_5$ d) $CH_3 - \overset{\overset{O}{\|}}{C} - OC_2H_5$

$CH_3 - C - CH_3$ O

351. Which method cannot be used for purification of liquids?
a) Chromatographic b) Steam distillation c) Sublimation d) Distillation

352. $CH_3COOC_2H_5$ with excess of $C_2H_5MgBr$ and hydrolysis gives

a) $CH_3 - C(=O) - C_2H_5$ b) $CH_3 - C(C_2H_5)_2 - OH$ c) $CH_3 - C(=O) - CH_3$ d) $CH_3 - C(=O) - CH_3$

353. Aniline is purified by:
a) Steam distillation
b) Simple distillation
c) Vacuum distillation
d) Extraction with a solvent

354. Percentage of Se(at. mass = 78.4 ) in peroxidase anhydrase enzyme is 0.5% by weight, then minimum molecular mass of peroxidase anhydrase enzyme is:
a) $1.576 \times 10^4$ b) $1.576 \times 10^3$ c) 15.76 d) $2.136 \times 10^4$

355. Which reagent is most suitable for the following for the synthesis of $HOCH_2CH_2CH_2COOH$ from$HOCH_2CH_2CH_2Br$?
a) Grignard reagent b) $KCN/H_3O^+$ c) $HgSO_4/H_2SO_4$ d) $PCl_5$

356. The IUPAC name of acrolein is:
a) Propanal b) Prop-2-en-l-al c) Propan-2-ol d) Prop-l-en-2-al

357. An organic compound contains hydrogen, oxygen, a single carbon atom and responds positively to Tollen's reagent. The compound is:
a) HCHO b) $CH_3OH$ c) $CH_3CHO$ d) $CH_3COOH$

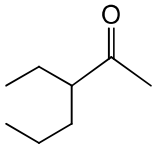
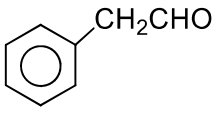
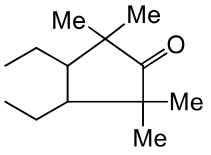
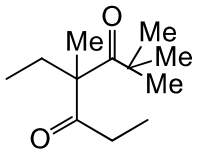
358. The reagent with which both acetaldehyde and acetophenone react easily are
a) Fehling's solution b) Schiff's reagent
c) Tollen's reagent d) 2, 4-dinitrophenylhydrazine

359. $CH_3COOH \xrightarrow{LiAlH_4} A + CH_3COOH \xrightarrow{H_3O^+} B + H_2O$
In the above reactions '*A*' and '*B*'respectively are
a) $CH_3COOC_2H_5, C_2H_5OH$ b) $CH_3CHO, C_2H_5OH$ c) $C_2H_5OH, CH_3CHO$ d) $C_2H_5OH, CH_3COOC_2H_5$

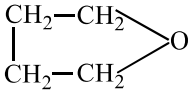
360. Formaldehyde gives an additive product with methyl magnesium iodide which on aqueous hydrolysis gives:
a) Isopropyl alcohol
b) Ethyl alcohol
c) Methyl alcohol
d) Propyl alcohol

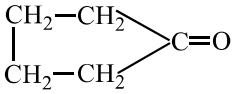
361. In Kjeldahl's method of estimation of nitrogen, $K_2SO_4$ acts as:
a) Oxidizing agent b) Catalytic agent c) Hydrolysing agent d) Boiling point elevator

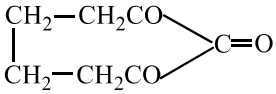
362. The compound that doesn't undergo aldol condensation

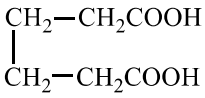
a)  b)  c)  d) 

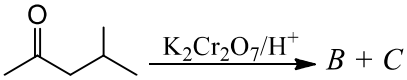
363. Which of the following products is formed when adipic acid is heated?

a) 

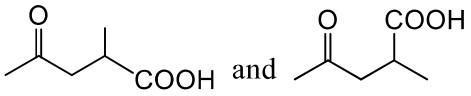
b) 

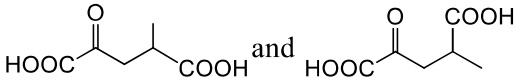
c) 

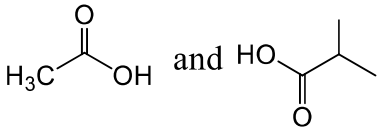
d) 

364. 

Here $B$ and $C$ are

a) 

b) 

c) 

d) None of the above

365. A silver salt of fatty acid on heating with an alkyl halide gives:

a) Ether b) Alcohol c) Aldehyde d) Ester

366. For hydrolysis of the following functional groups, the decreasing order of reactivity is:

a) $RCOOR > RCOCl > RCONH_2$

b) $RCOCl > RCOOR > RCONH_2$

c) $RCOCl > RCONH_2 > RCOOR$

d) $RCOOR > RCONH_2 > RCOCl$

367. The organic compounds $A$ and $B$ react with sodium metal and release $H_2$ gas. $A$ and $B$ react with each other to give ethyl acetate. $A$ and $B$ are:

a) $CH_3COOH$ and $C_2H_5OH$

b) $HCOOH$ and $C_2H_5OH$

c) $CH_3COOH$ and $CH_3OH$

d) $CH_3COOH$ and $HCOOH$

368. $A \xrightarrow{\text{Dil.NaOH}} (CH_3)_2C = CHCOCH = C(CH_3)_2$

a) Acetaldehyde b) Formaldehyde c) Acetone d) Propionaldehyde

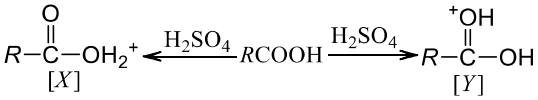
369. The hydrolysis product of $CH_3COCH_3 + CH_3MgBr$ is

a) $n$ −butyl alcohol b) Tertiary butyl alcohol

c) Secondary butyl alcohol d) Isopropyl alcohol

370. Aldehyde used in the manufacture of perfumes is:

a) $HCHO$ b) $CH_3CHO$ c) $C_6H_5CHO$ d) $CCl_3CHO$

371. 

Which is more stable?

a) $X$ b) $Y$

c) Both are equally stable d) Can't be predicted

372. When sodium formate is heated it gives:

a) Hydrogen b) Water c) Sodium hydroxide d) Carbon dioxide

373. In esterification, the reactivity of alcohols is:

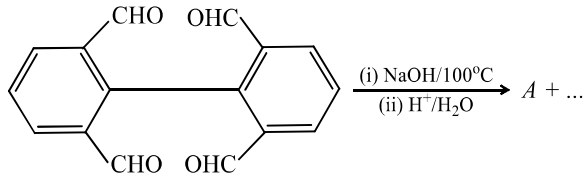
a) $3^\circ > 2^\circ > 1^\circ$ b) $1^\circ > 2^\circ > 3^\circ$ c) Same in all cases. d) None of these

374. Separation of organic compounds by column chromatography is due to:

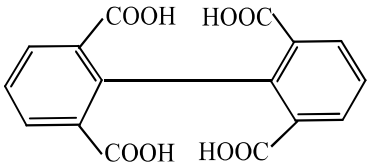
a) Selective adsorption
b) Selective absorption
c) Solubilities
d) Selective adsorption and selective absorption

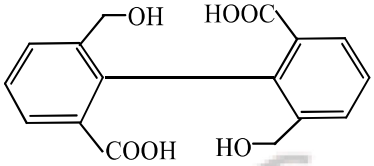
375. To determine the weight of halogen in the organic compound, the compound is heated with fuming $HNO_3$ in presence of:
a) Ag b) $AgNO_3$ c) $AlCl_3$ d) $Ag_2SO_4$

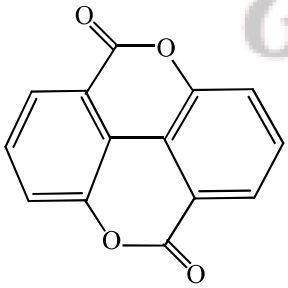
376. Cannizzaro's reaction involves:
a) Conversion of aldehyde into acid only
b) Conversion of aldehyde into alcohol only
c) Redox system reaction
d) Aromatic transformation

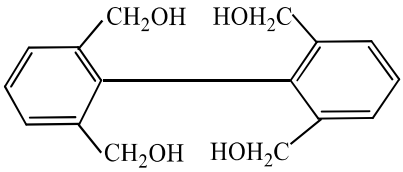
377. 


The major product *A* is:

a) 


b) 


c) 


d) 




378. Which one of the following compounds on treatment with $LiAlH_4$ will give a product that will give a positive iodoform test?
a) $CH_3CH_2CHO$ b) $CH_3CH_2COOCH_3$ c) $CH_3CH_2OCH_2CH_3$ d) $CH_3COCH_3$

379. An aldehyde can be distinguished from a ketone by the use of the reagent:
a) Grignard reagent b) Schiff's reagent c) Hydroxylamine d) Hydrazine

380. A compound *A* has molecular formula $C_2Cl_3OH$. It reduces Fehling's solution and on oxidation gives a monocarboxylic acid *B*. *A* is obtained by action of $Cl_2$ on ethyl alcohol. *A* is:
a) Chloral b) $CHCl_3$ c) $CH_3Cl$ d) Chloro acetic acid

381. Halogenation of silver salt of carboxylic acid using $CCl_4$ as solvent to form alkyl halide is an example of:
a) Free radical halogenation

b) Nuclear halogenation
c) Hunsdiecker reaction
d) HVZ reaction

382. Anhydrous $CaCl_2$ is used as drying agent because it:
a) Adsorbs water molecules
b) Absorbs water molecules
c) Adsorbs and absorbs water molecules
d) none of the above

383. $'A' \xleftarrow[\text{hydrolysis}]{\text{Acid}} CH_3COCHCOOC_2H_5 \xrightarrow[\text{hydrolysis}]{\text{Ketonic}} 'B'$ (with $CH_3$ on the CH)

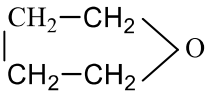
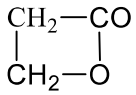
$''A''$ and $''B''$ are
a) $CH_3CH_2COOH, CH_3COCH_2CH_3$
b) $CH_3CH_2COOH, CH_3COOH$
c) $CH_3COOH, CH_3COCH_3$
d) $CH_3COOH, C_2H_5COC_2H_5$

384. Aldol condensation between the following compounds followed by dehydration gives methyl vinyl ketone:
a) Methanal and ethanal
b) Two mole of formaldehyde
c) Methanal and propanone
d) Two mole of ethanol

385. In a reaction $R$CHO is reduced to $RCH_3$ using amalgamated zinc and concentrated HCI and warming the solution. The reaction is known as
a) Meerwein-Ponndorf reaction
b) Clemmensen's reduction
c) Wolff-Kishner reduction
d) Schiff's reaction

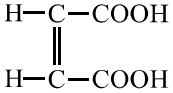
386. The Lassaigne's extract is boiled with conc. $HNO_3$ while testing for halogens. By doing so it:
a) Increases the concentration of $NO_3^-$ ions
b) Decomposes $Na_2S$ and NaCN, if formed
c) Helps in the precipitation of AgCl
d) Increases the solubility product of AgCl

387. $CH \equiv CH \xrightarrow{CH_3MgBr} A \xrightarrow[(ii)H_3O^+]{(i)CO_2} B \xrightarrow{HgSO_4/H_2SO_4} D \xleftarrow[(ii)H^+]{(i)\,[Ag(NH_3)_2]^+,OH^-} C$

In the given reaction, product $D$ is,
a) c
b) $CH_2(COOH)CH_2COOH$
c) 
d) 

388. Among the following compounds which will react with acetone to give a product containing $>C{=}N{-}$?
a) $C_6H_5NH_2$
b) $C_6H_5NHNH_2$
c) $(CH_3)_3N$
d) $C_6H_5NHC_6H_5$

389. Which can be used to distinguish aldehydes and ketones?
a) Fehling's solution
b) $H_2SO_4$ solution
c) $NaHSO_3$
d) $NH_3$

390. The name of  is :
a) Maleic acid
b) Fumaric acid
c) Malonic acid
d) Succinic acid

391. The important step in Cannizzaro's reaction is the intermolecular shift of:
a) Proton
b) H-atom
c) Hydride ion
d) Hydronium ion

392. Given below are some statements concerning formic acid, which of them is true?
a) It is weaker acid than acetic acid
b) It is reducing agent

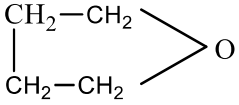
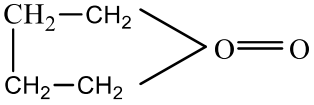
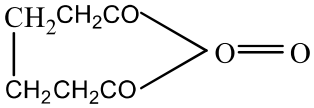
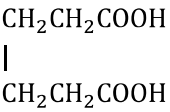
c) When its calcium salt is heated, it forms a ketone
d) It is an oxidising agent

393. When Lemery for the first time proposed his classification of substances in 1675 the substance not known among the following was:
a) Cane sugar b) Wine c) Iron d) Penicillin

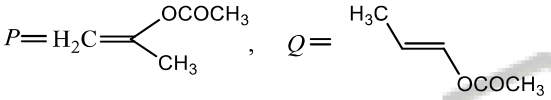
394. Formalin is:
a) Formaldehyde
b) Formaldehyde + methanol
c) Formaldehyde + methanol + water
d) Formaldehyde + water

395. Chloral belongs to the class of:
a) Alcohols b) Aldehydes c) Amides d) Ketones

396. Which one of the following product is formed when calcium salt of adipic acid is heated?

a) 
b) 
c) 
d) 

397. The product of acid hydrolysis of $P$ and $Q$ can be distinguish by



a) Lucas reagent b) 2, 4-DNP c) Fehling's solution d) $NaHSO_3$

398. Which gives positive haloform test and positive Fehling's solution test?
a) Acetone b) Acetaldehyde c) Ethanol d) Formaldehyde

399. Acetone when saturated with dry acid gives:
a) Diacetone alcohol b) Mesityl oxide c) Mesitylene d) Propane

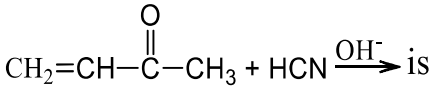
400. $-COOH$ group of a compound does not react with $NaHSO_3$ even though it has $>C=O$ group because of:
a) Acid character
b) Resonance
c) Cyclic structure
d) The attached organic group

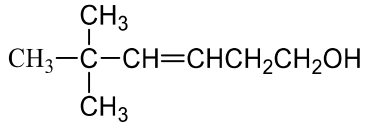
401. Aceto acetic ester behaves as:
a) An unsaturated hydroxyl compound
b) A keto compound
c) Both of these ways
d) None of the above

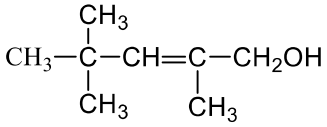
402. When benzoic acid is treated with $PCl_5$ at $100^0C$, it gives
a) Benzoyl chloride b) *o*-chlorobenzoic acid c) *p*-chlorobenzoic acid d) Benzyl chloride

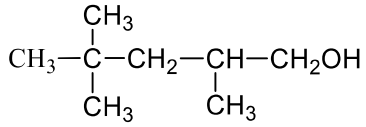
403. $CH_3\ COOCH_3$ + excess PhMgBr $\longrightarrow$ Product $\xrightarrow{H^+}$ X
Th product $X$ is
a) 1, 1-diphenylethanol b) 1, 1-diphenylethanol
c) Methyl phenylethanol d) Methyl phenylketone

404. The major product obtained in the reaction,



a) 

b) 

c) 

d) None of the above

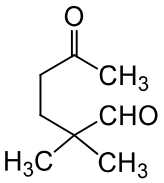
405. The end product $B$ in the sequence of reactions,
$R—X \xrightarrow{CN^-} A \xrightarrow{NaOH} B$ is:
a) An alkane
b) A carboxylic acid
c) Sodium salt of carboxylic acid
d) A ketone

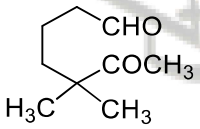
406. The correct order of acidic strengths of the carboxylic acids is
a) Formic acid < benzoic acid < acetic acid
b) Formic acid < acetic acid < benzoic acid
c) Acetic acid < formic acid < benzoic acid
d) Acetic acid < benzoic acid < formic acid

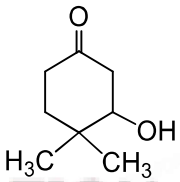
407. When formic acid reacts with $PCl_3$, it forms:
a) Formyl chloride b) Acetyl chloride c) Methyl chloride d) Propionyl chloride

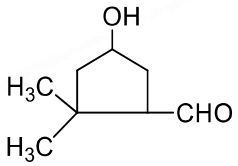
408. Carboxylic acids react with diazomethane to yield:
a) Amines b) Alcohols c) Esters d) Amides

409. $Me_2CHCHO + CH_2 = CHCOCH_3 \xrightarrow[(ii)OH^-]{(i)\text{Michael addition}} [X]$ product is

a) 

b) 

c) 

d) 

410. Tamarind contains:
a) (+) tartaric acid b) (-) tartaric acid c) Citric acid d) Lactic acid

411. Which of the following, compounds is the reactant in Rosenmund's reduction?
a) $CH_3CO_2H$ b) $CH_3CHO$ c) $CH_3CH_2Cl$ d) $CH_3COCl$

412. Aldol condensation will not take place in
a) HCHO b) $CH_3CH_2CHO$ c) $CH_3CHO$ d) $CH_3COCH_3$

413. Benzaldehyde reacts with methyl amine to give
a) $C_6H_5NH_2$ b) $C_6H_5CH_2NH_2$ c) $C_6H_5CH = NCH_3$ d) $C_6H_5CONH_2$

414. The reagent with which both acetaldehyde and acetone react easily is:
a) Fehling's solution b) Grignard reagent c) Schiff's reagent d) Tollen's reagent

415. 0.20 g of a hydrocarbon on combustion gave 0.66 g $CO_2$.The percentage of hydrogen in the hydrocarbon is about :
a) 33 b) 45 c) 10 d) 90

416. Which of the following is hydroxy acid?
a) Malic acid b) Lactic acid c) Tartaric acid d) All of these

417. Which one of the following undergoes reaction with 50% sodium hydroxide solution to give the corresponding alcohol and acid?
a) Phenol b) Benzaldehyde c) Butanal d) Benzoic acid

418. Amides may be converted into amines by reaction named after:
a) Perkin b) Claisen c) Hofmann d) Kekule

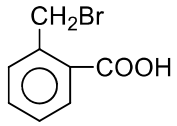
419. The correct order of decreasing acid strength of trichloroacetic acid, $(A)$, trifluoroacetic $(B)$, acetic acid $(C)$and formic acid $(D)$ is:
a) $A > B > C > D$ b) $A > C > B > D$ c) $B > A > D > C$ d) $B > D > C > A$

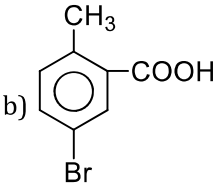
420. Which of the following is the strongest acid?
   a) HCOOH ($pK_a$ 3.77)
   b) $C_6H_5COOH$ ($pK_a$ 4.22)
   c) $CH_3COOH$ ($pK_a$ 4.71)
   d) $CH_3CH_2COOH$ ($pK_a$ 4.88)

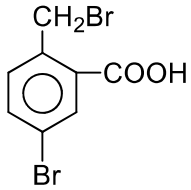
421. In Lassaigne's test sodium metal is used because:
   a) It is a very reactive
   b) Its melting point is low
   c) Its compounds are soluble in water
   d) all of the above

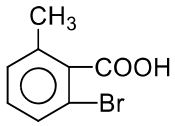
422. A process that involves the union of two or more molecules to form a new molecular aggregate without losing any simple molecule is known as:
   a) Polarisation  b) Polymerisation  c) Photosensitization  d) None of these

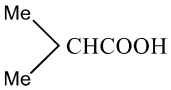
423. *o*-toluic acid on reaction with $Br_2$ + Fe gives

a) 


b) 


c) 


d) 


424. The correct order of increasing acid strength of the compounds
   (A) $CH_3COOH$
   (B) $MeOCH_2COOH$
   (C) $CF_3COOH$
   (D) 

   is
   a) B < D < A < C  b) D < A < C < B  c) D < A < B < C  d) A < D < C < B

425. Acetic acid and $P_2O_5$ reacts to produce which of the following?
   a) Acetic anhydride  b) Acetaldehyde  c) Phosphoric acid  d) Acetone

426. Which of the following is an example of aldol condensation?
   a) $2CH_3CHO \xrightarrow{\text{Dil. NaOH}} CH_3CHOHCH_2CHO$
   b) $HCHO \xrightarrow{\text{Dil. NaOH}} CH_3OH$
   c) $C_6H_5CHO + HCHO \xrightarrow{\text{Dil. NaOH}} C_6H_5CH_2OH$
   d) $2CH_3COCH_3 \xrightarrow{\text{Conc. NaOH}} CH_3C(OH)(CH_3)CH_2COCH_3$

427. Aldehydes behave as:
   a) Oxidising agent
   b) Reducing agent
   c) Dehydrating agent
   d) Oxidizing as well as reducing agent

428. Acetone is prepared by:
   a) Pyrolysis of acetic acid
   b) Oxidation of acetic acid
   c) Pyrolysis of calcium acetate
   d) Oxidation of *n*-propyl alcohol

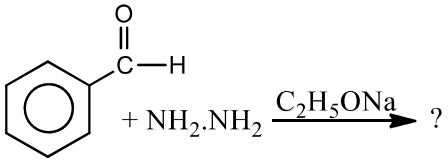
429. Benzaldehyde gives a positive test with
   a) Tollen's reagent  b) Fehling's solution  c) Benedict's solution  d) All of these

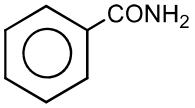
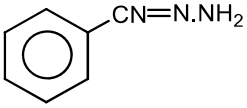
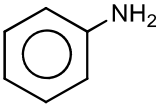
430. Isopropyl alcohol on passing over heated copper at 300°C gives:

a) Propylene b) Acetaldehyde c) Acetone d) None of these

431. Vinegar contains:
a) 10 to 20% acetic acid b) 10% acetic acid c) 6 to 10% acetic acid d) 100% acetic acid

432. What product is formed in the reaction

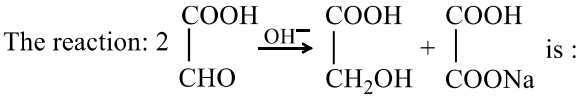


a)  b)  c)  d) None of these

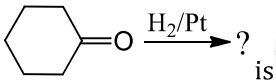
433. Acetaldehyde is the rearrangement product of:
a) Ethyl alcohol b) Vinyl alcohol c) Allyl alcohol d) Methyl alcohol

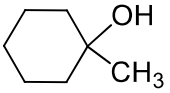
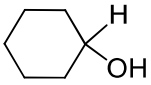
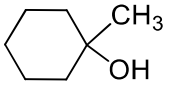
434. When sodium extract is prepared, generally the substance ignites:
a) Na b) $H_2$ c) Organic compound d) $O_2$

435. The compound which forms acetaldehyde when heated with dilute NaOH, is
a) 1, 1-dicholoroethane b) 1, 1, 1-trichloroethane
c) 1-chloroethane d) 1, 2-dichloroethane

436. The reaction:  is :
a) Crossed Cannizzaro reaction
b) Intermolecular Cannizzaro reaction
c) Intramolecular Cannizzaro reaction
d) Either of the above

437. The product of following reaction



a)  b)  c)  d) 

438. Tollen's reagent is:
a) Ammoniacal cuprous chloride
b) Ammoniacal cuprous oxide
c) Ammoniacal silver nitrate
d) Ammoniacal silver nitrite

439. Which structural unit is possessed by aldehyde and not ketone?
a) α-H-atom
b) H-atom and carbonyl group
c) OH and carbonyl group
d) None of the above

440. $CH_3CH_2CHO$ is produced when the following is hydrolysed:
a) $CH_3CH_2CH_2Cl$ b) $CH_3CHClCH_2Cl$ c) $CH_3CH_2CHCl_2$ d) $CH_3C \cdot Cl_2 \cdot CH_3$

441. Acetaldehyde undergoes self condensation in presence of aluminium ethoxide to give ethyl acetate. This reaction is called:
a) Perkin reaction b) Tischenko's reaction c) Cannizzaro's reaction d) Aldol condensation

442. Formaldehyde polymerises from 6 to 100 molecules to form:
a) Formalin b) Metaldehyde c) Para formaldehyde d) None of these

443. Magenta is:
a) Alkaline phenolphthalein

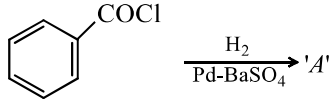
b) Red litmus
c) *p*-rosaniline hydrochloride
d) Methyl red

444. Aldehyde which is formed during photosynthesis of plants is
a) Methanal b) Acetaldehyde c) Propanal d) Phenylmethanal

445. Which of the following carboxylic acids undergoes decarboxylation easily?
a) $C_6H_5—CO—CH_2COOH$ b) $C_6H_5—CO—COOH$ c) $C_6H_5—\underset{\underset{OH}{|}}{CH}—COOH$ d) $C_6H_5—\underset{\underset{NH_2}{|}}{CH}—COOH$

446. The salicylic acid reacts with both the neutral $FeCl_3$ solution and in esterification reaction because it contains:
a) Both an acid group and an alcoholic group
b) Both an acid group and an aldehydic group
c) Both an acid group and a phenolic group
d) Both an acid and ester group

447. Consider the following reaction:




The product '*A*' is:
a) $C_6H_5CHO$ b) $C_6H_5OH$ c) $C_6H_5COCH_3$ d) $C_6H_5Cl$

448. Ink stains can be removed from clothes by treating them with:
a) Formic acid b) Acetic acid c) Benzoic acid d) Oxalic acid

449. Identify 'acetaldoxime'
a) $CH_3CH = N - NH_2$ b) $CH_3CH = N - OH$ c) $(CH_3)_2C = N - OH$ d) $CH_2 = N - OH$

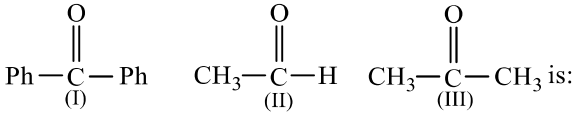
450. Benzaldehyde and acetaldehyde can be distinguished by:
a) Iodoform test
b) 2 : 4 DNP test
c) $NH_3$ reaction
d) Wolff-Kishner's reduction

451. Ethyl benzoate reacts with $PCl_5$ to give
a) $C_2H_5Cl + C_6H_5COCl + POCl_3 + HCl$ b) $C_2H_5Cl + C_6H_5COCl + POCl_3$
c) $CH_3COCl + C_6H_5COCl + POCl_3$ d) $C_2H_5Cl + C_6H_5COOH + POCl_3$

452. Lactic acid extracted from muscles is:
a) *laevo*-rotatory
b) *dextro*-rotatory
c) Similar with synthetic lactic acid
d) None of the above

453. Phenol is soluble in:
a) Dilute HCl
b) Both NaOH solution and dilute HCl
c) $NaHCO_3$ solution
d) NaOH solution

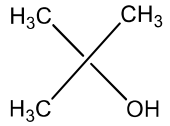
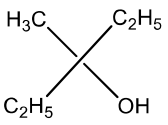
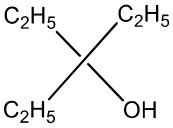
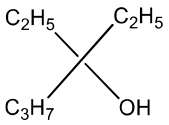
454. The correct order of reactivity of PhMgBr with,

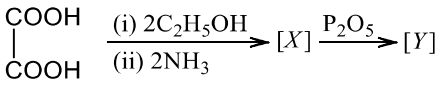



is:
a) I > II > III b) III > II > I c) II > III > I d) II > I > III

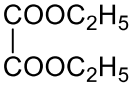
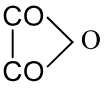
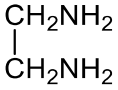
455. Reactions between organic compounds are generally slow because they are:
a) Ionic b) Covalent c) Metallic d) None of these

456. Ethyl ester $\xrightarrow[\text{(excess)}]{CH_3MgBr}$ $P$, the product '$P$ will be

a) 
b) 
c) 
d) 

457. 

What is''$Y$'' ?

a) 
b) 
c) 
d) 

458. Lemon gives sour taste because of
a) Citric acid b) Tartaric acid c) Oxalic acid d) Acetic acid

459. On warming formic acid with ammoniacal silver nitrate, the product formed is:
a) Silver oxide b) Metallic silver c) Silver formate d) Formaldehyde

460. Simple distillation is used to separate liquids which differ in their boiling point by:
a) 5°C b) 10°C c) $30^{\circ} - 80°C$ d) Less than 20°C

461. Maximum percentage of chlorine is in:
a) Pyrene b) PVC c) Chloral d) Ethylidene chloride

462. Which of the following aldehydes give red precipitated with Fehling solution?
a) Benzaldehyde b) Salicylaldehyde c) Acetaldehyde d) None of these

463. Pinacole is:
a) 2,3-dimethyl-2,3-butandiol
b) 3,3-dimethyl-2-propanone
c) 3-methyl butan-2-ol
d) None of the above

464. $CH_3CHO \xrightarrow{HCN} A \xrightarrow{HOH} B$. The product $B$ is
a) Malonic acid b) Glycolic acid c) Lactic acid d) Malic acid

465. A mixture of calcium acetate and calcium formate on heating gives:
a) $CH_3COCH_3$ b) $CH_3CHO$ c) HCHO d) All of these

466. Which of the following can be used to differentiate between aldehyde and ketone?
a) Ammoniacal $AgNO_3$
b) Ammoniacal $AgNO_3$ in presence of tartarate ion
c) $I_2$ in the presence of base
d) Ammoniacal $AgNO_3$ in the presence of citrate ion

467. If the compound contains C, H and halogen. When C and H are to be estimated the combustion tube at the exit should contain a:
a) Copper spiral b) Silver spiral c) Lead spiral d) Iron spiral

468. A ketone on reduction gives:
a) Primary alcohol
b) Secondary alcohol
c) A dihydric alcohol
d) A mixture of above all three

469. Which is least soluble in water?
a) Phenol b) Ethanol c) Benzene d) Benzoic acid

470. In a set of reactions propionic acid yielded a compound $D$.

$$CH_3CH_2COOH \xrightarrow{SOCl_2} B \xrightarrow{NH_3} C \xrightarrow[Br_2]{KOH} D$$

The structure of *D* would be:

a) $CH_3CH_2NHCH_3$ b) $CH_3CH_2NH_2$ c) $CH_3CH_2CH_2NH_2$ d) $CH_3CH_2CONH_2$

471. Acetals are:

a) Aldehyde b) Diethers c) Ketones d) Hydroxy aldehydes

472. Hexamethylene tetramine is used as an:

a) Analgesic b) Antipyretic c) Urinary antiseptic d) All of these

473. Which of the following gives an aldehyde on dry distillation?

a) Calcium formate + calcium acetate b) Calcium acetate + calcium benzoate

c) Calcium acetate d) Calcium benzoate

474. Which aldehyde cannot be obtained by Rosenmund's reaction?

a) $CH_3CHO$ b) $HCHO$ c) $CH_3CH_2CHO$ d) All of these

475. Which is tribasic acid?

a) Malonic acid b) Citric acid c) Valeric acid d) Tartaric acid

476. Which of the following on heating with aqueous KOH, produces acetaldehyde?

a) $CH_3COCl$ b) $CH_3CH_2Cl$ c) $CH_2ClCH_2Cl$ d) $CH_3CHCl_2$

477. Fruits are preserved by using:

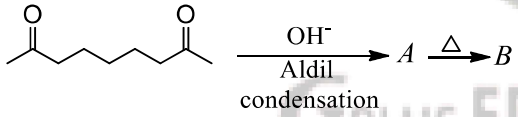
a) Aldehydes b) Sodium benzoate c) Formic acid d) Salicylic acid

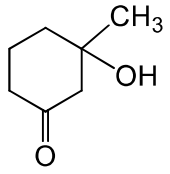
478. End product of the following reaction is

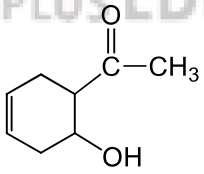
$$CH_3CH_2COOH \xrightarrow[\text{red P}]{Cl_2} X \xrightarrow{\text{Alc.KOH}}$$

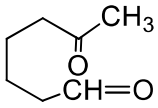
a) $CH_3CH_2COOH$ (OH) b) $CH_2CH_2COOH$ (OH) c) $CH_2 = CHCOOH$ d) $CH_2CHCOOH$ (Cl, OH)

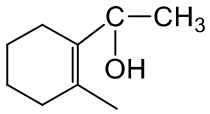
479. Predict the product for the following




a) 


b) 


c) 


d) 


480. Ketones can be prepared by:

a) Rosenmund's reduction

b) Stephen's reduction

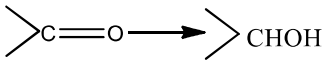
c) Both (a) and (b)

d) None of the above

481. The percentage of nitrogen in urea is about:

a) 64.6 b) 46.7 c) 35.8 d) 28

482. Collin's reagent is used to convert

a) 


b) $-CH_2OH \rightarrow CHO$

c) $-CHO \longrightarrow -COOH$ d) $-CHO \longrightarrow -CH_2OH$

483. Which of the following reactant give Tollen's reagent and Fehling's solution test?

a) $CH_3CHO$ b) $CH_3COOH$ c) $CH_3 - \underset{\underset{O}{\|}}{C} - CH_3$ d) $CH_3 - CH_2COOH$

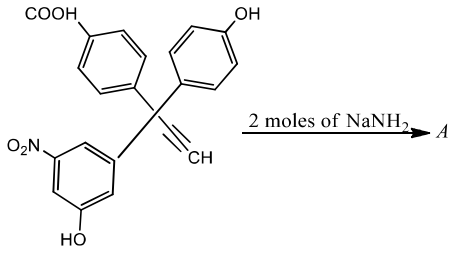
484. Reduction of aldehydes and ketones into hydrocarbons using Zn – Hg HCl conc. is called?

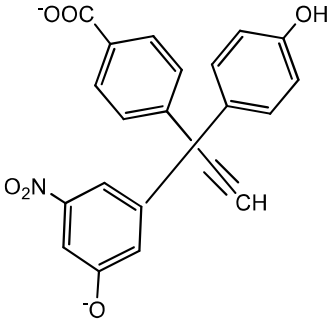
a) Cope reaction

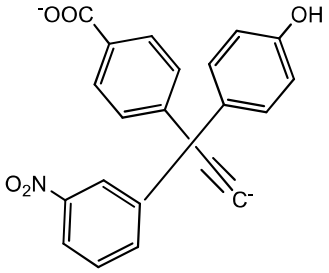
b) Dow reaction

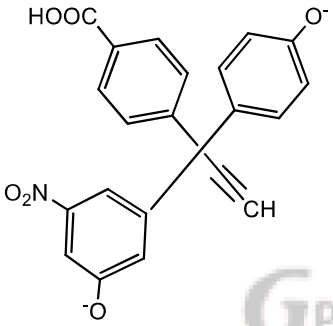
c) Wolff-Kishner reaction
d) Clemmensen reduction

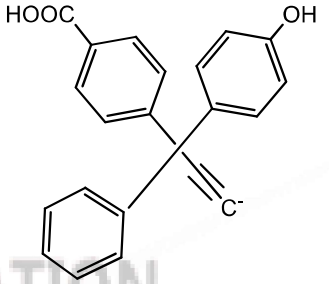
485. How will you convert butan-2-one to propanoic acid?
a) Tollen's reagent b) Fehling solution c) NaOH $/I_2/H^+$ d) $NaOH/NaI/H^+$

486. 


a) 


b) 


c) 


d) 


487. When vapours of acetic acid are passed over .... 300°C we get acetone.
a) $Al_2O_3$ b) CuO c) MoO d) Cu

488. Which product is obtained on reduction of methanal in the presence of concentrated NaOH?
a) Formic acid and methyl alcohol b) $CO + H_2$
c) Methyl alcohol d) Formic acid

489. Which of the following doesn't give Fehling solution test?
a) Acetone b) Propanal c) Ethanal d) Butanal

490. Which gives smell of burnt sugar on charring?
a) Tartaric acid b) Formic acid c) Oxalic acid d) Acetic acid

491. Hydrated oxalic acid contains:
a) 5 water molecules b) 1 water molecule c) 2 water molecules d) 4 water molecules

492. Cacodyl test is used for identification of:
a) HCOOH b) $CH_3COOH$ c) Oxalic acid d) Tartaric acid

493. During hydrogenation of oils vegetable ghee is formed. In this process:
a) Hydrogen is dissolved in the oil
b) Hydrogen combines with $O_2$ of the oil
c) Esters of unsaturated fatty acids are reduced to those of saturated acids
d) Hydrogen drives off impurities from the oil

494. Hydrogenation of $C_6H_5CHOH - COOH$ over $Rh - Al_2O_3$ catalyst in methanol gives
a) $C_6H_5CH_2COOH$ b) $C_6H_{11}CH_2COOH$ c) $C_6H_5CHOH.CH_2OH$ d) $C_6H_{11}CHOH - COOH$

495. Formaldehyde can be distinguished from acetaldehyde by the use of:
a) Schiff's reagent b) Tollen's reagent c) Fehling's solution d) NaOH and iodine

496. Which of the following carbonyl compounds on condensation gives an aromatic compound?
a) $CH_3CHO$ b) $HCHO$ c) $(CH_3)_2CO$ d) $CH_3CH_2CHO$

497. Mild oxidation of carboxylic acids occurs at…….position.
a) α b) γ c) β d) δ

498. The compound obtained by the reduction of propionaldehyde by Zn/Hg and conc. HCl is:
a) Propanol b) Propane c) Propene d) None of these

499. Almost all amides exist in:
a) Solid state
b) Liquid state
c) Gaseous state
d) Liquid and gaseous state

500. In public urinals, we observe some nascent smell. This smell is due to:
a) Hydrolysis of urea of urine by urease of atmosphere into $NH_3$ and $CO_2$
b) Formation of sulphamic acid by urea of urine
c) Reaction of $CO_2$ of atmosphere with urea mononitrate in urine
d) Hydrogen present in air reacts with nitrogen forming $NH_3$

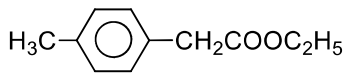
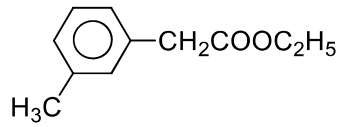
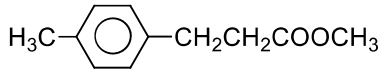
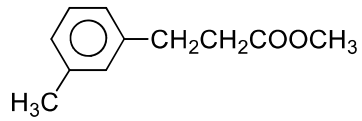
501. Trichloroacetaldehyde was subjected to Cannizaro's reaction by using $NaOH$.The mixture of the products contains sodium trichloroacetate ion and another compound. The other compound is
a) 2, 2, 2-trichlorethanol b) Trichloromethanol
c) 2, 2, 2-trichloropropanol d) Chloroform

502. The end products in the Cannizaro reaction of benzaldehyde is
a) $PhCO_2H, PhCH_2OH$ b) $PhCO_2H, PhCH_2CO_2H$ c) $PhCH_2OH, PhCOCH_3$ d) $PhCO_2H, PhCOCH_3$

503. Turpentine oil can be purified by:
a) Vacuum distillation b) Fractional distillation c) Steam distillation d) Simple distillation

504. $CH_3NH_2$ is heated with sodium and extracted with water and then $AgNO_3$ is added. The white ppt. obtained is of:
a) AgCN b) $Ag_2SO_4$ c) AgCl d) $Cl \cdot CH_2COOAg$

505. An ester $(A)C_{11}H_{14}O_2$ was treated with $LiAlH_4$ to give compound $(B)C_9H_{12}O$ and $(C)C_2H_6O$. $B$ on slight heating with an acid forms$(D)C_9H_{10}$. Compound $D$ on vigorous oxidation with $KMnO_4$ gives terephthalic acid. The compound $(A)$, is

a) 
b) 
c) 
d) 

506. Elements found in explosive are:
a) S b) N c) Both S and N d) C

507. Which acid forms Zwitter ions?
a) $CH_3COOH$ b) Salicylic acid c) Phthalic acid d) Sulphanilic acid

508. Acetaldehyde cannot show
a) Iodoform test b) Lucas test c) Benedict's test d) Tollen's test

509. In Lassaigne's test for N, S and halogens, the organic compound is:
a) Fused with sodium
b) Dissolved with sodamide
c) Extracted with sodamide
d) Fused with calcium

510. The number of aldehydes of molecular formula $C_5H_{10}O$ is:
a) 2 b) 3 c) 4 d) 5

511. Which of the following compound a would have the smallest value of $pK_a$?
a) $CHF_2CH_2CH_2COOH$ b) $CH_3CH_2CF_2COOH$ c) $CH_2FCHFCH_2COOH$ d) $CH_3CF_2CH_2COOH$

512. Hydrolysis of an ester gives acid $A$ and alcohol $B$. The acid reduces Fehling's solution. Oxidation of alcohol $B$ gives acid $A$. The ester is:
a) Methyl formate b) Ethyl formate c) Methyl acetate d) Ethyl acetate

513. Weakest acid among the following is:
a) $CH_3COOH$ b) $CH_2ClCOOH$ c) $(CH_3)_2CHCOOH$ d) $CCl_3COOH$

514. What is the product in following cross Claisen condensation?

$$C_2H_5COOC_2H_5 + \begin{matrix}COOC_2H_5\\ |\\ COOC_2H_5\end{matrix} \xrightarrow[H^+]{C_2H_5ONa} ?$$

a) $CH_3CH(COOC_2H_5)(COOC_2H_5)$ b) $CH_3-CH(COCOOC_2H_5)(COCOOC_2H_5)$

c) $CH_3CH(COCOOC_2H_5)(COOC_2H_5)$ d) $CH_3-CH(COCOC_2H_5)(COC_2H_5)$

515. 0.22 g of organic compound $C_xH_yO$ which occupied 112 mL at NTP and on combustion gave 0.44 g $CO_2$. The ratio of $X$ to $Y$ in the compound is:
a) 1 : 1 b) 1 : 2 c) 1 : 3 d) 1 : 4

516. Rate of the reaction:

$$R-C(=O)-Z + Nu^{\ominus} \longrightarrow R-C(=O)-Nu + Z^{\ominus}$$

a) $OCOCH_3$ b) $NH_2$ c) $OC_2H_5$ d) Cl

517. Among the following acids which has the lowest p$K_a$ value?
a) $CH_3CH_2COOH$ b) $(CH_3)_2CH-COOH$ c) $HCOOH$ d) $CH_3COOH$

518. The reaction of an organic compound with ammonia followed by nitration of the product gives a powerful explosive, called RDX. The organic compound is
a) Phenol b) Toluene c) Glycerine d) Formaldehyde

519. The decreasing order of solubility of methanal $(A)$, propanaldehyde $(B)$, benzaldehyde $(C)$ and acetophenone $(D)$:
a) $A > B > C > D$ b) $D > C > B > A$ c) $D > A > B > C$ d) $B > A > C > D$

520. Why —OH group in ethyl alcohol is neutral, while it is acidic in acetic acid?
a) In acetic acid —OH group is attached with electronegative carbonyl group
b) Ethyl alcohol molecules get associated
c) Acetic acid has much stronger hydrogen bonding
d) All of the above

521. The class of compounds that are reduced to primary alcohols and also respond to Fehling's solution are known as:
a) Aliphatic aldehydes b) Aliphatic ketones c) Aromatic amines d) Aromatic ketones

522. $CH_3-CHO + HCN \rightarrow$ A.Compound $A$ on hydrolysis gives
a) $CH_3-CH_2-COOH$ b) $CH_3-CH_2-CH_2-NH_2$
c) $CH_3-CO-COOH$ d) $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-COOH$

523. Which of the following aldehydes on chlorination will give a product, which can be used for the synthesis of DDT?
a) HCHO b) $CH_3CHO$ c) $CH_3CH_2CHO$ d) $C_6H_5CHO$

524. The relation of the isoelectric point for an amino acid to solubility is:

a) The two are not related
b) An amino acid is the least soluble at the isoelectric point
c) An amino acid has the maximum solubility at the isoelectric point
d) Solubilities of only some amino acids depend on it

525. The discovery that shocked the vital force theory was:
a) Stereoisomerism
b) Synthesis of indigo
c) Wöhler's synthesis of urea from $NH_4CNO$
d) Fermentation of sugars

526. α-chloropropionic acid on treatment with alcoholic KOH followed by acidification gives:
a) $CH_3$—CH(OH)—COOH
b) $CH_2$=CH—COOH
c) HO—$CH_2$—$CH_2$—COOH
d) None of the above

527. A mixture of camphor and NaCl can be separated by:
a) Sublimation b) Evaporation c) Filtration d) Decantation

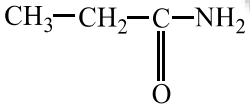
528. When $CH_2$=CH—COOH is reduced by $LiAlH_4$, the compound obtained is:
a) $CH_3CH_2COOH$ b) $CH_2$=$CHCH_2OH$ c) $CH_3CH_2CH_2OH$ d) $CH_3CH_2CHO$

529. Among the given compounds, the most susceptible to nucleophile attack at the carbonyl group is:
a) MeCOCl b) MeCHO c) MeCOOMe d) MeCOOCOMe

530. In Tischenko's reaction an aldehyde is heated with catalyst:
a) NaOH
b) $Al(OC_2H_5)_3$
c) $Al_2O_3$
d) Mg/Hg

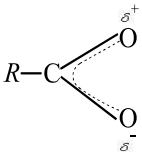
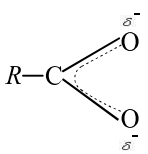
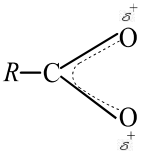
531. Identify *Z* in the sequence,

$$CH_3CO\bar{O}NH_4^+ \xrightarrow[2.\ P_2O_5]{1.\ Heat} Y \xrightarrow{H_2O(H^+)} Z:$$

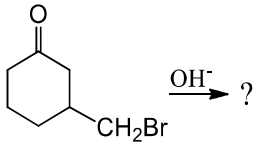
a)  b) $CH_3CN$ c) $CH_3COOH$ d) $(CH_3CO)_2O$

532. In the α-halogenation of aliphatic acids (HVZ reaction) the catalyst used is:
a) Zn b) P c) $FeCl_3$ d) $AlCl_3$

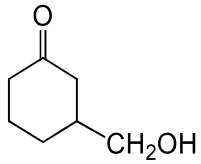
533. Distillation under reduced pressure in principle resembles with:
a) Steam distillation
b) Fractional distillation
c) Azeotropic distillation
d) All of these

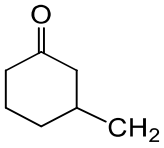
534. Which of the following does the best represent the structure of the carboxylate ion?
a)  b)  c)  d) None of these

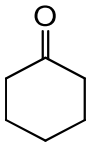
535. Acetic acid is obtained when:
a) Glycerol is heated with sulphuric acid
b) Methyl alcohol is oxidized with potassium permanganate
c) Acetaldehyde is oxidized with potassium dichromate and sulphuric acid
d) Calcium acetate is distilled in presence of calcium formate

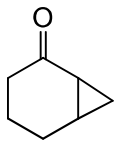
536. 

Product is

a) 

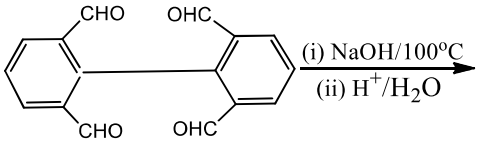
b) 

c) 

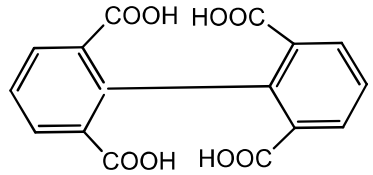
d) 

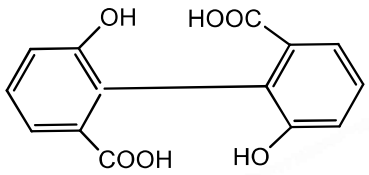

537. Acetophenone is used in:
a) Toilet soaps
b) Preparation of hypnotic drug
c) Perfumery
d) Phenacyl chlorine preparation used in tear gas shells

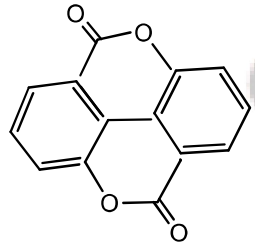
538. In organic compounds sulphur is estimated as:
a) $H_2SO_4$ b) $BaSO_4$ c) $SO_2$ d) $BaCl_2$

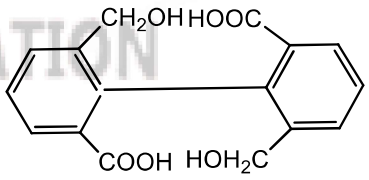
539. 

Major product is

a) 

b) 

c) 

d) 


540. Malonic acid and succinic acid are distinguished by:
a) Heating b) $NaHCO_3$ c) Both (a) and (b) d) None of these

541. Pleasant odours of common fruits is due to:
a) Alcohol b) Fats c) Sugars d) Esters

542. Which one of the following pairs gives effervescence with aq. $NaHCO_3$?

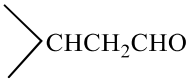
| | |
|---|---|
| $CH_3COCl$ (I) | $CH_3COCH_3$ (II) |
| $CH_3COOCH_3$ (III) | $CH_3COOCOCH_3$ (IV) |

a) I and II b) I and IV c) II and III d) I and III

543. The reduction of aldehydes and ketones to the corresponding alkanes in presence of alkaline hydrazine solution is called:
a) MPV reaction
b) Stephen reduction
c) Wolff-Kishner's reduction
d) Cannizzaro's reaction

544. The acid showing salt like structure in aqueous solution is:
a) Acetic acid b) Benzoic acid c) Formic acid d) α-aminoacetic acid

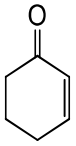
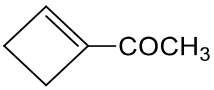
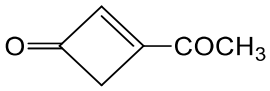
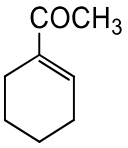
545. Cannizaro reaction is given by

a) HCHO b)  c)  d) $CH_3CH_2OH$

546. Acetone on addition to methyl magnesium bromide forms a complex, which on decomposition with acid gives *X* and Mg(OH)Br. Which one of the following is *X*?

a) $CH_3OH$ b) $(CH_3)_3COH$ c) $(CH_3)_2CHOH$ d) $CH_3CH_2OH$

547. $OHC(CH_2)_3COCH_3 \xrightarrow[\Delta]{OH^-}$? Major product is

a)  b)  c)  d) 

548. $CH_3CH_2OH \xrightarrow[I]{Cu,573\ K} X \xrightarrow[II]{[O]} Y \xrightarrow[III]{Br_2,P} BrCH_2COOH$

Reaction I, II and III respectively are

a) Reduction, oxidation and substitution b) Dehydration, oxidation and substitution

c) Dehydrogenation, oxidation and substitution d) Dehydration, oxidation and elimination

549. Chromatographic techniques of purification can be used for:

a) Coloured compounds b) Liquids c) Solids d) All of these

550. Decarboxylation of malonic acid gives:

a) HCHO b) COOH—COOH c) $CH_3COOH$ d) $CH_4$

551. Which of following reactions convert acetone into hydrocarbon having same number of carbon atoms?

a) Wolff-Kishner reaction b) Hofmann reaction

c) Grignard reaction d) Reduction with $LiAlH_4$

552. A compound $C_5H_{10}O$ gives a positive test of carbonyl group, gives a negative test with Fehling solution but gives positive haloform test and on reduction it gives normal pentane. Identify the compound

a) 3-pentanone b) 2-pentanone c) 1,5-pentanediol d) None of these

553. Fruity smell is given by

a) Esters b) Alcohols c) Chloroform d) Acid anhydrides

554. The reaction of a carboxylic acid gives effervescences of $CO_2$ with $NaHCO_3$. The $CO_2$ comes from:

a) *R* —COOH b) $NaHCO_3$ c) Both (a) and (b) d) None of these

555. Hydrolysis of HCN gives:

a) Acetic acid b) Formaldehyde c) Acetaldehyde d) Formic acid

556. Which of the following is an example of aldol condensation?

a) $2CH_3COCH_3 \xrightarrow{Dil.NaOH} CH_3COHCH_3CH_2COCH_3$ b) $2HCHO \xrightarrow{Dil.NaOH} CH_3OH$

c) $C_6H_5CHO + HCHO \xrightarrow{Dil.NaOH} C_6H_5CH_2OH$ d) None of the above

557. Benedict's solution provides:

a) $Ag^+$ b) $Cu^{2+}$ c) $Ba^{2+}$ d) $Li^+$

558. Which of the following product is formed in the reaction

$CH_3MgBr \xrightarrow[(ii)H_2O]{(i)CO_2}$ ?

a) Acetic acid b) Methanoic acid c) Methanol d) Ethanal

559. The Cannizaro reaction is not given by

a) Trimethyl acetaldehyde b) Acetaldehyde

c) Benzaldehyde d) Formaldehyde

560. Carboxylic acids readily dissolve in aqueous sodium bicarbonate, liberating carbon dioxide. Which one of the following is correct?

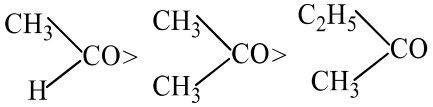
a) Free carboxylic acid and its conjugate base are of comparable stability.

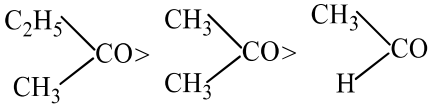
b) The free carboxylic acid is more stable than its conjugate base.

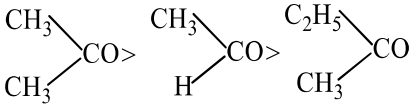
c) The conjugate base of the carboxylic acid is more stable than the free carboxylic acid.
d) The conjugate acid of the carboxylic acid is more stable than the free carboxylic acid.

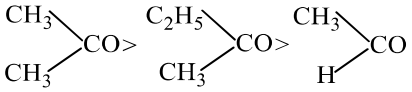
561. $ClCH_2COOH$ is heated with fuming $HNO_3$ in the presence of $AgNO_3$ in Carius tube. After filtration and washing the precipitate obtained is:
a) $AgNO_3$ b) AgCl c) $Ag_2SO_4$ d) $ClCH_2COOA_g$

562. The correct order of reactivity of $>CO$ group in given compounds is :

a) 

b) 

c) 

d) 

563. Doctors detect diabetes disease by testing the presence of glucose in urine with :
a) Nessler's reagent b) Fehling's solution c) Fenton's reagent d) Silver nitrate solution

564. Which reaction is used for the preparation of acetophenone?
a) Reimer-Tiemann reaction b) Wurtz-Fittig reaction
c) Friedel-Craft's reaction d) Cannizaro's reaction

565. Carbonyl group undergoes:
a) Electrophilic addition reactions
b) Nucleophilic addition reactions
c) Both (a) and (b)
d) None of the above

566. Carbon shows maximum capacity of catenation because:
a) Carbon shows variable valency
b) In carbon there is one extra empty *d*-orbital
c) C—C bond strength is very low
d) C—C bond strength is very high

567. The enol form of acetone after treatment with $D_2O$, give
a) $H_3-\underset{\underset{OD}{|}}{C}=CH_3$ b) $H_3C-\overset{\overset{O}{||}}{C}-CD_3$ c) $H_2C=\underset{\underset{OH}{|}}{C}-CH_2D$ d) $H_2C=\underset{\underset{OH}{|}}{C}-CHD_2$

568. An important reaction of acetone is autocondensation in presence of concentrated sulphuric acid to give the aromatic compound
a) Mesitylene b) Mesityl oxide c) Trioxan d) Phorone

569. Acetals are
a) Ketones b) Diethers c) Aldehyde d) Hydroxy aldehydes

570. Azeotropes are:
a) Liquid mixture, which distil unchanged in composition
b) Liquids mixed in equal proportion
c) Sodium which form solutions of definite composition
d) Gaseous mixture, which cannot be separated

571. The name glacial acid is given to pure acetic acid:
a) Below 16.6°C it is white liquid

b) It forms ice like solid below 16.6°C
c) It is mixed with methanol
d) Pure acetic acid above 16.6°C

572. The conversion of $CH_3OH$ to $CH_3COOH$ can be brought in by:
a) $K_2Cr_2O_7/H^+$ b) $CO + Rh$ c) $KMnO_4$ d) $H_3PO_4$

573. The IUPAC name of tartaric acid is:
a) 2,3-dihydroxy butane-1-4-dicarboxylic acid
b) 1,4-dihydroxy butane-2-3-dioic acid
c) Butane-1-4-dicarboxylic acid
d) None of the above

574. The IUPAC name of caproic acid is:
a) Pentanoic acid b) Hexanoic acid c) Heptanoic acid d) Octanoic acid

575. An azeotropic mixture of ethanol and water is first treated with ..... before subjecting for fractional distillation to separate them.
a) Anhydrous lime b) $C_6H_6$ c) Both (a) and (b) d) None of these

576. Acetaldehyde on oxidation with $SeO_2$ gives:
a) $CH_3COOH$ b) $C_2H_5OH$ c) CHO·CHO d) None of these

577. Acetaldehyde is used:
a) In the preparation of dyes
b) In the preparation of chloral
c) In the preparation of paraldehyde
d) All are correct

578. Consider the following reactions,
$CH_3COOH \xrightarrow{CaCO_3} A \xrightarrow{Heat} B$
Compound $B$ is:
a) An ether b) An alcohol c) An aldehyde d) A ketone

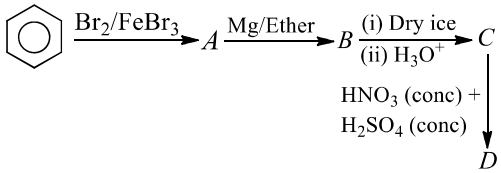
579. Ethanal reacts with alkali to give 3-hydroxybutanal. This reaction is:
a) Polymerisation
b) Claisen condensation
c) Reimer-Tiemann reaction
d) Aldol condensation

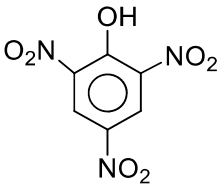
580. When acetic acid is dissolved in benzene its molecular mass:
a) Decreases
b) Increases
c) Either decreases or increases
d) Suffers no change

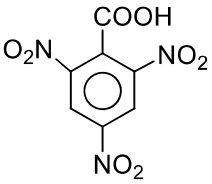
581. Chloral is prepared industrially by the chlorination of:
a) Propanone b) Formaldehyde c) Ethanol d) Chloroform

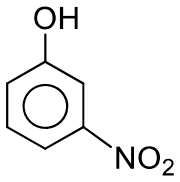
582. Paraldehyde is used as a:
a) Soporific b) Poison c) Polymer d) Dye

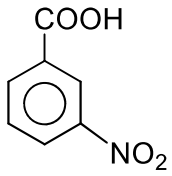
583. Identify the final product ($D$) of the reaction



a) 


b) 


c) 

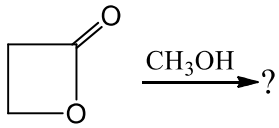

d) 

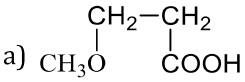

584. Ketones are prepare by:
   a) Clemmensen's reduction
   b) Rosenmund's reduction
   c) Oppenauer's oxidation
   d) Cannizzaro's reaction

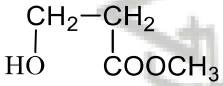
585. The correct sequence of decreasing order of reactivity of hydrolysis of acid chlorides is
   a) $\mathrm{PhCOCl} > p-\mathrm{O_2NC_6H_4COCl} > p-\mathrm{CH_3OC_6H_4COCl}$
   b) $\mathrm{PhCOCl} > p-\mathrm{CH_3OC_6H_4COCl} > p-\mathrm{O_2NC_6H_4COCl}$
   c) $\mathrm{p-O_2NC_6H_4COCl} > PhCOCl > p-\mathrm{CH_3OC_6H_4COCl}$
   d) $\mathrm{p-O_2NC_6H_4COCl} > p-\mathrm{CH_3OC_6H_4COCl} > PhCOCl$

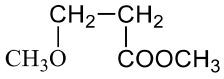
586. When acetamide is treated with $Br_2$ and caustic soda, the product formed is
   a) N-bromamide  b) Bromoacetic acid  c) Methanamine  d) Ethanamine

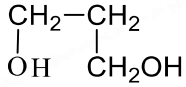
587. The product ($A$) of the following reaction




a) 


b) 


c) 


d) 


588. Nitration of salicylic acid will give:
   a) 2,4,6-trinitophenol
   b) 2,4,6-trinitrobenzoic acid
   c) 2,4,6-trinitrobenzene
   d) None of the above

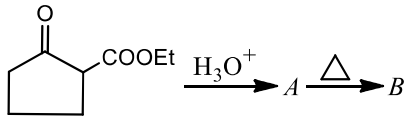
589. In Dumas' method of estimation of nitrogen 0.35 g of an organic compound gave 55mL of nitrogen collected at 300 K temperature and 715 mm pressure. The percentage composition of nitrogen in the compound would be:
   (Aqueous tension at 300 K = 15 mm)
   a) 14.45  b) 15.45  c) 16.45  d) 17.45

590. A powerful sedative made from acetaldehyde is:
   a) Acetic anhydride  b) Paraldehyde  c) Acetic acid  d) Acetamide

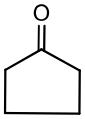
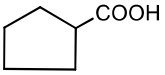
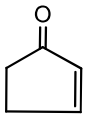
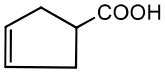
591. An organic compound of molecular formula $C_3H_6O$ did not give a silver mirror with Tollen's reagent, but gave an oxime with hydroxylamine, it may be
   a) $CH_3-CO-CH_3$  b) $C_2H_5CHO$
   c) $CH_2=CH-CH_2-OH$  d) $CH_3-O-CH=CH_2$

592. Trichloroacetaldehyde was subjected to Cannizzaro's reaction by using NaOH. The mixture of the products conatains sodium trichloroacetate ion and another compound. The other compound is:
   a) 2,2,2-Trichloroethanol
   b) Trichloromethanol
   c) 2,2,2-Trichloropropanol
   d) Chloroform

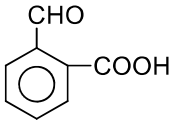
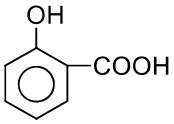
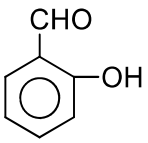
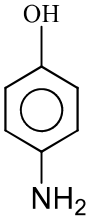
593. Acetic anhydride is prepared in the laboratory by heating sodium acetate with
   a) Ethyl chloride  b) Acetyl chloride  c) Conc. $H_2SO_4$  d) Zinc dust

594. 

The compound B is

a)  b)  c)  d) 

595. Which one of the following compound gives aspirin on reacting with acetic anhydride in presence of $H_2SO_4$ ?

a)  b)  c)  d) 

596. The acid which contains the aldehyde group is

a) Acetic acid b) Formic acid c) Benzoic acid d) Propionic acid

597. When acetyl chloride reacts with any amine, the reaction is known as:

a) Saponification b) Esterification c) Acetylation d) Condensation

598. Fehling solution is

a) $CuSO_4$+lime b) $CuSO_4$ + $NaOH(aq)$ c) $CuSO_4 + Na_2CO_3$ d) None of these

599. In the Rosenmund's reaction

$RCOCl + H_2 \xrightarrow{Pd/BaSO_4} RCHO + HCl$ $BaSO_4$ here

a) Promotes catalytic activity of Pd b) Removes the HCl formed in the reaction

c) Deactivates palladium d) Activates palladium

600. Formaldehyde can be manufactured from:

a) Natural gas b) Water gas c) Both (a) and (b) d) None of these

601. Which of the following methods is not employed to prepare methyl benzoate $C_6H_5COOCH_3$?

a) $C_6H_5COOH, (CH_3)_2SO_4$, b) $C_6H_5COCl, C_2H_5OH$ c) $C_6H_5COOH, CH_2N_2, \Delta$ d) $C_6H_5COOC_2H_5, CH_3OH,$ I

602. The boiling and melting points of carboxylic acids depend on:

a) Hydrogen bonding b) Polarization c) Resonance d) All of these

603. Complete the following reaction $RCOOH \xrightarrow[\Delta]{P_2O_5} ?$

a) Acid anhydride b) Ketone c) Aldehyde d) Ester

604. Which of the following does not undergo Cannizaro's reaction?

a) Benzaldehyde b) 2-methylpropanal

c) *p*-methoxybenzaldehyde d) 2,2-dimethylpropanal

605. The strongest acid amongst the following compound is:

a) $CH_3COOH$ b) HCOOH c) $CH_3CH_2CH(Cl)COOH$ d) $ClCH_2CH_2CH_2COOH$

606. Phthalic acid

$\Delta\downarrow$

$A \xrightarrow{NH_3} B \xrightarrow[H_2O]{NaOH} C \xrightarrow{Br_2/KOH} D \xrightarrow{HCl} E$

In this reaction, the product $E$ is

a) *o*-nitrobenzoic acid b) Salicylic acid c) Anthranilic acid d) Crotonic acid

607. In the Lassaigne's test the Sulphur present in the organic compound first changes into:

a) $Na_2SO_3$ b) $CS_2$ c) $Na_2SO_4$ d) $Na_2S$

608. Which of the following statements is correct about a carbonyl group?
   a) The carbonyl carbon is *sp*-hybridised
   b) The carbonyl carbon is $sp^3$-hybridised
   c) The three groups attached to the carbonyl carbon lie in the same plane
   d) The three groups attached to the carbonyl carbon lie in different planes

609. Formaldehyde and formic acid can be distinguished by:
   a) Tollen's reagent  b) Fehling's solution  c) Ferric chloride  d) $NaHCO_3$

610. Oxidation of which compound is not possible?
   a) $CH_3-COOH$  b) $CH_3-CO-CH_3$  c) $CH_3-CHO$  d) $CH_3-CH_2-OH$

611. Which type of isomerism is not common in carboxylic acid?
   a) Chain  b) Functional  c) Metamer  d) Optical

612. The acidity of the compounds $RCOOH, H_2CO_3, C_6H_5OH, ROH$ decreases in the order
   a) $RCOOH > H_2CO_3 > C_6H_5OH > ROH$  b) $C_6H_5OH > RCOOH > H_2CO_3 > ROH$
   c) $ROH > C_6H_5OH > RCOOH > H_2CO_3$  d) $H_2CO_3 > RCOOH > C_6H_5OH > ROH$

613. Which one of the following will undergo *meta*-sustitution on monochlorination?
   a) Ethoxybenzene  b) Chlorobenzene  c) Ethyl benzoate  d) Phenol

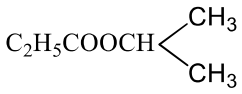
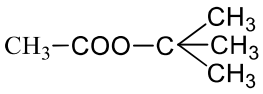
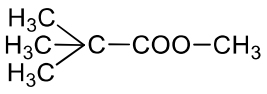
614. When acetamide is hydrolysed by boiling with acid, the product obtained is
   a) Acetic acid  b) Ethyl amine  c) Ethanol  d) acetamide

615. $CH_3COOH \xrightarrow{Br_2/P} Y \xrightarrow[(ii)H_3O^+]{(i)KCN} X$ Here, $X$ is
   a) Glycollic acid  b) $\alpha$ –hydroxy propionic acid
   c) Succinic acid  d) Malonic acid

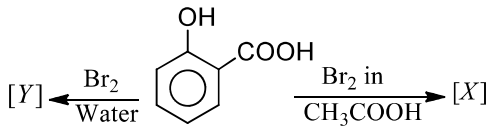
616. Lemon is sour due to:
   a) Citric acid  b) Tartaric acid  c) Oxalic acid  d) Acetic acid

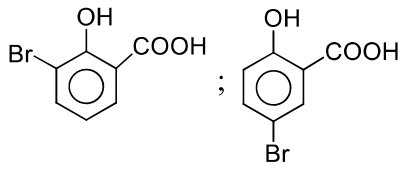
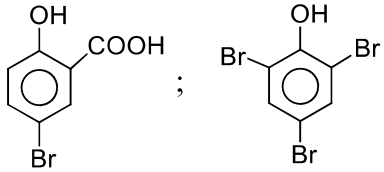
617. Both acetaldehyde and ketone react with:
   a) Ammoniacal $AgNO_3$
   b) Rochelle salt
   c) 2,4-dinitro phenylhydrazine
   d) All of the above

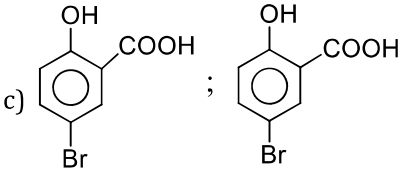
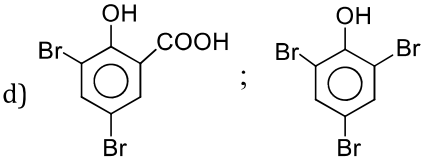
618. Self condensation of two moles of ethyl acetate in presence of sodium ethoxide yields:
   a) Methyl acetoacetate  b) Ethyl propionate  c) Ethyl butyrate  d) Acetoacetic ester

619. $Me_2CHCOC_2H_5 \xrightarrow[\text{Villiger}]{\text{Baeyer}}$ ? Productc
   a) $Me_2CHCOOC_2H_5$  b)   c)   d) 

620. Salicylic acid is treated with bromine under two different conditions.

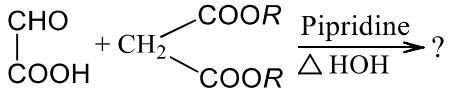


Predict the nature of $[X]$ and $[Y]$ in the above reactions,
   a)   b) 

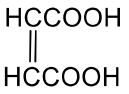
c)  ; d) 

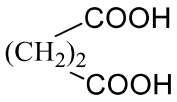
621. Acetic acid on warming with hydrazoic acid in presence of conc. $H_2SO_4$ gives:
a) $CH_3CONH_2$ b) $CH_3NH_2$ c) $CH_3COONH_4$ d) $CH_3CH_2NH_2$

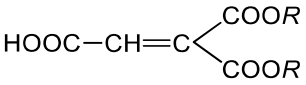
622. Electrolytic reduction with lead cathode of oxalic acid yields:
a) Glycollic acid
b) Glyoxalic acid
c) Glycollic acid + glyoxalic acid
d) $CH_3COOH$

623. 

Final product and the name of the reaction is

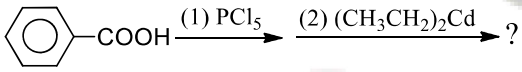
a)  Knoevengel

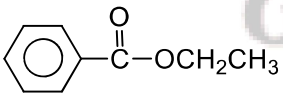
b)  Claisen condensation

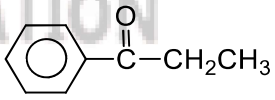
c)  , Mannich

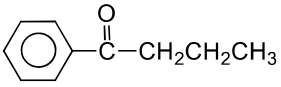
d) None of the above

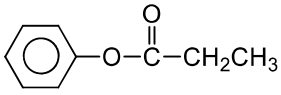
624. Complete the following reaction,



a) 

b) 

c) 

d) 

625. In the following reaction

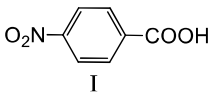
$RCH_2COOH \xrightarrow{Br_2/P} X \xrightarrow{\text{Excess } NH_3} Y$

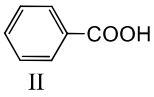
The major amounts of $X$ and $Y$ are
a) $RCHBrCONH_2$; $RCH(NH_2)COOH$ b) $RCHBrCOOH$; $RCH(NH_2)COOH$
c) $RCH_2COBr$; $RCH_2COONH_4$ d) $RCHBrCOOH$; $RCH_2CONH_2$

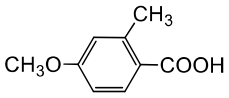
626. Benzaldehyde and acetone can be best distinguished using
a) Fehling's solution b) Sodium hydroxide solution
c) 2, 4-DNP d) Tollen's reagent

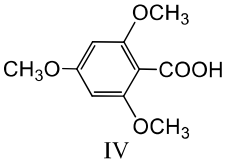
627. $CH_3COOH \xrightarrow{LiAlH_4} X \xrightarrow[300^0C]{Cu} Y \xrightarrow[NaOH]{Dilute} Z$. In the above reaction $Z$ is
a) Butanol b) Aldol c) Ketol d) Acetal

628. Give the order of ease of the esterification of the following acids


I


II


III


IV

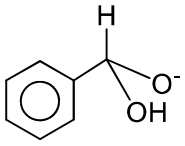
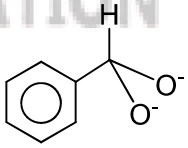
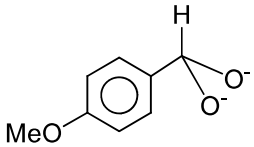
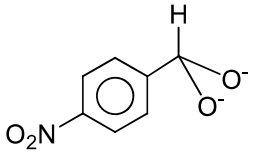
a) I > *II* > *III* > *IV* b) IV > *III* > *II* > *I* c) II > *I* > *IV* > *III* d) I > *II* > *III* > *IV*

629. Which of the following statements is/are correct?
   a) Magnesium citrate is used as antacid
   b) Tartar emetic is used to produce nausea and vomiting in the treatment of poisoning
   c) Cream of tarter (pot. Hydrogen tartrate) is used in baking powder
   d) All of the above

630. Which of the following reaction is a condensation reaction?
   a) HCHO ⟶Para-formaldehyde
   b) $CH_3CHO$ ⟶ Paraldehyde
   c) $CH_3COCH_3$ ⟶ Mesityl oxide
   d) $CH_2{=}CH_2$ ⟶ Polyethylene

631. In Duma's method for determining the nitrogen content of an organic compound, the nitrogen content is determined in the form of:
   a) Gaseous $NH_3$ b) NaCN c) Gaseous $N_2$ d) $(NH_4)_2SO_4$

632. An organic compound containing C, H and O gives red colouration with sodium nitroprusside solution but does not reduce Tollen's reagent and yields chloroform on treating with NaOH and $Cl_2$. The compound is
   a) $CH_3CH_2OH$ b) $CH_3{-}\underset{\displaystyle OH}{\underset{|}{CH}}{-}CH_3$ c) $CH_3COCH_3$ d) $(CH_3)_2CH-CHO$

633. In a Cannizaro reaction, the intermediate that will be best hydride donor is
   a) 
   b) 
   c) 
   d) 

634. 0.58 g of hydrocarbon on combustion gave 0.9 g water. The percentage of carbon is about :
   a) 75.8 b) 82.7 c) 27.85 d) 68.8

635. $C_6H_5CHO + HCN \longrightarrow C_6H_5CH(CN)OH$; the product is:
   a) Optically active
   b) A meso compound
   c) Racemate
   d) Mixture of distereoisomers

636. Which is the most reactive of the following?
   a) Ethyl acetate b) Acetic anhydride c) Acetamide d) Acetyl chloride

637. When acetamide is hydrolysed by boiling with acid, the product formed is:
   a) Acetic acid b) Ethyl amine c) $C_2H_5OH$ d) Acetamide

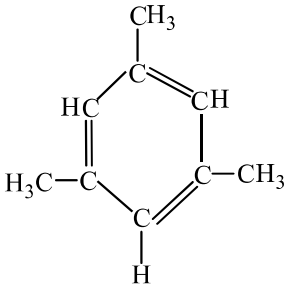
638. The most reactive compound towards formation of cyanohydrin on treatment with HCN followed by acidification is
   a) Benzaldehyde b) *p*-nitrobenzaldehyde

c) Phenylacetaldehyde d) *p*-hydroxybenzaldehyde

639. Which one of the following aldehydes will not form an aldol when treated with dil. NaOH?
a) $CH_3CHO$ b) $CH_3CH_2CHO$ c) $(CH_3)_3CCHO$ d) $C_6H_5CH_2CHO$

640. Wacker method is used to convert alkene into corresponding.....using $PbCl_2$
a) Alcohol b) Ketone c) Aldehyde d) Acid

641. The figure given below describes a condensation polymer which can be obtained in two ways. Either treating 3 molecules of acetone ($CH_3COCH_3$) with conc. $H_2SO_4$or passing propyne ($CH_3C{\equiv}CH$) through a red hot tube. The polymer is:



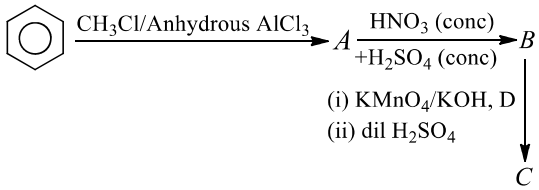
a) Phorone b) Mesityl oxide c) Diacetonyl alcohol d) Mesitylene

642. 0.5 g of an organic compound containing nitrogen on Kjeldahlising required 29 mL of $N/5$ $H_2SO_4$ for complete neutralization of ammonia. The percentage of nitrogen in the compound is:
a) 34.3 b) 16.2 c) 21.6 d) 14.8

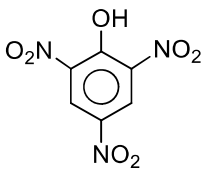
643. A nitrogen containing organic compound gave an oily liquid on heating with bromine and potassium hydroxide solution. On shaking the product with acetic anhydride, an antipyretic drug was obtained. The reactions indicate that the starting compound is
a) Aniline b) benzamide c) acetamide d) nitrobenzene

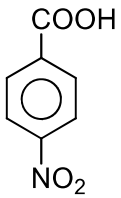
644. Acid hydrolysis of *X* yields two different organic compounds. Which one of the following is *X*?
a) $CH_3COOH$ b) $CH_3CONH_2$ c) $CH_3COOC_2H_5$ d) $(CH_3CO)_2O$

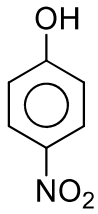
645. An alcohol, on oxidation, produces a ketone with the same number of carbon atoms. When the ketone is oxidized, it yields an acid with a lesser number of carbon atoms. The alcohol could be a
a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) None of these

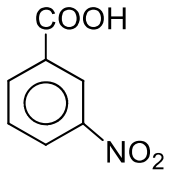
646. 


In this reaction, *C* is

a) 


b) 


c) 


d) 


647. At room temperature formaldehyde is :
a) Gas b) Liquid c) Solid d) None of these

648. Positive Beilstein test shows that:
a) Halogens are surely present
b) Halogens are absent
c) Halogens may be present
d) None of the above

649. Among the following, the most acidic is

a) $CH_3COOH$ b) $ClCH_2COOH$ c) $Cl_2CHCOOH$ d) $Cl_2CHCH_2COOH$

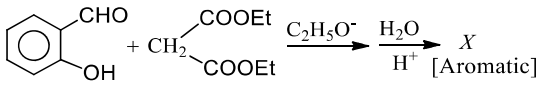
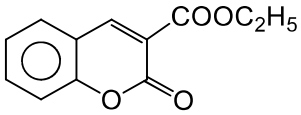
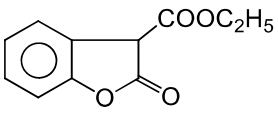
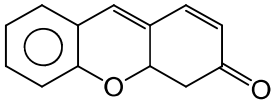
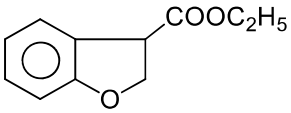
650. In question 178 step (4) cab be carried out with $NaNO_2$ + dil. HCl. The other products of the step are:
a) $NO_2$ b) $NH_3$ c) $N_2 + H_2O$ d) $RCH_2NO_2$

651. In question 178 an intermediate involved in step (3) is:
a) $R—CH_2CO_2H$ b) $R—CH_2COONH_4$ c) $R—CH_2CN$ d) $R—CH_2—N=C=O$

652. Acetyl chloride is reduced to acetaldehyde by:
a) Na —$C_2H_5OH$ b) $LiAlH_4$ c) $H_2/Pd$ —$BaSO_4$ d) $H_2/Ni$

653. The compound having least solubility in water is:
a) Methanol b) Acetaldehyde c) Acetone d) Acetophenone

654. 2-bromopropanoic acid when heated with alcoholic KCN gives an organic compound which on further acid hydrolysis gives the compound*A*. Hence, *A* will be:
a) $CH_3—\underset{OH}{\underset{|}{CH}}—COOH$ b) $CH_3CH(COOH)_2$ c) $CH_3—\underset{CH_2NH_2}{\underset{|}{CH}}—COOH$ d) $CH_3—\underset{NH_2}{\underset{|}{CH}}—COOH$

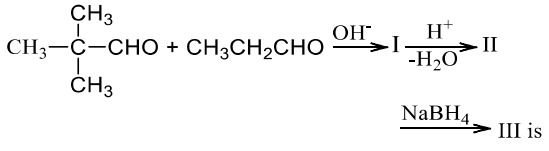
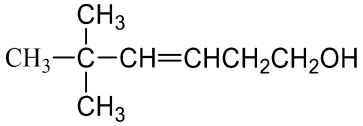
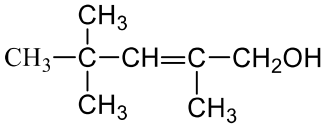
655. 
Identify the final product *X*
a) 
b) 
c) 
d) 

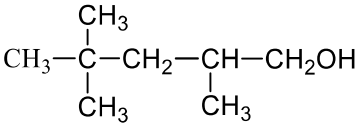
656. $RCOOH \longrightarrow RCH_2OH$. This mode of reduction of an acid to alcohol can be affected only by:
a) Zn/HCl
b) Na-alcohol
c) Aluminium isopropoxide and isopropyl alcohol
d) $LiAlH_4$

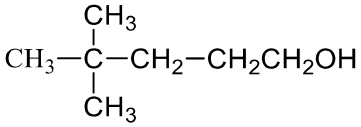
657. An organic compound *X* is oxidised by using acidified $K_2Cr_2O_7$. The product obtained reacts with phenyl hydrazine but does not answer silver mirror test. The possible structure of *X* is
a) $CH_3CH_2OH$ b) $CH_3-\underset{\underset{O}{\|}}{C}-CH_3$ c) $(CH_3)_2CHOH$ d) $CH_3CHO$

658. Formic acid reduces ammoniacal $AgNO_3$ solution and Fehling's solution because:
a) All organic acids do so
b) Formic acid has aldehyde like structure
c) Formic acid is an aliphatic acid
d) None of the above statement is correct

659. Vapour density of a volatile substance is $4(CH_4 = 1)$. Its molecular weight would be:
a) 8 b) 2 c) 64 d) 128

660. The final product (III) obtained in the reaction

a) 
b) 

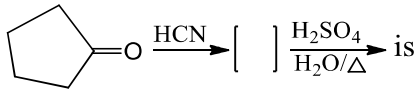
c) 

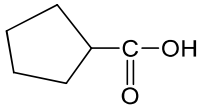
d) 

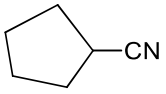
661. Which one of the following compounds, each with two carbons will have the highest boiling point?

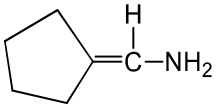
a) $C_2H_5OH$ b) $CH_3—O—CH_3$ c) $CH_3COOH$ d) $CH_3CHO$

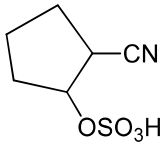
662. The major product obtained in the reaction



a) 

b) 

c) 

d) 

663. In organic chemistry the element which is estimated by difference:

a) N b) O c) S d) H

664. In estimation of carbon and hydrogen, the saphnolite resin absorbs:

a) $N_2$ b) $H_2O_2$ c) $CO_2$ d) $CO_2$ and $H_2O_2$

665. $(CH_2CO)_2O + RMgX \xrightarrow{H_2O} ?$

a) $ROOC(CH_2)COOR$ b) $RCOCH_2CH_2COOH$ c) $RCOOR$ d) $RCOOH$

666. Which reaction is suitable for the preparation of $\alpha$ −chloroacetic acid?

a) Hell-Volhard-Zelinsky reaction b) Nef reaction
c) Stephen's reaction d) Perkin condensation

667. A fractionating column is used in:

a) Sublimation b) Distillation c) Fractional distillation d) Chromatography

668. Ni formate is best used as catalyst in:

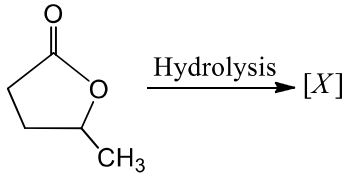
a) Preservation of fruits
b) Esterification
c) Dyeing wool and cotton fabric
d) Hydrogenation of oil

669. The term carboxylic is a contraction of two terms:

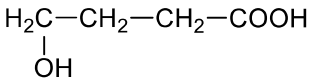
a) Carbonyl and amine
b) Carbonyl and hydroxyl
c) Hydroxyl and carboxyl
d) Carboxyl and hydroxyl

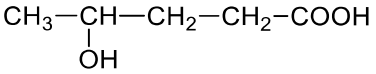
670. Boiling point of a compound does not depend on:

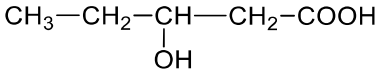
a) Hydrogen bonding in the compound
b) Solubility of the compound in water
c) Size of the molecule
d) Polarity of the molecule

671. 

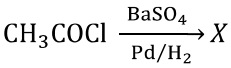
What is $''X''$?

a) $CH_3 - CH_2 - CH_2 - CH_2 - COOH$ b) 

c) 

d) 

672. In the following reaction,



Identify $X$ out of the following

a) Acetaldehyde b) Propionaldehyde c) Acetone d) Acetic anhydride

673. Which acid is an optically active?

a) Propionic acid
b) 2-chloropropionic acid
c) 3-chloropropionic acid
d) Acetic acid

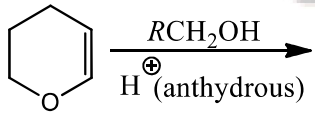
674. Two substances when separated out on the basis of their extent of adsorption by one material, the phenomenon is:

a) Chromatography
b) Paper chromatography
c) Sublimation
d) Steam distillation

675. Which of the following statement is correct?

a) $o$-nitrophenol can be separated from $p$-nitrophenol because of intermolecular hydrogen bonding in $o$-nitrophenol
b) $m$-nitrophenol vcan be separated from $p$-nitrophenol because of intermolecular hydrogen bonding in $o$-nitrophenol
c) $o$-hydroxybenzoic acid can be separated from $p$-hydrobenzoic acid because of intramolecular hydrogen bonding in $o$-hydroxybenzoic acid
d) $o$-hydroxybenzoic acid can be separated from $p$-hydrobenzoic acid because of intermolecular hydrogen bonding in $o$-hydroxybenzoic acid

676. The major product of the following reaction is



a) A hemiacetal b) An acetal c) An ether d) An ester

677. The molecular formula of chlorinated acetone produced in the distillation with bleaching powder is:

a) $CH_3COCl$ b) $CCl_3COCl_3$ c) $CH_2ClCOOH$ d) $CCl_3COCH_3$

678. Which one of the following contains acetic acid?

a) Vinegar b) Molasses c) Coal-tar d) Butter

679. The compound which on reduction with $LiAlH_4$ gives two alcohols:

a) $CH_3COOCH_3$ b) $CH_3COOC_2H_5$ c) $CH_3COCH_3$ d) $CH_3CHO$

680. Salicylic acid gives a compound known as oil of winter green when treated with

a) $CH_3COCl$ b) $\phi OH$ c) $CH_3OH$ d) $PCl_5$

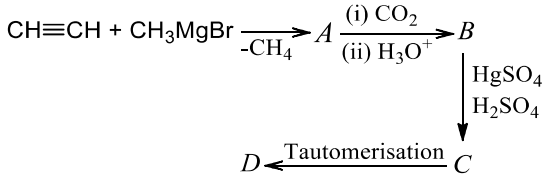
681. The compound easily soluble in water is:

a) Stearic acid b) Benzene c) Aniline d) Ethanol

682. Carbon atom of carbonyl gp. in aldehyde is of:

a) $1^{\circ}$ b) $2^{\circ}$ c) $3^{\circ}$ d) None of these

683. Identify $D$ in the following reaction




a) $HOOC-CH_2-COOH$ b) $OHC-CH_2-COOH$
c) $OHC-CH_2-CHO$ d) $HO-CH=CH-COOH$

684. Which reagent is useful in separating benzoic acid from phenol?
a) Dilute HCl b) Dilute $H_2SO_4$ c) 5% NaOH d) 5% $NaHCO_3$

685. Acetone and acetophenone can be identified by:
a) Burning the compound on spatula
b) Adding a saturated solution of $NaHSO_3$
c) HCN
d) All are correct

686. Which of the following will produce only one product on reduction with $LiAlH_4$?
a) $CH_3OCOCH_2CH_3$ b) $CH_3CH_2OCOCH_2CH_3$
c) $CH_3CH_2OCOCH_3$ d) $CH_3CH_2OCOCH_2CH_2CH_3$

687. Main product of the reaction ,
$CH_3CONH_2 + HNO_2 \longrightarrow$ ..... is :
a) $CH_3COOH$ b) $CH_3CH_2NH_2$ c) $CH_3NH_2$ d) $CH_3COONH_4$

688. In presence of sodium ethoxide two molecules of ethyl acetate interact to form acetoacetic ester, this process is known as:
a) Aldol condensation b) Claisen condensation c) Polymerization d) None of these

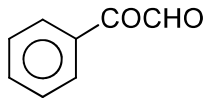
689. When calcium acetate is distilled, it will produce which of the following compound?
a) $CH_3COOH$ b) $CH_3CHO$ c) $CH_3COCH_3$ d) All of these

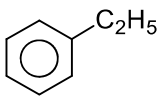
690. The main source of organic compounds is:
a) Coal-tar b) Petroleum c) Both (a) and (b) d) None of these

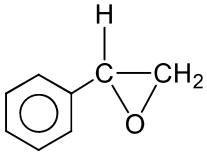
691. The strongest acid is:
a) $CH_2FCOOH$ b) $CH_2ClCOOH$ c) $CHCl_2COOH$ d) $CHF_2COOH$

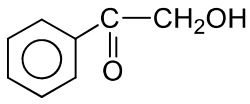
692. Which one of the following is the mechanism of hydrolysis of ethyl benzoate by refluxing with dil. Aq. NaOH solution?
a) Acyl oxygen bond cleavage, unimolecular b) Acyl oxygen bond cleavage, bimolecular
c) Alkyl oxygen bond cleavage, unimolecular d) Alkyl oxygen bond cleavage, bimolecular

693. $\phi COCH_3 \xrightarrow[(ii)LAH]{(i)Br_2\,1\,eq.} [X] \xrightarrow{OH^-} [Y]$. Here $Y$ is

a) 

b) 

c) 

d) 

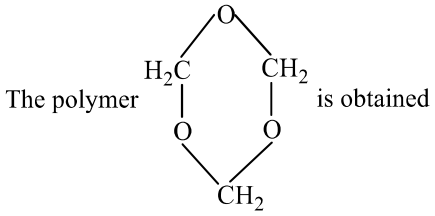

694. Formaldehyde can be distinguished from acetaldehyde by:
a) Fehling's solution b) Schiff's reagent c) Ammonia d) Ammoniacal $AgNO_3$

695. 20 mL of $CH_4$ is burnt with 60 mL of $O_2$. If all measurements are made at the same $P$ and $T$, what is the volume of unreacted oxygen?
a) 10 mL b) 20 mL c) 30 mL d) 40 mL

696. The aldol condensation of $CH_3-CHO$ results in the formation of
a) $CH_3-\underset{\underset{O}{\|}}{C}-\underset{\underset{OH}{|}}{CH}-CH_3$ b) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_2-\underset{\underset{O}{\|}}{CH}$
c) $CH_3-CH_2-\underset{\underset{|}{}}{\overset{\overset{|}{}}{CH}}-\underset{\underset{\|}{}}{\overset{\overset{\|}{}}{CH}}$ d) $CH_3-CH_2OH + CH_3OH$

OH O

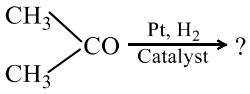
697. Oxalic acid may be distinguished from tartaric acid by:
   a) $NaHCO_3$
   b) Ammoniacal silver nitrate
   c) Litmus paper
   d) Phenolphthalein

698. 


When HCHO is allowed to stand. It is a white solid. The polymer is:
   a) Trioxane  b) Formose  c) Para formaldehyde  d) Metaldehyde

699. Aldehydes are produced in atmosphere by:
   a) Oxidation of secondary alcohols
   b) Reduction of alkenes
   c) Reaction of oxygen atoms with hydrocarbons
   d) Reaction of oxygen atoms with $O_3$

700. Main product of the reaction is,




   a) $CH_3COOH + H_2$  b) $CH_3CH_2COOH$  c) $CH_3CH(OH)CH_3$  d) $CH_3CH_2OH$

701. Which is not an organic compound?
   a) Hexane  b) Urea  c) Spirit  d) Ammonium cyanate

702. In organic compound phosphorus is estimated as:
   a) Magnesium pyrophosphate $Mg_2P_2O_7$
   b) $H_3PO_4$
   c) $Mg_3(PO_4)_2$
   d) $P_2O_5$

703. Wolff-Kishner reduction, reduces
   a) $-COOH$ group  b) $-C \equiv C-$ group  c) $-CHO$ group  d) $-O-$ group

704. $RMgX$ on reaction with $O_2$ followed by hydrolysis gives:
   a) $RH$  b) $RCOOH$  c) $ROR$  d) $ROH$

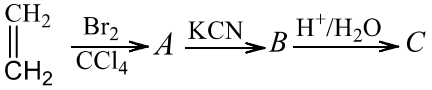
705. Aldehyde with $NH_2$. $NH_2$ forms
   a) Hydrazones  b) Aniline  c) Nitrobenzene  d) None of these

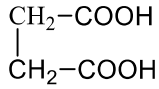
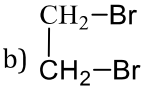
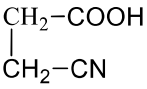
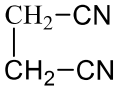
706. Steam distillation is a better method of purification for.....compounds.
   a) Liquids  b) Steam volatile  c) Non-volatile  d) Miscible with water

707. On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is
   a) $CH_3COOC_2H_5 +$ NaCl  b) $CH_3COONa + C_2H_5OH$
   c) $CH_3COCl + C_2H_5OH + NaOH$  d) $CH_3Cl + C_2H_5COONa$

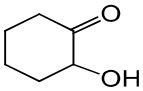
708. Liquid benzene burns in oxygen according to $2C_6H_6 + 15O_2 \longrightarrow 12CO_2$ (g) $+ 6H_2O$ (g). How many litre of $O_2$ at STP are needed to complete the combustion of 39 g of liquid benzene?
   a) 11.2 litre  b) 22.4 litre  c) 84 litre  d) 74 litre

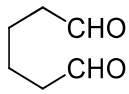
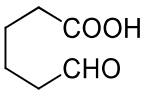
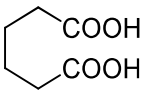
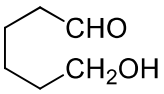
709. The final product of the following sequence of reaction is



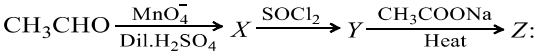
a)  b)  c)  d) 

710. The product obtained when

 is oxidized with $HIO_4$

a)  b)  c)  d) 

711. Identify *Z* in the series,



a) $CH_3 \cdot CO \cdot CH_2COONa$
b) $(CH_3CO)_2O$
c) $CH_2Cl \cdot CO \cdot O \cdot COCH_3$
d) $CHCl_2CO \cdot O \cdot COCH_3$

712. When an acyl chloride is heated with Na salt of a carboxylic acid, the product is an
a) ester b) Anhydride c) Alkene d) Aldehyde

713. Which produces $NH_3$ on reaction with caustic soda?
a) Ethyl amine b) Dimethyl amine c) Acetamide d) Aniline

714. The IUPAC name of crotonaldehyde is:
a) Propenal b) But-2-en-l-al c) Butan-2-en-l-al d) None of these

715. The elimination of $CO_2$ from a carboxylic acid is known as:
a) Hydration b) Dehydration c) Decarboxylation d) Carboxylation

716. Oxidation product of '*X*' (molecular formula $C_3H_6O$) is 'y'(molecular formula $C_3H_6O_2$). The compound 'y' is :
a) Acetic acid b) Formic acid c) Propionic acid d) Butyric acid

717. HVZ reaction leads to the formation of:
a) Acetic acid
b) Formic acid
c) Chlorosubstituted acids
d) Oxalic acid

718. Which of the following acids acts as reducing agent?
a) COOH—COOH b) Tartaric acid c) Formic acid d) All of these

719. Which part of —COOH group is involved in the reaction of acid with metals?
a) Only H-atom b) Only —OH part c) Both (a) and (b) d) None of these

720. HCHO and HCOOH are distinguished by treating with:
a) Tollen's reagent b) $NaHCO_3$ c) Fehling's solution d) Benedict solution

721. Formula of diacetone alcohol is:
a) $(CH_3)_2C(OH)CH_2COCH_3$
b) $CH_3CHOHCH_2COCH_3$
c) $(CH_3)_2CHOHCH_2COCH_3$
d) None of the above

722. Mercuric chloride is reduced to mercurous chloride by:
a) Acetic acid b) Carbon tetrachloride c) Formic acid d) Ammonia

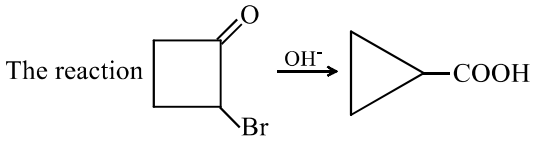
723. An organic compound containing C,H and N have the percentage 40, 13.33 and 46.67 respectively. Its empirical formula may be:
a) $C_2H_7N$ b) $C_2H_7N_2$ c) $CH_4N$ d) $CH_5N$

724. Pick up the correct statement from the following:
a) Secondary alcohols are oxidized to ketones in which the number of carbon atoms remains unchanged

b) TEL is a good anti-knock compound
c) Both aldehydes and ketones use $sp^2$-hybrid carbon atoms for their formation
d) All of the above

725. Name the end product in the following series of reactions,
$CH_3COOH \xrightarrow{NH_3} A \xrightarrow{\Delta} B \xrightarrow{P_2O_5} C$:
a) $CH_4$ b) $CH_3OH$ c) Acetonitrile d) Ammonium acetate

726. Certain unripe fruits like green apples and plums contain:
a) $H_2SO_4$ b) HCl c) $CH_3COOH$ d) Malic acid

727. The reaction 

is an example of:
a) Wolf rearrangement
b) Favorskii rearrangement
c) Steven's rearrangement
d) Wagner-Meerwin rearrangement

728. Which of the following is least acidic?
a) $C_2H_5OH$ b) $CH_3COOH$ c) $C_6H_5OH$ d) $ClCH_2COOH$

729. For a compound to be purified by steam distillation:
a) Impurities must be non-volatile
b) The liquid must be completely immiscible with water
c) The vapour pressure of the liquid must be sufficiently high
d) All of the above are correct

730. Acetone + mercaptan $\xrightarrow{HCl} X \xrightarrow{4[0]} Y$; Identify '$Y$' in the above sequence
a) Sulphonal b) Trional c) Tetronal d) None of these

731. Amides are:
a) Amphoteric b) Acidic c) Basic d) Neutral

732. Silica gel is used for keeping away the moisture because it:
a) Absorbs $H_2O$ b) Adsorbs $H_2O$ c) Reacts with $H_2O$ d) None of these

733. Consider the acidity of the carboxylic acids
(i) PhCOOH (ii) $o-NO_2C_6H_4COOH$
(iii)$p-NO_2C_6H_4COOH$ (iv)$m-NO_2C_6H_4COOH$
Which of the following order is correct?
a) I > II > III > IV b) II > IV > III > I c) II > IV > IN >III d) II > III > IV > I

734. Benzaldehyde on refluxing with aqueous alcoholic KCN produce
a) Cyanobenzene b) Cyanohydrin c) Benzoyl cyanide d) Benzoin

735. A bottle containing two immiscible liquids is given to you. These may be separated by:
a) Fractionating column b) Separating funnel c) Fractional distillation d) Steam distillation

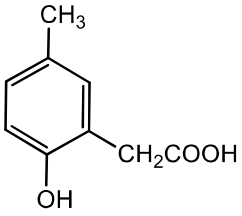
736. Which of the following is obtained by the oxidation of propionaldehyde?
a) Acetic acid
b) Formic and acetic acid
c) Propionic acid
d) $n$-propyl alcohol

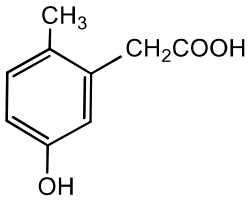
737. Acetaldehyde and acetone differ in their reaction with:
a) $NaHSO_3$ b) $NH_3$ c) $PCl_5$ d) Phenyl hydrazine

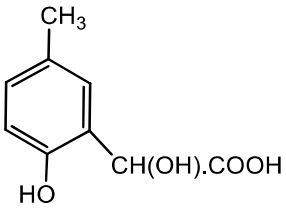
738. Which of the following reactions can be used to change benzaldehyde to cinnamic acid?
a) Perkin's reaction b) Knoevenagel reaction
c) Reformatsky reaction and ketones d) Benzoin condensation

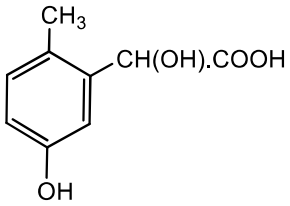
739. In the estimation of nitrogen by Duma's method 1.18 g of an organic compound gave 224 mL of $N_2$ at NTP. The percentage of nitrogen in the compound is about:
a) 20.0 b) 11.8 c) 47.5 d) 23.7

740. *p*-cresol reacts with chloroform in alkaline medium to give the compound *A* which adds hydrogen cyanide to form the compound *B*. The latter on acidic hydrolysis gives chiral carboxylic acid. The structure of the carboxylic acid is

a) 


b) 


c) 


d) 


741. Butan-2-one can be converted to propanoic acid by:
a) Tollen's reagent b) Fehling's solution c) $NaOH/I_2/H^+$ d) $NaOH/NaI/H^+$

742. By passing water gas ($CO + H_2$) through an electric discharge at low pressure, we get:
a) HCHO b) HCOOH c) $CH_3CHO$ d) $CO_2$ and $H_2O$

743. An organic compound $C_5H_{10}O$ forms phenyl hydrazone, gives positive iodoform test and undergoes Wolff Kishner reaction to give isopentane. It is:
a) Pentanol b) Pentan-2-one c) Pentan-3-one d) 3-methylbutan-2-one

744. Consider the reaction:
$RCHO + NH_2NH_2 \longrightarrow RCH = N—NH_2$
What sort of reaction is it?
a) Electrophilic addition – elimination reaction
b) Free radical addition – elimination reaction
c) Electrophilic substitution – elimination reaction
d) Nucleophilic addition – elimination reaction

745. Lindlar's catalyst is:
a) $Ni + BaSO_4$ b) $Pd—CaCO_3 + BaSO_4$ c) $Hg + BaSO_4$ d) $Ni + ZnSO_4$

746. In a Cannizaro's reaction, the combination not possible is
a) $HCHO + HCHO$ b) $C_6H_5CHO + HCHO$ c) $CH_3CHO + HCHO$ d) 


747. When propanone reacts with chlorine, it forms:
a) Trichloro propanone
b) Hexachloro propanone
c) Trichloro ethanol
d) Trichloro propanal

748. Benzyl alcohol and sodium benzoate is obtained by the action of sodium hydroxide on benzaldehyde. This reaction is known as
a) Perkin's reaction b) Cannizaro's reaction
c) Sandmeyer's reaction d) Claisen condensation

749. The structural formula of the compound isomeric with acetone is:
a) $CH_3CH_2CHO$ b) $CH_3CHO$ c) $CH_3CH_2OH$ d) None of these

750. An organic compound contains, C, H and S. When C and H are to be estimated the combustion tube at the exit should contain a:

a) Copper spiral b) Silver spiral c) Potassium chloride d) Lead chromate

751. In the preparation of an ester the commonly used dehydrating agent is:
a) Phosphorus pentoxide
b) Anhydrous calcium chloride
c) Anhydrous aluminium chloride
d) Concentrated sulphuric acid

752. A compound *A* has a molecular formula $C_2Cl_3OH$.It reduces Fehling's solution and on oxidation, gives a monocarboxylic acid *B*. *A* can be obtained by the action of chlorine on ethyl alcohol. *A* is
a) Chloroform b) Chloral
c) Methyl chloride d) Monochloroacetic acid

753. In glycine the basic group is:
a) $-NH_2$ b) $-NH_3^{\oplus}$ c) $-COOH$ d) $-COO^{\ominus}$

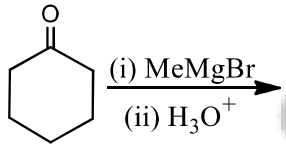
754. 3-hydroxybutanal is formed when (*X*) reacts with (*Y*)in dilute (*Z*) solution. What are *X*, Y and Z?

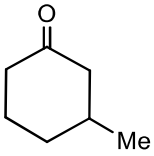
| | *X* | *Y* | *Z* |
|---|---|---|---|
| a) | $CH_3CHO$, | $(CH_3)_2CO$, | NaOH |
| b) | $CH_3CHO$, | $CH_3CHO$, | NaCl |
| c) | $(CH_3)_2CO$, | $(CH_3)_2CO$, | HCl |
| d) | $CH_3CHO$, | $CH_3CHO$, | NaOH |

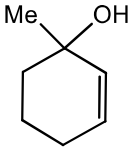
755. Which of the following have high melting points?
a) Acids containing even number of carbon atoms
b) Acids containing odd number of carbon atoms
c) Both (a) and (b)
d) None of the above

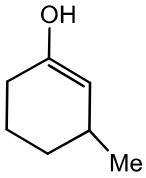
756. $A \xrightarrow{HCN} B \xrightarrow{H_3O^+}$ lactic acid. Identify *A*
a) HCHO b) $CH_3CHO$ c) $C_6H_5CHO$ d) $CH_3COCH_3$

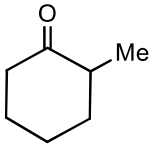
757. Predict the product,




a) 


b) 


c) 


d) 


758. The reverse of esterification is known as:
a) Acidolysis b) *trans*-esterification c) Hydrolysis d) Neutralization

759. Identify the reaction which is used to obtain $\beta$-hydroxy ketone.
a) Condensation reaction b) Aldol condensation
c) Cross aldol condensation d) Cannizaro reaction

760. 0.14 g of an acid required 12.5 mL of 0.1*N* NaOH for complete neutralization. The equivalent weight of the acid is:
a) 45 b) 56 c) 63 d) 112

761. Which of the following contains pungent odour?
a) Esters b) Higher aldehydes c) Lower aldehydes d) None of these

762. Which of the following cannot reduce Fehling solution?
a) HCOOH b) $H_3CCOOH$ c) HCHO d) $H_3CCHO$

763. Which of the following on treatment with 50% *aq*. NaOH gives alcohol and acid?
a) $C_6H_5CHO$ b) $CH_3CH_2CH_2CHO$ c) $CH_3COCH_3$ d) $C_6H_5CH_2CHO$

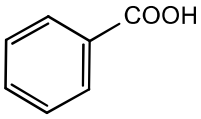
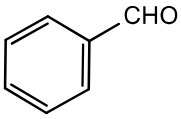
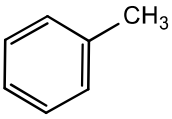
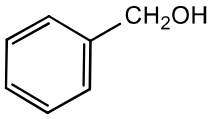
764. The reaction $C_6H_5CHO + CH_3CHO \longrightarrow C_6H_5CH{=}CHCHO + H_2O$ is called:
a) Benzoin condensation

b) Claisen condensation
c) Aldol condensation
d) Condensation

765. Which of the following does not undergo benzoin condensation?
a) Benzene carbaldehyde
b) *p*-toluene carbaldehyde
c) Phenylethanal
d) 4-methoxyhbenzaldehyde

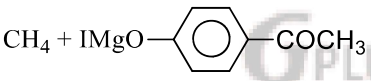
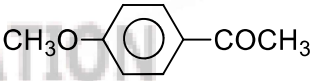
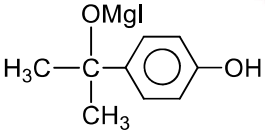
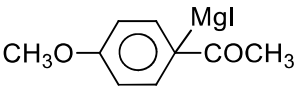
766. When acetaldehyde is heated with Fehling solution, a red precipitate is formed. Which of the following is that?
a) $Cu_2O$ b) Cu c) CuO d) $CuSO_4$

767. Benzaldehyde reacts with ammonia to form
a) Benzaldehyde ammonia
b) Urotropine
c) Hydrobenzamide
d) Ammonium chloride

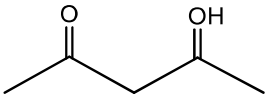
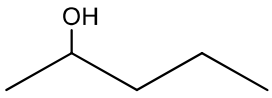
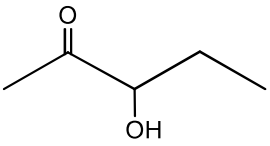
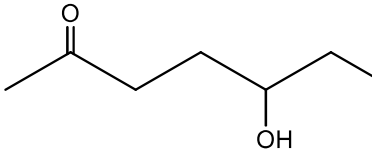
768. The reactant $(X)$ in the reaction,
$(X) \xrightarrow[(CH_3CO)_2O]{CH_3COONa}$ Cinnamic acid is
a) 
b) 
c) 
d) 

769. Ketones are less reactive than aldehydes because:
a) C=O group is less polar in ketones
b) Of electromeric effect
c) Of steric hindrance to the attacking reagent
d) None of the above

770. Dialkyl cadmium reacts with a compound to form a ketone. The compound is:
a) Acid b) Acid chloride c) Ester d) CO

771. The reaction of 1 mole each of *p*-hydroxyacetophenone and methyl magnesium iodide will give
a) 
b) 
c) 
d) 

772. Which of the following has the most acidic hydrogen?
a) 3-hexanone b) 2,4-hexanedione c) 2,5-hexanedione d) 2,3-hexanedione

773. Which of the following will be most readily dehydrated under acidic conditions?
a) 
b) 
c) 
d) 

774. Sodium salt of formic acid on strong heating followed by acid hydrolysis yields:
a) HCHO b) HCOOH c) COOH—COOH d) $CH_3CHO$

775. $RCOOH \xleftarrow{H_2O^+} X \xrightarrow{[H]} RCH_2NH_2$
Identify the $X$ in the above sequence
a) Alkane nitrile b) Alkyl isonitrile c) Aldoxime d) Alkyl nitrile

776. Which of the following acids has the smallest dissociation constant?
a) $CH_3CHFCOOH$ b) $FCH_2\ CH_2\ COOH$ c) $BrCH_2CH_2COOH$ d) $CH_3CHBrCOOH$

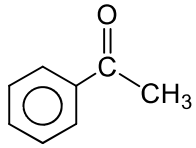
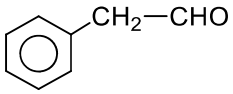
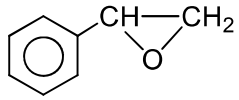
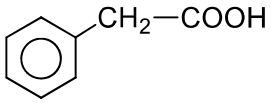
777. Salol (phenyl salicylate ) is used as an:
a) Insecticide b) Analgesic c) Ointment d) Intestinal antiseptic

778. Aldehydes and ketones will not form crystalline derivatives with:

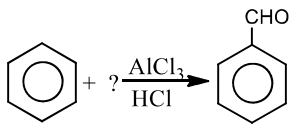
a) $NaHSO_3$
b) Phenyl hydrazine
c) Semicarbazide hydrochloride
d) Dihydrogen sodium phosphate

779. Pyruvic acid is obtained by
a) Oxidation of acetaldehyde cyanohydrin
b) Oxidation of formaldehyde cyanohydrin
c) Oxidation of acetone cyanohydrin
d) None of the above

780. A compound ($A$) (molecular formula – $C_8H_8O$) on treatment with $NH_2OH \cdot HCl$ gives $B$ and $C$ rearrange to give $D$ and $E$ respective on treatment with acid. $B, C, D$ and $E$ are all isomers of molecular formula ($C_8H_9NO$). When $D$ is boiled with the alcoholic KOH, an oil $F$ ($C_6H_7N$) separates out. $F$ reacts rapidly with $CH_3COCl$ to give back $D$. On the other hand, $E$ on boiling with alkali followed by acidification gives a white solid $G(C_7H_6O_2)$. Identify $A$

a) 
b) 
c) 
d) 

781. On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is
a) $CH_3COOC_2H_5 + NaCl$
b) $C_3COONa + C_2H_5OH$
c) $CH_3COCl + C_2H_5OH + NaOH$
d) $CH_3Cl + C_2H_5COONa$

782. 

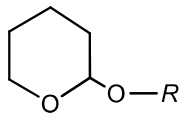
Identify the reactant.
a) $H_2O$
b) HCHO
c) CO
d) $CH_3CHO$

783. Carbon atom of carbonyl gp. in ketone is of:
a) $1^{\circ}$
b) $2^{\circ}$
c) $3^{\circ}$
d) None of these

784. Formic acid is not a representative member of the carboxylic acids because:
a) It is the first member of the series
b) It does not contain alkyl group
c) It is a gas
d) It contains an aldehydic group while the other acids do not have the aldehydic group

785. $CH_3CHO + H_2NOH \rightarrow CH_3—CH=N—OH$ The above reaction occurs at:
a) pH = 1
b) pH = 4.5
c) Any value of pH
d) pH = 12

786. β-hydroxy butyraldehyde is an example of:
a) Aldol
b) Diol
c) Hemiacetal
d) Acetal

787.  is
a) An ester
b) An anhydride
c) Acetal
d) Hemiacetal

788. Hydrogenation of $C_6H_5CHOHCOOH$ over $Rh — Al_2O_3$ catalyst in methanol gives:
a) $C_6H_5CH_2COOH$
b) $C_6H_{11}CHOHCOOH$
c) $C_6H_5CHOHCH_2OH$
d) $C_6H_{11}CH_2COOH$

789. $CH_3COCH_3$ and $CH_3CH_2CHO$ can be distinguished by
a) $FeCl_3$
b) Tollen's reagent
c) $NaHSO_3$
d) $2,4 - DNP$

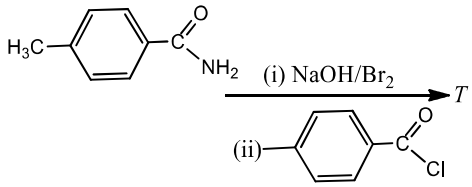
790. The molecular formula of methanoic acid and propanoic acid differs by:
a) $C_2H_4$
b) $CH_3$
c) $CH_2$
d) $CH_2CH_2CH_3$

791. The most suitable method of separation of 1 : 1 mixture of *ortho* and *para* nitrophenols is:
a) Distillation b) Crystallization c) Sublimation d) Chromatography

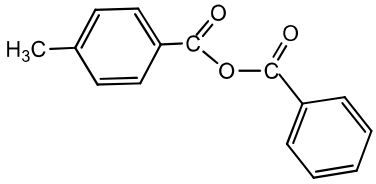
792. Identify the product $Z$ in the series,
$CH_3CN \xrightarrow{Na/C_2H_5OH} X \xrightarrow{HNO_2} Y \xrightarrow{[O]} Z$:
a) $CH_3CHO$ b) $CH_3CH_2CONH_2$ c) $CH_3COOH$ d) $CH_3CH_2NHOH$

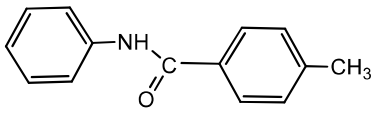
793. Which of the following is not true about the urea?
a) It can be stored easily b) It should be applied at sowing time
c) It cannot be used for all types of crops and soils d) The cost of production of urea is cheap

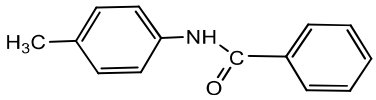
794. In the reaction

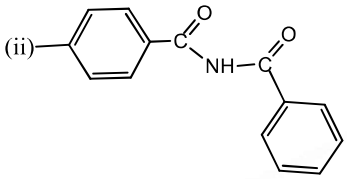



The structure of the product $T$ is

a) 


b) 


c) 


d) 


795. The term hypnone is used for:
a) Benzophenone b) Acetophenone c) Acetaldehyde d) None of these

796. The end product of $CH_3COOH \xrightarrow{CaCO_3} A \xrightarrow{Heat} B \xrightarrow{NH_2OH} C$
a) Acetaldehyde b) Acetoxime c) Formaldehydeoxime d) Methyl cyanide

797. The boiling points of aldehydes and ketones lie in between alkanes and alcohols of comparable masses because:
a) Alkanes are polar
b) Aldehydes and ketones are non-polar
c) Alkanes are non-polar and aldehydes and ketones contain polar $\rangle C{=}O$ group and lower alcohols have H-bonding.
d) Alkanes are held together by weak van der Waals' forces (being non-polar), aldehydes and ketones contain polar $\rangle C{=}O$ group and held together by strong dipole-dipole attraction and lower alcohols have H-bonding, which is stronger than dipole-dipole attraction

798. A compound (60 g) on analysis gave C=24g, H =4 g and O = 32 g. Its empirical formula is:
a) $C_2H_4O_2$ b) $C_2H_2O$ c) $CH_2O_2$ d) $CH_2O$

799. Alkaline hydrolysis of esters is.....than acid hydrolysis.
a) Faster b) Slower c) Equal d) None

800. Main product obtained from the reaction of ammonia and formaldehyde is
a) Formic acid b) Methylamine c) Methanol d) Urotropine

801. The gas evolved on heating alkali formate with soda-lime is

a) CO b) $CO_2$ c) Hydrogen d) Water vapour

802. 2, 4-dichlorophenoxy acetic acid is used as

a) Fungicide b) Insecticide c) Herbicide d) Moth repellant

803. Benzaldehyde undergoes Claisen's condensation with another aldehyde to give cinnamaldehyde. The aldehyde is:

a) Formaldehyde b) Acetaldehyde c) Crotonaldehyde d) Propanaldehyde

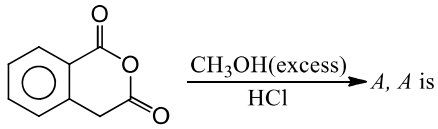
804. An organic compound *X* gives a red precipitate on heating with Fehling's solution. Which one of the following reactions yields *X* as a major product?

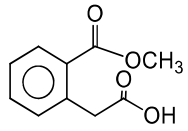
a) $HCHO \xrightarrow[(ii)H_2O]{(i)CH_3MgI}$

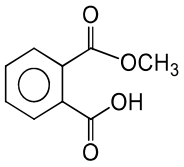
b) $C_2H_5Br + AgOH \xrightarrow{\Delta}$

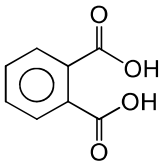
c) $2C_2H_5Br + Ag_2O \xrightarrow{\Delta}$

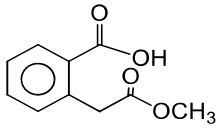
d) $C_2H_2 + H_2O \xrightarrow[1\%\ HgSO_4,\ 60^0C]{40\%\ H_2SO_4}$

805. 

a) 

b) 

c) 

d) 

806. The Cannizzaro's reaction is not given by:

a) Trimethylacetaldehyde
b) Acetaldehyde
c) Benzaldehyde
d) Formaldehyde

807. Which of the following represents the correct order of the activity in the given compounds?

a) $CH_3COOH > BrCH_2COOH > ClCH_2COOH > FCH_2COOH$

b) $FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$

c) $BrCH_2COOH > ClCH_2COOH > FCH_2COOH > CH_3COOH$

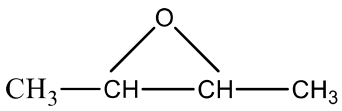
d) $FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$

808. Ellution is the process for:

a) Crystallization of compound
b) Separation of compound
c) Extraction of compound
d) Distillation of compound

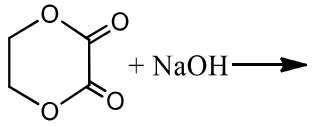
809. Pyroligneous acid contains:

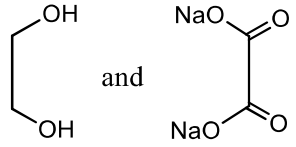
a) 2% acetic acid b) 50% acetic acid c) 10% acetic acid d) 20% acetic acid

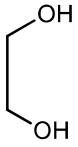
810. 

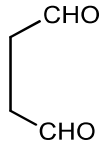
is the anhydride in

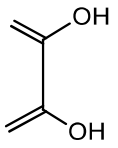
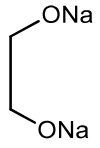
a) 1, 2-butane diol b) 2, 2-butane diol c) 2, 3-butane diol d) 1, 1-butane diol

811. 

a) 

b)  and $2CO_2$

c)  and $Na_2CO_3$

d)  and 

812. Consider the following reaction;

$CH_3Br + Mg \xrightarrow{Ether} A \xrightarrow{HCHO} B \xrightarrow{HOH} C$

compound $C$ is :

a) Acetic acid b) Acetaldehyde c) Ethyl alcohol d) Formic acid

813. In the reaction sequence,

$A \xrightarrow{CH_3CH_2MgBr} B \xrightarrow{H_3O^{\oplus}} C_5H_{12}O$

Compound '$A$' is

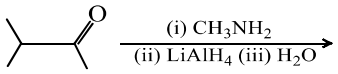
a) 1-propanol b) Propanal c) Ethanol d) 2-propanol

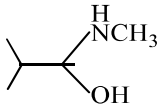
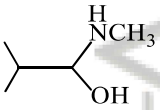
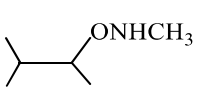
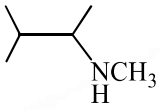
814. Identify $Z$ in the sequence

$CH_3COONH_4 \xrightarrow{\Delta} X \xrightarrow[\Delta]{P_2O_5} Y \xrightarrow{H_2O/H^+} Z$

a) $CH_3CH_2CONH_2$ b) $CH_3CN$ c) $CH_3COOH$ d) $(CH_3CO)_2O$

815. The major organic product formed in the following reaction is:



a)  b)  c)  d) 

816. Compound '$A'$ (molecular formula $C_3H_8O$) is treated with acidified potassium dichromate to form a product '$B'$ (molecular formula $C_3H_6O$). '$B'$ forms a shining silver mirror on warming with ammoniacal silver nitrate. '$B'$ when treated with an aqueous solution of $H_2NCONHNH_2$. HCl and sodium acetate gives a product '$C'$. Identify the structure of '$C'$.

a) $CH_3CH_2CH{=}NNHCONH_2$

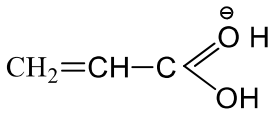
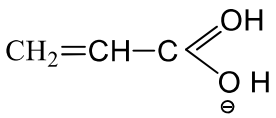
b) $CH_3{-}\underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}}{=}NNHCONH_2$

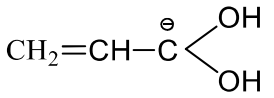
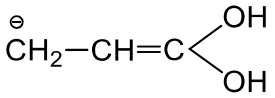
c) $CH_3{-}\underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}}{=}NCONHNH_2$

d) $CH_3CH_2CH{=}NCONHNH_2$

817. Which of the following intermediate species is not formed in the reaction of acrylic acid with HBr to give β-bromopropionic acid?

$(CH_2 = CH - COOH \xrightarrow{HBr} BrCH_2CH_2COOH)$ ?

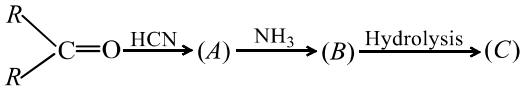
a)  b) 

c)  d) 

818. The oxidation of benzyl chloride with lead nitrate gives

a) Benzaldehyde b) Benzyl alcohol

c) *p*-chloro benzaldehyde d) Benzoic acid

819. 

Compound $(C)$ in above reaction is:

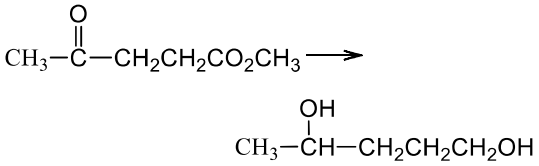
a) α-hydroxy acid

b) α-amino acid

c) α-amino alkanol

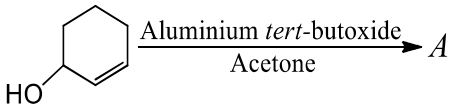
d) α-amino β-hydroxy acid

820. The conversion

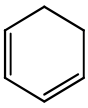
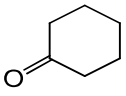
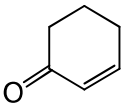
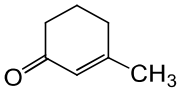


Can be effected using

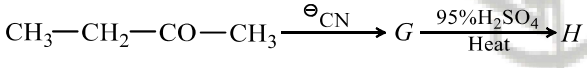
a) $LiAlH_4$ and then $H^+$ b) $NaBH_4$ and then $H^+$ c) $H_2/Pt-C$ d) None of these

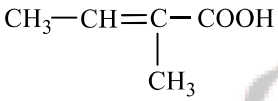
821. 

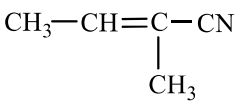
In the above reaction, $A$ is

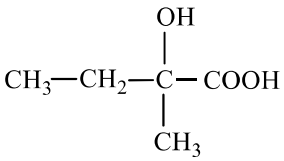
a)  b)  c)  d) 

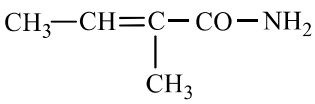
822. The major product $H$ of the given reaction sequence is:



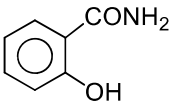
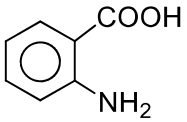
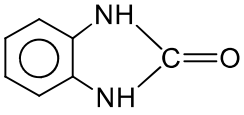
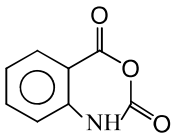
a) 

b) 

c) 

d) 

823. Which of the following compounds is not obtained when phthalic anhydride is treated with $N_3H$ ?

a)  b)  c)  d) 

824. Chlorine does not react with:

a) Methanal b) $CH_3CHO$ c) Propanone d) $C_6H_5CHO$

825. An organic acid when heated strongly with $P_2O_5$, gave rise to a colourless gas which burns with a pale blue flame. The acid is:

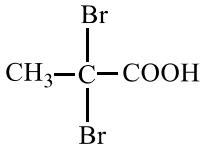
a) Acetic acid b) Formic acid c) Formalin d) Benzoic acid

826. Bakelite polymer is formed by the polymerization of

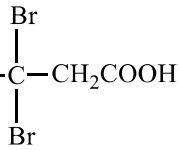
a) Methanal and salicyaldehyde b) Methanal and hydroxy benzene

c) Ethanal and hydroxy benzene d) Ethanal and cinnamic acid

827. Propionic acid with $Br_2$ |P yields a dibromo product. Its structure would be:

a) 

b) $CH_2Br—CHBr—COOH$

c) 

d) $CH_2Br—CH_2—COBr$

828. The difference between aldol condensation and Cannizzaro's reaction is that:

a) The former takes place in the presence of α-H-atom
b) The former takes place in the absence of α-H-atom
c) The former takes place in the presence of β-H-atom
d) None of the above

829. Collin's reagent causes the conversion:

a) $>CO \longrightarrow >CHOH$ b) $>CHO \longrightarrow —COOH$ c) $>CHOH \longrightarrow >CO$ d) $>CHOH \longrightarrow —COOH$

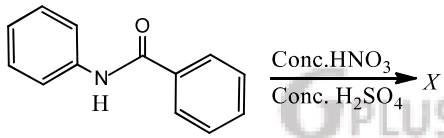
830. Cyanohydrin of which compound gives lactic acid on hydrolysis?

a) Acetone b) Acetaldehyde c) Propanal d) HCHO

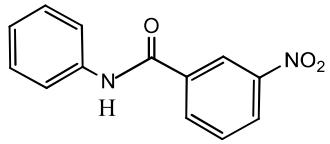
831. Arrange phenol (I), cyclohexanol (II), 2, 4, 6-trinitrophenol (III) and acetic acid (IV) in order of acidity

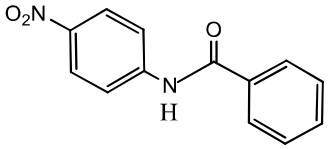
a) III>IV>I>II b) I>II>III>IV c) III>I>II>IV d) II>I>IV>III

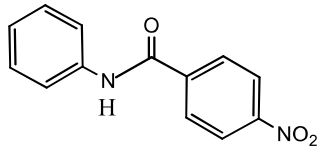
832. In the following reaction,

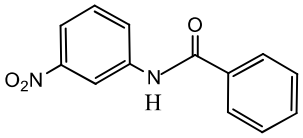



The structure of the major product *X* is

a) 

b) 

c) 

d) 

833. Preparation of β-hydroxy ester is favoured by:

a) Cannizzaro's reaction
b) Reformatsky reaction
c) Claisen condensation
d) Wittig reaction

834. The enolic form of acetone contains:

a) 9 σ-bonds, 1π-bond and 2 lone pairs
b) 8 σ-bonds, 2π-bond and 2 lone pairs
c) 10 σ-bonds, 1π-bond and 1 lone pair
d) 9 σ-bonds, 2π-bond and 1 lone pairs

835. Monocarboxylic acids (saturated) are regarded as……oxidation products of paraffins.
a) First b) Second c) Third d) Fourth

836. Which of the following forces explain the boiling point of aldehydes and ketones?
a) Hydrogen bonding
b) van der Waals' forces
c) Dipole-dipole attraction
d) None of the above

837. Which can reduce$RCOOH \rightarrow RCH_2OH$?
a) $NaBH_4$ b) $Na/C_2H_5OH$ c) $BH_3/THF/H_3O^+$ d) $H_2$/ catalyst

838. Ethanol vapours are passed over heated copper at 300°C and product is treated with aqueous NaOH. The final product is:
a) Aldol
b) β-hydroxy butyraldehyde
c) Both (a) and (b)
d) None of the above

839. The refluxing of $(CH_3)_2NCOCH_3$ with acid gives
a) $(CH_3)_2NH + CH_3COOH$ b) $(CH_3)_2NCOOH + CH_4$
c) $2CH_3OH + CH_3CONH_2$ d) $2CH_3NH_2 + CH_3COOH$

840. $OCH - CHO \xrightarrow{OH^-} HOH_2C - COOH$. The reaction given is
a) Aldol condensation b) Knovengel reaction c) Cannizaro reaction d) None of these

841. A distinctive and characteristic functional group in fat is:
a) Keto group b) Ester group c) Basic group d) None of these

842. Sodium acetamide smells like:
a) Garlic b) Rotten egg c) Pleasant d) Reminiscents of mice

843. On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is:
a) $CH_3Cl + C_2H_5COONa$
b) $CH_3COONa + C_2H_5OH$
c) $CH_3COCl + C_2H_5OH + NaOH$
d) $CH_3COOC_2H_5 + NaCl$

844. The final product formed when acetaldehyde is reduced with sodium and alcohol is:
a) Ethylene b) Ethyl alcohol c) Ethene d) All of these

845. Oxalic acid when reduced with zinc and $H_2SO_4$ gives
a) Glyoxalic acid b) Glyoxal c) Glycolic acid d) glycol

846. Which of the following functional groups, cannot be reduced to alcohol using $NaBH_4$ in ethanolic solution?
a) $R - O - R$ b) $RCOCl$ c) $R - COOH$ d) $R - CHO$

847. A carboxylic acid is converted into its anhydride using
a) Thionyl chloride b) Sulphur chloride
c) Sulphuric acid d) Phosphorus pentoxide

848. Ammonium formate on heating yields:
a) Ammonia
b) Formamide
c) Formic acid
d) Ammonium carbonate

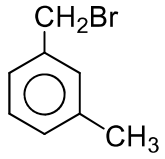
849. By combining the two calcium salts of carboxylic acids we are preparing 2-butanone. Find the correct pair of the following
a) Calcium formate + calcium propanoate b) Calcium acetate + calcium propanoate
c) Calcium acetate + calcium acetate d) Calcium formate + calcium acetate

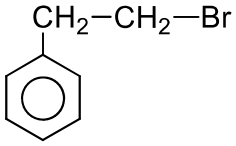
850. Aldehydes and ketones form addition products with:
a) Phenyl hydrazine b) Hydrazine c) Semicarbazide d) Hydrogen cyanide

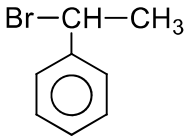
851. Lactic acid on oxidation with Fenton's reagent gives main product:

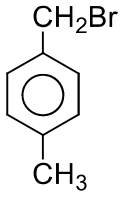
a) $CH_3COOH$ b) $H_2C_2O_4$ c) $CH_3COCOOH$ d) None of these

852. An aromatic compound $(A)$, $C_8H_9Br$ reacts with $CH_2(COOC_2H_5)_2$ in then presence of $C_2H_5ONa$ to give $(B)$ which on refluxing with oil $H_2SO_4$ gives$(C)$, a monobasic acid. $(C)$On vigorous oxidation gives benzoic acid. What is the structure of$(A)$?

a) 

b) 

c) 

d) 


853. Urotropine has the composition:

a) $(CH_2)_4N_6$ b) $(CH_2)_5N_5$ c) $(CH_2)_6N_4$ d) $(CH_3)_6N_5$

854. 0.75 g platinic chloride of a mono-acid base on ignition gave 0.245 g platinum. The molecular weight of the base is :

a) 75.0 b) 93.5 c) 100 d) 80.0

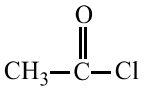
855. An aliphatic hydroxy acid is:

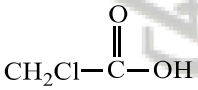
a) Maleic acid b) Mandelic acid c) Malonic acid d) Malic acid

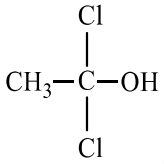
856. Carbonyl compounds when treated with sodium bisulphite solution generally a crystalline sodium bisulphite addition product is formed but which of the following carbonyl compound not forms crystalline addition product?

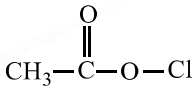
a) HCHO b) $CH_3CHO$ c) $CH_3COCH_3$ d) $C_2H_5COC_2H_5$

857. In presence of iodine catalyst, chlorine reacts with acetic acid to form:

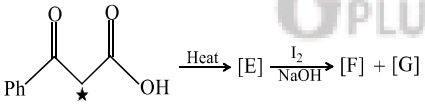
a) 

b) 

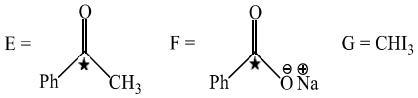
c) 

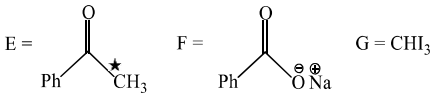
d) 

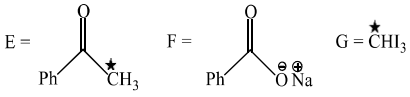

858. In the following reaction sequence, the correct structures of E, F and G are:

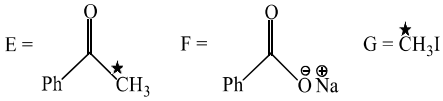



(*implies $^{13}C$ labelled carbon)

a) 


b) 


c) 


d) 


859. Compound having molecular formula $C_3H_6O$ may be:

a) Cyclic ether
b) Carbonyl compound
c) Unsaturated ether or unsaturated alcohol
d) All of the above

860. In the estimation of nitrogen by Duma's method 0.59 g of an organic compound gave 112 mL nitrogen at NTP. The percentage of nitrogen in the compound is about:

a) 23.7 b) 11.8 c) 20 d) 47.5

861. Propanone does not undergo:
   a) Oxime formation
   b) Hydrazone formation with hydrazine
   c) Cyanohydrin formation with HCN
   d) Reduction of Fehling's solution

862. $2DCDO \xrightarrow{OH^-} [X]$ and $[Y]$are
   a) $DCOO^-, D_2CHOH$ b) $HCOO^-, CH_3OH$ c) $HCOO^-, CD_3OH$ d) $DCOO^-, CD_3OH$

863. A typical compound undergoes Cannizzaro's reaction and aldol condensation. It is :
   a) $(CH_3)_2CHCHO$ b) $HCHO$ c) $C_6H_5CHO$ d) $CH_3CHO$

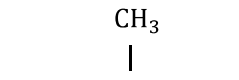
864. Formaldehyde when reacted with methyl magnesium bromide gives
   a) $C_2H_5OH$ b) $CH_3COOH$ c) $HCHO$ d) $CH_3CHO$

865. Among the following which has lowest $pK_a$ values:
   a) $CH_3COOH$ b) $HCOOH$ c) $(CH_3)_2CHCOOH$ d) $CH_3CH_2COOH$

866. Ethane can be obtained from ethanal in one step by:
   a) Na-Hg + water
   b) Zn-Hg + conc. HCl
   c) Aluminium isopropoxide and isopropyl alcohol
   d) $LiAlH_4$ + ether

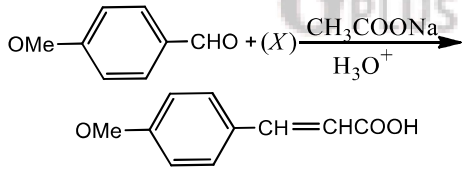
867. The end product '$C$' in the following sequence of chemical reactions is
   $CH_3COOH \xrightarrow{CaCo_3} A \xrightarrow{Heat} B \xrightarrow{NH_2OH} C$
   a) Acetaldehyde oxime b) Formaldehyde oxime c) Methyl nitrate d) Acetoxime

868. Which set of products is expected on reductive ozonolysis of the following diolefin?



   a) $CH_3CHO; CH_3COCH = CH_2$ b) $CH_3CH = C(CH_3)CHO; CH_2O$
   c) $CH_3CHO; CH_3COCHO; CH_2O$ d) $CH_3CHO; CH_3COCH_3; CH_2O$

869.



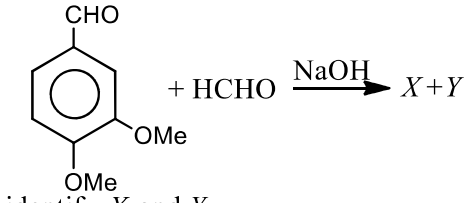

   The compound (X) is
   a) $CH_3 - COOH$ b) $BrCH_2 - COOH$ c) $(CH_3CO)_2O$ d) $CHO - COOH$

870. In the sequence, $A \xrightarrow{NH_2OH} CH_3CH = NOH \xrightarrow{Reduction} B$
   $A$ and $B$ are
   a) $CH_3CH_2OH, CH_3CH_2NH_2$ b) $CH_3CHO, CH_3NH - CH_3$
   c) $CH_3CHO, CH_3CH_2NH_2$ d) $CH_3CH_2OH, CH_3NHCH_3$

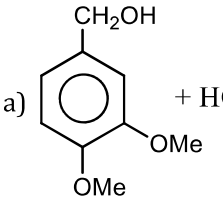
871. Partial oxidation of methane gives:
   a) HCHO b) HCOOH c) $H_2O$ and $CO_2$ d) CO and $H_2O$

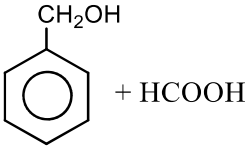
872. Ethyl acetate is obtained when methyl magnesium bromide reacts with
   a) Ethyl formate b) Ethyl chloroformate c) Acetyl chloride d) Carbon dioxide

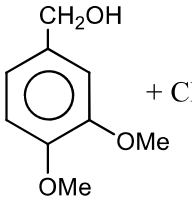
873. Collin's reagent is used to convert
   a) $>C=O \longrightarrow >CHOH$ b) $-CH_2OH \rightarrow -CHO$
   c) $-CHO \rightarrow -COOH$ d) $-CHO \rightarrow -CH_2OH$

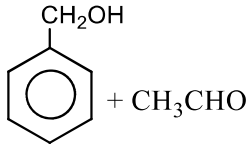
874. 

identify $X$ and $Y$

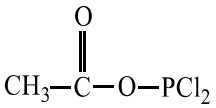
a) 

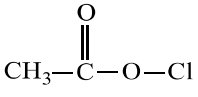
b) 

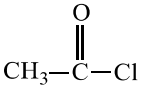
c) 

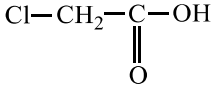
d) 

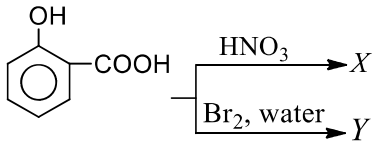

875. Which can be reduced to corresponding hydrocarbon by Zn/HCl?
a) Butan-2-one b) Acetic acid c) Acetamide d) Ethyl acetate

876. The product obtained when acetic acid is treated with phosphorus trichloride is:
a) 

b) 

c) 

d) 


877. 

$X$ and $Y$ respectively are
a) Picric acid, 2, 4, 6-tribromophenol
b) 5-nitrosalicylic acid, 5-bromosalicylic acid
c) *o*-nitrophenol, *o*-bromophenol
d) 3, 5-dinitrosalicylic acid, 3, 5-dibromosalicylic acid

878. The final products of oxidation of isopropyl alcohol are:
a) $CH_3COCH_3 + HCOOH$
b) $CH_3CH_2COOH + HCOOH$
c) $CH_3COOH + HCOOH$
d) $CH_3COOH + CH_3CH_2COOH$

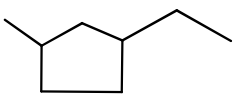
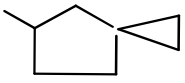
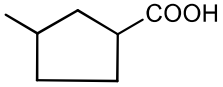
879. The main product obtained in the reaction of acetamide and $HNO_2$ is
a) $CH_3CN$ b) $CH_3NC$ c) $CH_3NH_2$ d) $CH_3COOH$

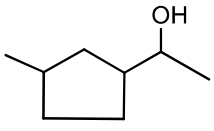
880. Which gives a ketone with a Grignard reagent?
a) Formaldehyde b) Ethyl alcohol c) Methyl cyanide d) Methyl iodide

881. Self condensation of acetaldehyde, in the presence of dilute alkalies gives
a) An acetal b) An aldol c) Mesitylene d) Propionaldehyde

882. Hybridization of carbon in carbonylic group is:
a) $sp$ b) $sp^2$ c) $sp^3$ d) None of these

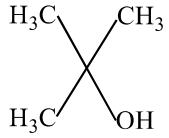
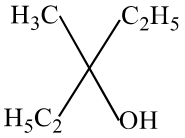
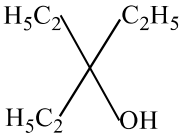
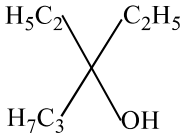
883. 

a) 
b) 
c) 

d) 


884. $CH_3CH_2CONH_2 \xrightarrow{X} CH_3CH_2CH_2NH_2, X$ is
a) $Pt/H_2$ b) $Ni/H_2$ c) $LiAlH_4$ d) Zn

885. Ethyl ester $\xrightarrow[\text{Excess}]{CH_3MgBr}$ $P$. The product $P$ will be:

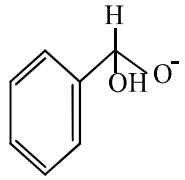
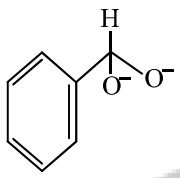
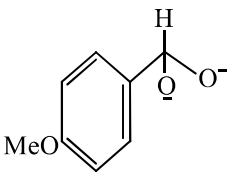
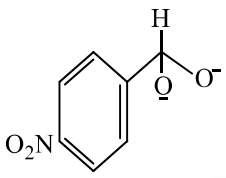
a)  b)  c)  d) 

886. When benzaldehyde reacts with acetophenone in presence of sodium hydroxide, then product is
a) $C_6H_5CH = CHCOC_6H_5$ b) $C_6H_5COCH_2C_6H_5$
c) $C_6H_5CH = CHC_6H_5$ d) $C_6H_5CH(OH)COC_6H_5$

887. Acetaldehyde cannot exhibit:
a) Lodoform test b) Benedict's test c) Tollen's test d) Lucas test

888. Cannizaro reaction is performed by
a) Formaldehyde b) Formaldehyde and acetaldehyde
c) Benzaldehyde d) Formaldehyde and benzaldehyde

889. The reaction,
$CH_3COOH + Cl_2 \xrightarrow{p} ClCH_2COOH + HCl$ is called
a) Hell-Volhard-Zelinsky reaction b) Wurtz reaction
c) Rosenmund reaction d) Hunsdiecker reaction

890. In a Cannizzaro's reaction, the intermediate that will be best hydride donor is:
a)  b)  c)  d) 

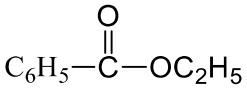
891. Aldehydes can be conveniently separated from alcohols by treating with:
a) $Na_2SO_4$ b) NaCN c) $NaHSO_3$ d) Schiff's reagent

892. One having high vapour pressure at temperature below its m. p. :
a) Benzoic acid b) Salicylic acid c) Citric acid d) All of these

893. Which of the following compounds would be the main product of an aldol condensation of acetaldehyde and acetone?
a) $CH_3CH = CH.CHO$ b) $CH_3CH = CHCOCH_3$ c) $(CH_3)_2C = CH.CHO$ d) $(CH_3)_2C = CHCOCH_3$

894. Reaction between $(C_2H_5)_2Cd$ and $CH_3COCl$ leads to the formation of
a) Diethyl ketone b) Ethyl methyl ketone c) Dimethyl ketone d) Acetaldehyde

895. Which of these does not contain –COOH group?
a) Aspirin b) Benzoic acid c) Picric acid d) Salicylic acid

896. The ease of reduction of $C_6H_5COCl$ (i), $C_6H_5CHO$ (II), $C_6H_5COCH_3$ (III) and
 (IV) by hydrogen over a palladium catalyst follows the order
a) I > *II* > *III* > *IV* b) IV > *III* > *II* > *I* c) II > *III* > *I* > *IV* d) III > *II* > *I* > *IV*

897. Schiffs and Piria method is used for the estimation of:
a) Nitrogen b) Sulphur c) Halogens d) Oxygen

898. Select the strongest acid:
a) $CF_3COOH$ b) $CCl_3COOH$ c) $CH_3COOH$ d) $CBr_3COOH$

899. The most acidic of the following is
a) $ClCH_2COOH$ b) $C_6H_5COOH$ c) $CD_3COOH$ d) $CH_3CH_2COOH$

900. The formula of a compound which gives simple whole number atomic ratio in one molecule of a compound is called:
a) Structure formula b) Molecular formula c) Empirical formula d) Projection formula

901. Which of the following is a better reducing agent for the following reduction?
$RCOOH \rightarrow RCH_2OH$
a) $SnCl_2/HCl$ b) $NaBH_4$/ether c) $H_2/Pd$ d) $B_2H_6/H_3O^+$

902. Alkaline hydrolysis of $C_4H_8Cl_2$ gives a compound which on heating with NaOH and $I_2$ produces a yellow precipitate of $CHI_3$. The compound should be

a) $CH_3CH_2CH_2CHO$

b) $CH_3CH_2-\overset{\overset{O}{\|}}{C}-CH_3$

c) $CH_3CH_2-\underset{\underset{OH}{|}}{CH}-CH_2OH$

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

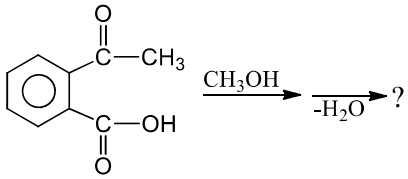
903. The most appropriate reagent to distinguish between acetaldehyde and formaldehyde is

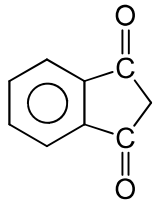
a) Fehling's solution
b) Tollen's reagent
c) Schiff's reagent
d) Iodine in presence of base

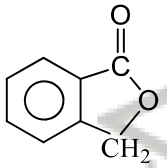
904. Which will form two oximes with $NH_2OH$?

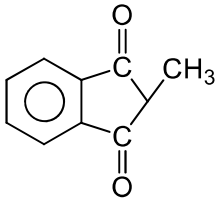
a) $CH_3COCH_3$ b) $CH_3CH_2COCH_3$ c) $CH_3CH_2COCH_2CH_3$ d) $\begin{matrix} H \\ \diagdown \\ C=O \\ \diagup \\ H \end{matrix}$

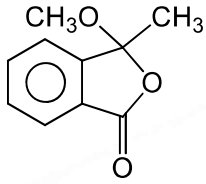
905. What is the final product of the following reaction?




a) 


b) 


c) 


d) 


906. The reaction of acetaldehyde with Tollen's reagent gives

a) Silver acetate b) Methyl alcohol c) Formaldehyde d) Acetic acid

907. Aldol condensation is given by:

a) Aldehydes only having α-hydrogen atom
b) Aldehydes and ketones having α-hydrogen atom
c) Ketones only having α-hydrogen atom
d) Aldehydes having α-hydrogen atom

908. Isoelectric point is the pH at which :

a) An amino acid becomes acidic
b) An amino acid becomes basic
c) Zwitter ion has positive charge
d) Zwitter ion has zero charge

909. Ascorbic acid is a/an:

a) Vitamin C b) Enzyme c) Protein d) None of these

910. Lacrymator or tear gas is:

a) $C_6H_5COCl$ b) $C_6H_5OC_6H_5$ c) $C_6H_5COCH_2Cl$ d) $C_6H_5COCH_3$

911. Which acid derivatives on hydrolysis will give brown precipitate with Nessler's reagent?

a) Acid chloride b) Acid anhydride c) Acid amide d) All of these

912. In a set of the given reactions, acetic acid yielded a product *C.*

$CH_3COOH + PCl_5 \rightarrow A$

$$A \xrightarrow[\text{arth.}AlCl_3]{C_6H_5} B \xrightarrow[\text{ether}]{C_2H_5MgBr} C$$

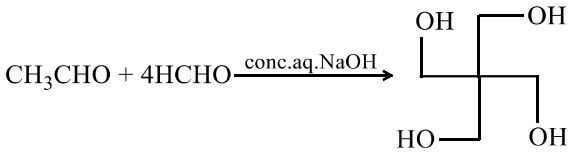
Product $C$ would be

a) $CH_3CH(OH)C_6H_5$ b) $\begin{matrix} C_2H_5 \\ | \end{matrix}$ c) $CH_3CH(OH)C_2H_5$ d) $CH_3COC_6H_5$

$CH_3 - C(OH)C_6H_5$

913. Formic acid:
   a) Is immiscible with water
   b) Reduces ammoniacal silver nitrate
   c) Is a weak acid nearly three and a half times weaker than acetic acid
   d) Is prepared by heating potassium hydroxide

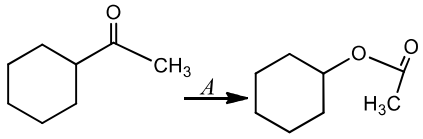
914. The number of aldol reaction(s) that occurs in the given transformation is:




   a) 1 b) 2 c) 3 d) 4

915. Reactivity of acids in esterification follows the order:
   a) $HCOOH > CH_3COOH > RCH_2COOH > R_2CHCOOH > R_3CCOOH$
   b) $CH_3COOH > HCOOH > R_3CCOOH > R_2CHCOOH > RCH_2COOH$
   c) $R_3CCOOH > R_2CHCOOH > RCH_2COOH > CH_3COOH > HCOOH$
   d) None of the above

916. The most suitable reagent *A*, for the reaction




   is/are
   a) $O_3$ b) $H_2O_2$
   c) $NaOH - H_2O_2$ d) *m*-chloroperbenzoic acid

917. Three of the following four reactions are due to one similar feature of carbonyl compounds, while the fourth one is different. Which one is fourth?
   a) Aldol condensation b) Knoevenagel reaction
   c) Witting reaction d) Haloform reaction



918. The relative reactivities of acyl compounds towards nucleophilic substitution are in the order of:
   a) Ester > Acyl chloride > Amide > Acid anhydride
   b) Acid anhydride > Amide > Ester > Acyl chloride
   c) Acyl chloride > Ester > Acid anhydride > Amide
   d) Acyl chloride > Acid anhydride > Ester > Amide

919. With the help of following Grignard synthesis which carboxylic acid is formed?

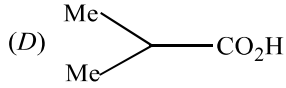
$$CH_2 = CHCH_2Br \xrightarrow{Mg/Ether} \xrightarrow[(ii)\ H_3O^+]{(i)\ CO_2} ?$$

   a) $CH_2 = CHCH_2COOH$ b) $CH_3CH_2CH_2COOH$ c) $CH_2 = CHCOOH$ d) $CH_3CH = CH - COOH$

920. Oxalic acid on treatment with conc. $H_2SO_4$ gives:
   a) $CO + H_2O_2$ b) $H_2O + CO + CO_2$ c) $HCOOH + CO_2$ d) $HCOOH + CO_2 + O_2$

921. The reaction product of the compound '*A*' with excess of methyl magnesium iodide followed by acidification yields *t*-butanol. The compound *A* is:
   a) Methanal b) Ethanal c) Propanal d) Methyl ethanoate

922. The correct order of increasing acid strength of the compounds:
   $(A)CH_3CO_2H$
   $(B)MeOCH_2CO_2H$
   $(C)CH_3CO_2H$



is:

a) $B < D < A < C$ b) $D < A < C < B$ c) $D < A < B < C$ d) $A < D < C < B$

923. Which is obtained by the oxidation of propionaldehyde?

a) Acetic acid
b) Formic acid and acetic acid
c) Propanoic acid
d) $n$-Propyl alcohol

924. Acetone and acetaldehyde can be identified by treatment with:

a) $NaHSO_3$ b) NaCN c) $NaOH + I_2$ d) $Ag(NH_3)_2^+$

925. The presence of carbon in an organic compound can be shown by

a) Heating with copper which goes black
b) Burning it to produce green edge flame
c) Heating it with copper oxide to convert it into $CO_2$
d) None of the above

926. Choose the incorrect statement

a) Carboxylic acids have higher boiling points than those of alcohols of similar molecular weight
b) Carboxylic acids have lower boiling points than those of alcohols of similar molecular weight
c) Carboxylic acids ($C_1$ $to$ $C_4$) are soluble in water
d) The melting points of carboxylic acids increase or decrease in an irregular manner

927. The increasing order of the rate of HCN addition to compounds $A - D$ is

IV. HCHO
V. $CH_3COCH_3$
VI. $PhCOCH_3$
VII. PhCOPh

a) A < B < C < D b) D < B < C < A c) D < C < B < A d) C < D < B < A

928. Benzoin is

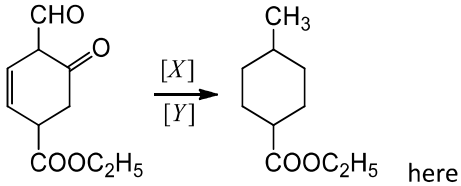
a) Compound containing an aldehyde and a ketonic group
b) $\alpha, \beta$-unsaturated acid
c) $\alpha$ −hydroxy aldehyde
d) $\alpha$ −hydroxy ketone

929. Highest pH value among the following is that of:

a) Gastric juice b) Lemon juice c) Human blood d) Pepsi cola

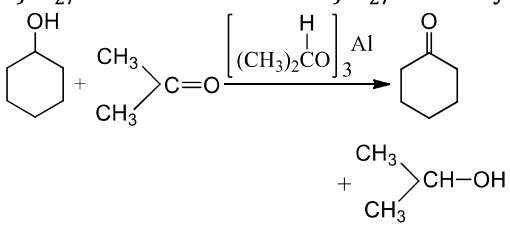
930. Molecular weight of phorone is equal to

a) 2 × molecular weight of acetone − molecular weight of water
b) 3 × molecular weight of accetone − 2 × molecular weight of water
c) 3 × molecular weight of acetone − molecular weight of water
d) 2 × molecular weight of acetone − 2 × molecualr weight of water

931. 

here

a) $H_2/Ni$ and NaOH b) $H_2/Ni$ and hydrazine c) $H_2/Ni$, LAH d) None of theses

932. 


The reaction is known as

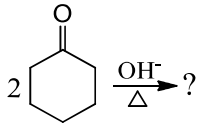
a) MPV reaction b) Oppanauer oxidation

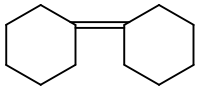
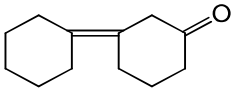
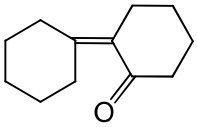
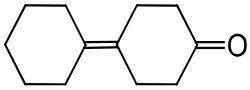
c) Tischenko reaction d) Gattermann Koch reaction

933. Raw juice in sugar factories is generally concentrated by:
a) Vacuum distillation b) Steam distillation c) Sublimation d) Crystallization

934. Which of the following converts carbonyl compounds into hydrocarbons?
a) $H_2$ / Pt b) $LiAlH_4$ c) $K_2Cr_2O_7$ /$H_2SO_4$ d) Zn – Hg /HCl

935. Two molecules of an aldehyde react with a concentrated solution of caustic soda and produces one molecule of an alcohol and acid each, which one is the aldehyde?
a) Acetaldehyde b) Formaldehyde c) Propionaldehyde d) Butyraldehyde

936.  product is

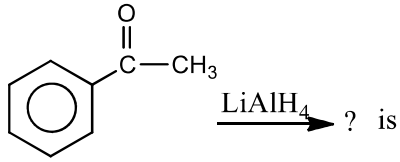
a)  b)  c)  d) 

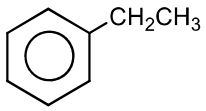
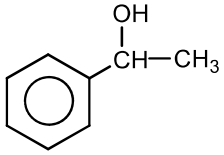
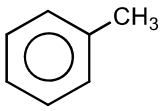
937. Schiff's reagent is:
a) Magenta solution decolourised with sulphurous acid
b) Magenta solution decolourised with chlorine
c) Ammoniacal cobalt chloride solution
d) Ammoniacal manganese sulphate solution

938. The compound which is not formed during the dry distillation of a mixture of calcium formate and calcium acetate is
a) Methanal b) Propanal c) Propanone d) Ethanal

939. The reaction
$RCOOH + N_3H \xrightarrow{Conc.H_2SO_4} RNH_2 + CO_2 + N_2$ is called
a) Lossen reaction b) Schmidt reaction c) Curtius reaction d) Ullmann reaction

940. The IUPAC name of  is:
a) 6-oxohexanoic acid
b) Hexan-1-al-6-oic acid
c) 1-aldo-hexanoic acid
d) 6-aldo-hexan-1-oic acid

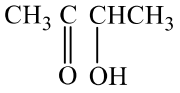
941. The product formed in the reaction
 is

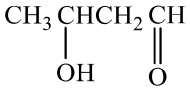
a)  b)  c)  d) None of these

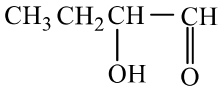
942. Fuels from crude oil are separated from one another by:
a) Fractional distillation b) Crystallization c) Steam distillation d) Selective adsorption

943. Propanoic acid on warming with $Cl_2$ in presence of red P gives:
a) $CH_3CH_2COCl$ b) $CH_3CH_2Cl$ c) $CH_3CHClCOOH$ d) $CH_2ClCH_2COOH$

944. The aldol condensation of acetaldehyde results in the formation of:

a) 

b) 

c) 

d) $CH_3CH_2OH + CH_3COOH$

945. Which one of the following can produce hydrogen when treated with metallic sodium?
a) $(CH_3)_2NH$ b) $CH_3NH_2$ c) $C_6H_5NH_2$ d) $CH_3CONH_2$

946. Identify the correct order of boiling points of the following compounds,
$CH_3(CH_2)_2CH_2OH$; $CH_3(CH_2)_2CHO$;
1 2
$CH_3(CH_2)_2COOH$:
3
a) $1 > 2 > 3$ b) $3 > 1 > 2$ c) $1 > 3 > 2$ d) $3 > 2 > 1$

947. Organic compounds are studied separately from inorganic compounds because:
a) They occur in plants and animals
b) These are combustible and have complex structures
c) These are the compounds of carbon
d) The number of organic compounds is very large

948. Give IUPAC name of the product, when acetamide is heated with anhydrous phosphorus pentoxide.
a) Ethyl amine b) Propane nitrile c) Cyano methane d) Ethane nitrile

949. Acetamide is treated with the following reagents separately. Which one of these would yield methyl amine.
a) $NaOH + Br_2$ b) Sodalime c) Hot conc. $H_2SO_4$ d) $PCl_5$

950. $CH_3 - \underset{|}{C} = CH - CH_3$
The compounds on reaction with $NaIO_4$ in the presence of $KMnO_4$ gives
a) $CH_3COCH_3$ b) $CH_3COCH_3 + CH_3COOH$
c) $CH_3COCH_3 + CH_3CHO$ d) $CH_3CHO + CO_2$

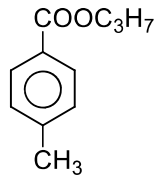
951. When a ketone is condensed into an aldol, the reagent used is:
a) Alkali b) $NaHCO_3$ c) $Br_2$ water d) $Cl_2$

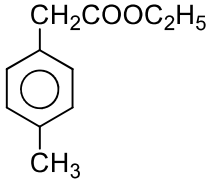
952. Amides contain $>C=O$ group, yet they do not give characteristic reactions of $>C=O$ group because
a) They dimerise b) Of resonance
c) They posses cyclic structure d) Of attached alkyl group

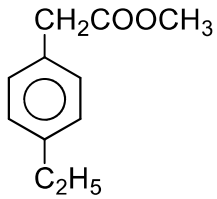
953. Which of the following acids (1 mol) does not give cyclic anhydride on heating
a) Adipic acid b) Terephthalic acid c) Succinic acid d) Phthalic acid

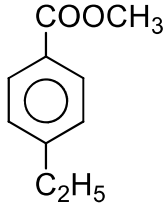
954. Which of the aldehyde is most reactive?
a) $C_6H_5CHO$ b) $CH_3CHO$
c) HCHO d) All are equally reactive

955. An ester $(X)$ molecular formula $C_{11}H_{14}O_2$ was treated with LAH when it forms two compounds $(A)$ and $(B)$ with molecular formula $C_9H_{12}O$ and $C_2H_6O$ respectivity $(A)$ on heating with an acid forms $C_9H_{10}(C)$. $(C)$ on oxidation with $KMnO_4$ forms terephthalic acid. Compound $(X)$ is

a) 

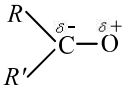
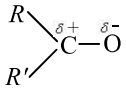
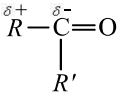
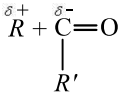
b) 

c) 

d) 

956. Which of the following is present in tea as well as in bark of a tree?
a) Tannic acid b) Oxalic acid c) Cellulose d) Caffeine

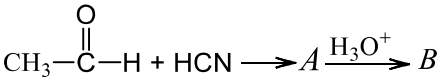
957. Waxes are long chain compounds belonging to the class:
a) Acids b) Alcohols c) Esters d) Ethers

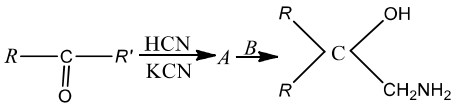
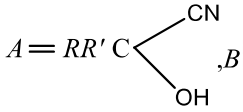
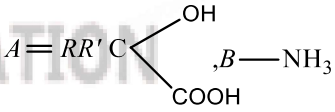
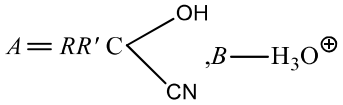
958. Which of the following is correct for carbonyl compounds?
a)  b)  c)  d) 

959. Which of the following has most acidic hydrogen?
a) 3-hexanone b) 2,4-hexanedione c) 2,5-hexanedione d) 2,3-hexanedione

960. Which acid gives wine red colour with neutral $FeCl_3$?
a) Propanoic acid b) Acetic acid c) Formic acid d) None of these

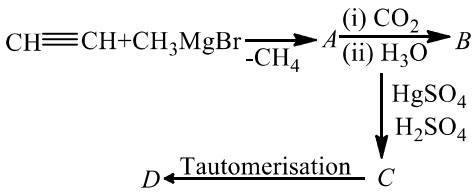
961. An organic compound is fused with fusion mixture and extracted with $HNO_3$. The extract gives yellow precipitate with ammonium molybdate. It show the presence of which element?
a) P
b) As
c) Both P and As
d) May be P or As or both

962. Which acid is produced in the following reaction?

a) Maleic acid b) Lactic acid c) Tartaric acid d) Oxalic acid

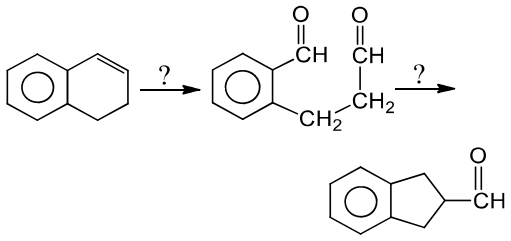
963. A and B in the following reaction are

a)  b) 
c)  d) $A + RR'CH_2CN, B = NaOH$

964. Amino acid usually exists in the form of Zwitter ions, which consists of:
a) The basic group —$NH_2$ and the acidic group —COOH
b) The basic group —$NH_3^+$ and the acidic group —$CO_2^-$
c) The basic group —$CO_2^-$ and the acidic group —$NH_3^+$
d) No basic or acidic groups as such

965. Which of the following do not form addition compounds with ammonia?
a) HCHO b) $CH_3COCH_3$ c) $CH_3CHO$ d) None of these

966. Identify $D$ in the following reaction

a) $HOOC - CH_2 - COOH$ b) $OHC - CH_2 - COOH$
c) $OHC - CH_2 - CHO$ d) $HO - CH = CH - COOH$

967. What reagent would be needed to bring about each step of following synthesis?



a) $Hg^{2+}, H_2SO_4, OH^-$ b) $KMnO_4/H_2SO_4, OH^-$ c) $H_2Cr_2O_7$, dry HCl d) $O_3, Zn, H_2O, OH^-$

968. Etard's reaction involves the preparation of benzaldehyde from
a) Toluene b) Ethyl benzene c) Benzoyl chloride d) Sodium benzoate

969. The Hell-Volhard-Zelinsky reaction is used for preparing
a) $\beta$ −halo acid b) $\gamma$ −halo acid c) $\alpha$-halo acid d) Acid halide

970. It acetyl chloride is reduced in presence of $BaSO_4 + Pd$, the product formed is:
a) $CH_3CHO$ b) $CH_3CH_2OH$ c) $CH_3COOH$ d) $CH_3COCH_3$

971. The end product of the reaction,
$CH_3OH \xrightarrow[300^oC]{Cu} A \xrightarrow{NaOH} B$ is:
a) Alkane
b) Carboxylic acid
c) Ketone
d) Sodium slat of carboxylic acid

972. Aldehydes on reaction with hydroxylamine gives :
a) Aldoxime b) Hydrazone c) Aminohydroxide d) Semicarbazone

973. In which of the below reaction do we find $\alpha, \beta$- unsaturated carbonyl compounds undergoing a ring closure reaction with conjugated dienes?
a) Perkin reaction b) Diels-Alder reaction
c) Claisen rearrangement d) Hofmann reaction

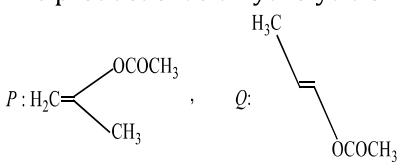
974. When an aldehyde was heated with alkali, a part of it was converted into alcohol and a part of it into an acid. The aldehyde is:
a) An aliphatic aldehyde other than HCHO
b) An aliphatic aldehyde or salicylaldehyde
c) An aromatic aldehyde other than salicylaldehyde
d) An aromatic aldehyde or HCHO

975. In the reaction,
$C_2H_5OC_2H_5 + CO \xrightarrow[150^0,C,500\ atm\ pressure]{BF_3} X$
What is $X$?

a) Diethyl carbonate b) Ethyl carbonate c) Diethyl peroxide d) Ethyl propionate

976. The correct order of decreasing acid strength of trichloroacetic acid ($A$), trifluoroacetic acid ($B$), acetic acid ($C$) and formic acid ($D$) is:
a) $A > B > C > D$
b) $A > C > B > D$
c) $B > A > D > C$
d) $B > D > C > A$

977. The product of acid hydrolysis of $P$ and $Q$ can be distinguished by:



a) Lucas reagent b) 2,4-DNP c) Fehling's solution d) $NaHSO_3$

978. Acetone is used in:
   a) Face creams
   b) Vanilla
   c) Nail polishes
   d) Sweet smelling erasers

979. A colourless water soluble organic liquid decomposes sodium carbonate and liberates $CO_2$. It produces black precipitate with Tollen's reagent. The liquid is
   a) Acetaldehyde  b) Acetamide  c) Formic acid  d) Acetone

980. The conversion of benzaldehyde into benzyl alcohol takes place by
   a) Fittig reaction  b) Wurtz Fitting reaction
   c) Wurtz reaction  d) Cannizaro's reaction

981. What is the oxidation number of carbonyl carbon in acetophenone?
   a) +3  b) +1  c) +2  d) Zero

982. Acetic acid on heating with urea gives:
   a) Acetamide, carbon dioxide and ammonia
   b) Ammonium carbonate and carbon
   c) Ammonium acetate, acetamide and carbon dioxide
   d) None of the above

983. $C_6H_5CHO$ on reacting with $Cl_2$ gives:
   a) $C_6H_5CHCl_2$  b) $C_6H_5COOH$  c) $C_6H_5CH_2OH$  d) $C_6H_5COCl$

984. In sodium extract test of organic compounds, the nitrogen of an organic compound is converted into:
   a) Sodamide  b) Sodium cyanide  c) Sodium nitrite  d) Sodium nitrate

985. At the isoelectric point for amino acid the species present are:
   a) $R-\underset{\displaystyle NH_2}{\underset{|}{CH}}-COOH$
   b) $R-\underset{\displaystyle {}^{+}NH_3}{\underset{|}{CH}}-COOH$
   c) $R-\underset{\displaystyle NH_2}{\underset{|}{CH}}-COO^{-}$
   d) $R-\underset{\displaystyle {}^{+}NH_3}{\underset{|}{CH}}-COO^{-}$

986. $CH_3COCl$ reacts with:
   a) $C_6H_5OH$  b) $C_6H_5NH_2$  c) Salicylic acid  d) All of these

987. Stinges of bees, red ant and wasps contain:
   a) Formaline  b) Formic acid  c) Acetic acid  d) Formaldehyde

988. A colourless organic compound gives brisk effervescences with a mixture of sodium nitrite and dil. HCl. It could be
   a) Oxalic acid  b) Acetic acid  c) Urea  d) Glucose

989. Which of the following on oxidation gives an acid containing two carbon atoms?
   a) Ethanol  b) Ethane nitrile  c) Ethanamide  d) Ethanamine

990. Which of the following has highest b.p.?
   a) $C_2H_5OH$  b) $CH_3COOH$  c) $CH_3COCH_3$  d) $HCOOCH_3$

991. $C_6H_5CHO \xrightarrow{NH_3} ?$
   a) $(C_6H_5CHN)_2CH.C_6H_5$  b) $C_6H_5NHCH_3$  c) $C_6H_5CH_2NH_2$  d) $C_6H_5NHC_6H_5$

992. Cyclohexanone is subjected to reduction by $NaBH_4$. The product formed is:
   a) Cyclohexane  b) Cyclohexanal  c) Cyclohexadiene  d) Cyclohexanol

993. Alkaline hydrolysis of an ester is called:

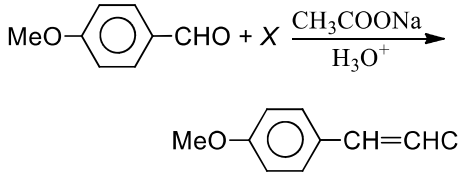
a) Neutralization b) Esterification c) Polymerization d) Saponification

994. The reagent used in Gattermann Koch aldehyde synthesis is

a) $Pb/BaSO_4$ b) Alkaline $KMnO_4$ c) Acidic $KMnO_4$ d) $CO + HCl$

995. Which is false in case of carboxylic acids?

a) They are polar molecules
b) They form H-bonds
c) They are stronger than mineral acids
d) They have higher b.p. than corresponding alcohols

996. 


The compound *X* is

a) $CH_3 - COOH$ b) $BrCH_2 - COOH$ c) $(CH_3CO)_2O$ d) $CHO - COOH$

997. Acetyl chloride cannot be obtained by treating acetic acid with:

a) $CHCl_3$ b) $SOCl_2$ c) $PCl_3$ d) $PCl_5$

998. Carbonyl compounds react with phenyl hydrazine to form:

a) Oxime b) Phenyl hydrazone c) Hydrazone d) Semicarbazone

999. Formic acid is obtained when:

a) Calcium acetate is heated with conc. $H_2SO_4$
b) Calcium formate is heated with calcium acetate
c) Glycerol is heated with oxalic acid
d) Acetaldehyde is oxidized with $K_2Cr_2O_7$ and $H_2SO_4$

1000. Benedict's solution is not reduced by

a) Formaldehyde b) Acetaldehyde c) Glucose d) Acetic anhydride

1001. Vinegar is

a) HCHO b) HCOOH
c) $CH_3CHO$ d) $CH_3COOH$

1002. Which will not give acetamide (no heating) on reaction with ammonia?

a) Acetic acid b) Acetyl chloride c) Acetic anhydride d) Methyl acetate

1003. Jone's reagent is:

a) Acidified $KMnO_4$
b) $K_2Cr_2O_7 + H_2SO_4$ or chromic acid + $H_2SO_4$
c) Alkaline $K_2Cr_2O_7$
d) None of the above

1004. Acetaldehyde reacts with $PCl_5$, to give:

a) Ethyl chloride
b) Ethylene chloride
c) Ethylidene dichloride
d) Trichloroacetaldehyde

1005. *Trans* esterification is the process of

a) Conversion of an aliphatic acid to ester
b) Conversion of an aromatic acid to ester

c) Conversion of one ester to another ester
d) Conversion of an ester into its components namely acid and alcohol

100 The formation of aldehyde from alkyl cyanide is related with the name
6.
a) Stephen b) Rosenmund c) Wurtz d) HVZ reaction

100 Which of the following substances will not react with $PCl_5$?
7.
a) Methyl alcohol b) Acetic acid c) Acetaldehyde d) Ethane

100 Treatment of propionaldehyde with dil. NaOH gives:
8.
a) $CH_3CH_2COOCH_2CH_2CH_3$ b) $CH_3CH_2CHOHCH_2CH_2Cl$ c) $CH_3CH_2CHOHCH(CH_3)C$ d) $CH_3CH_2COCH_2CHO$

100 Fehling's solution consists of two separate alkaline solution. If one is $CuSO_4$, the other is:
9.
a) $NaHCO_3$ b) $Na_2SO_4$ c) $NaKC_4H_6O_8$ d) $NaKC_2O_4$

101 α, β- unsaturated aldehyde is formed in the sequence
0.
a) $HCHO \xrightarrow{KOH\ (aq)}$ b) $CH_3CHO \xrightarrow{Dil.KOH} A \xrightarrow{\Delta} B$
c) $CCl_3\ CHO \xrightarrow{KOH\ (aq)}$ d) $CH_3-\overset{O}{\overset{\|}{C}}-OC_2H_5 \xrightarrow{KOH\ (aq)}$

101 Which of the following organic compounds answers to both iodoform test and Fehling's test?
1.
a) Ethanol b) Methanal c) Ethanal d) Propanone

101 In steam distillation, the vapour pressure of the volatile organic compound is:
2.
a) Equal to atmospheric pressure
b) Less than atmospheric pressure
c) More than atmospheric pressure
d) None of the above

101 The correct order of acid strength is:
3.
a) $CH_3COOH > CH_2ClCOOH > CHCl_2COOH$
b) $CHCl_2COOH > CH_2ClCOOH > CH_3COOH$
c) $CHCl_2COOH > CH_3COOH > CH_2ClCOOH$
d) $CH_2ClCOOH > CH_3COOH > CHCl_2COOH$

101 The ration of carbon, hydrogen and oxygen in 2-methyl benzoic acid is:
4.
a) 4 : 4 : 2 b) 4 : 4 : 1 c) 4 : 2 : 2 d) 2 : 4 : 1

101 Oxalic acid, malonic acid and succinic acid can be distinguished by:
5.
a) Heat
b) Acidified $KMnO_4$
c) $Br_2$ water
d) $NH_3$

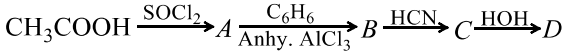
101 Ketones on reaction with $NH_2CONHNH_2$ form well defined crystalline compounds, called:
6.
a) Hydrazones b) Schiff's base c) Oximes d) Semicarbazones

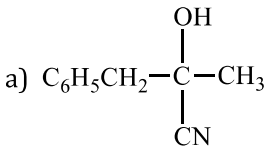
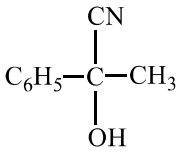
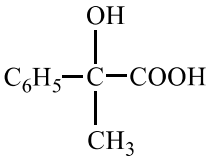
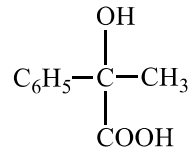
101 In Kjeldahl's method nitrogen present is quantitatively converted to:
7.
a) $N_2$ b) $(NH_4)_2SO_4$ c) $NO_2$ d) None of these

101 Propionic acid and KOH reacts to produce which one of the following?
8.

a) Potassium propionate b) Propyl alcohol
c) Propionaldehyde d) Does not react

101 In a set of reaction acetic acid yields a product [*D*]. The structure of [*D*] would be:
9.



a)  b)  c)  d) 

102 Benzamide on treatment with $POCl_3$ gives
0.

a) Aniline b) Benzonitrile c) Chlorobenzene d) Benzyl amine

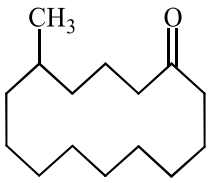
102 Anhydrous formic acid cannot be obtained from aqueous solution by fractional distillation because:
1.

a) It is soluble in water
b) It forms a constant boiling mixture with water
c) Its boiling point is very close to water
d) There is much difference in their boiling points

102 In lassaigne's test when both N and S are present, blood red colour obtained is due to the formation of:
2.

a) Ferric ferrocyanide b) Ferric sulphocyanide c) Ferric cyanide d) None of the above

102 Muscone (an explosive perfume secreted by musk deer) has the structure
3.



. Its IUPAC name is:

a) 3-methyl cyclopentadecanone
b) Methyl cyclopentadecan-3-one
c) 3-methyl cyclotetradecanone
d) 3-methyl cyclohexadecan-3-one

102 An organic compound *X* with the molecular formula $C_5H_{10}O$ yields phenyl hydrazone and gives a negative
4. response to the iodoform test and Tollen's test. It prouduces *n*-pentane on reduction. The compound could be

a) Pentanal b) Pentanone-2 c) Pentanone-3 d) Amyl alcohol

102 Which compounds will not reduce Fehling's solution?
5.

a) Methanal b) Ethanal c) Trichloroethanal d) Benzaldehyde

102 Which of the following compounds is oxidized to prepare methyl ethyl ketone?
6.

a) 2-propanol b) 1-butanol c) 2-butaonol d) Tert-butyl alcohol

102 An organic compound is boiled with alcoholic potash. The product is cooled and acidified with HCl. A
7. white solid separates out. The starting compound may be

a) Ethyl benzoate b) Ethyl formate c) Ethyl acetate d) Methyl acetate

102 The substance used as an adsorbent in the column chromatography is:
8.

a) $Na_2O$ b) $Na_2SO_4$ c) $Al_2O_3$ d) Alum

102 Saturated fatty acids are represented by which of the formula?

9.

a) $C_nH_nO_2$ b) $C_nH_{3n}O_2$ c) $C_nH_{2n+1}$ d) $C_nH_{2n}O_2$

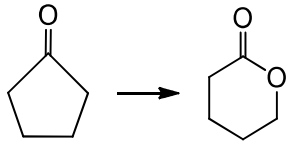
103 Clemmensen reduction of a ketone is carried out in the presence of which of the
0. following?

a) $H_2$ and Pt as catalyst b) Glycol with KOH c) Zn-Hg with HCl d) $LiAlH_4$

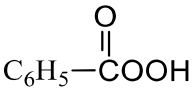
103 Which of the following diacid readily gives anhydride on heating?
1.

a) Fumaric b) Maleic acid c) Malic acid d) Terephthalic acid

103 The conversion
2.



Can be effected by using the reagent

a) $H_2O, H_2SO_4$ b) $O_2$ c)  d) $CrO_3, H_2SO_4$

103 For detection of sulphur in an organic compound, sodium nitroprusside is added to the sodium extract. A
3. violet colour is obtained due to the formation of:

a) $Fe(CN)_2$ b) $K_3$ $Fe(CN)_5$ NS c) $Na_4[Fe(CN)_5NOS]$ d) $Na_4Fe(CN)_6$

103 Which of the following acids has the smallest dissociation constant?
4.

a) $CH_3CHFCOOH$ b) $FCH_2CH_2COOH$ c) $BrCH_2CH_2COOH$ d) $CH_3CHBrCOOH$

103 In the conversion of Grignard reagent into an aldehyde, the other component used in
5.

a) Ethyl formate b) Ethyl acetate c) Ethyl cyanide d) Hydrogen cyanide

103 Compound (*A*) $C_5H_{10}O$ forms a phenyl hydrazone and gives negative Toolen's and iodoform tests.
6. Compound (*A*) on reduction gives *n*-pentane. Compound (*A*) is:

a) A primary alcohol b) An aldehyde c) A ketone d) A secondary alcohol

103 Which of the following statements regarding amides is not correct?
7.

a) Amides do not form salts when treated with aqueous acids
b) The aqueous solutions of amides are alkaline
c) Amides are very poor nucleophiles
d) Amides are considerably less reactive than acid chlorides

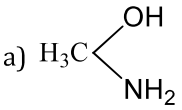
103 Maleic and fumaric acids:
8.

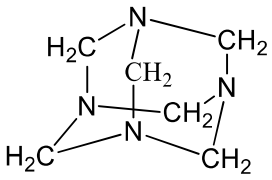
a) Have identical m.p.
b) Have identical solubility in water
c) Form the same anhydride on heating
d) None of the above

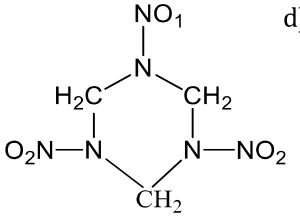
103 Sodium extract prepared by using thio urea contains which ion in the solution, mainly responsible for a
9. characteristic test?

a) NaCN b) $Na_2S$ c) NaCNS d) $Na_2SO_4$

104
0. The final product obtained in the reaction $CH_2O + NH_3 \longrightarrow [\quad] \xrightarrow[Ac_2O]{HNO_3}$ is

a) 

b) 

c) 

d) None of the above

104 Both HCHO and $CH_3CHO$ gives similar reactions with all the reagents except
1.

a) Schiff reagent b) Fehling solution c) Ammoniacal $AgNO_3$ d) Ammonia

104 In the reaction,
2. $R-X \xrightarrow{\text{Alcoholic KCN}} A \xrightarrow{\text{Dilute HCl}} B$

The product $B$ is

a) Alkyl chloride b) Aldehyde c) Carboxylic acid d) Ketone

104 The property which distinguishes formic acid from acetic acid is
3.

a) Only ammonium salt of formic acid on heating gives amide
b) When heated with alcohol /$H_2SO_4$ only acetic acid forms ester
c) Only acetic acid forms salts with alkali
d) Only formic acid reduces Fehling's solution

104 Absolute alcohol is prepared from rectified spirit by:
4.

a) Fractional distillation
b) Steam distillation
c) Azeotropic distillation
d) Vacuum distillation

104 Which of the following gives oxalic acid?
5.

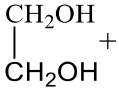
a) Heating of acetic acid b) Action of nitric acid glucose
c) Acidic hydrolysis of cyanogen d) Strong heating of sodium formate

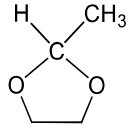
104 Urea on slow heating gives
6.

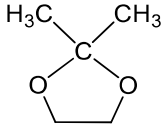
a) $NH_2CONHNO_2$ b) $NH_2CONHCONH_2$
c) HCNO d) $NH_2CONH_2.HNO_3$

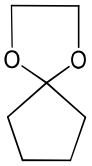
104 The conversion of acetophenone to acetanilide is best accomplished by using
7.

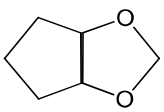
a) Backmann rearrangement b) Curtius rearrangement
c) Lossen rearrangement d) Hofmann rearrangement

104  + cyclopentanone $\longrightarrow [X]$.
8. Product is

a) 

b) 

c) 

d) 

104 An aldehyde which undergoes Cannizzaro's reaction and reduces Schiff's reagent but does not reduce
9. Fehling's solution is:

a) $CH_3CHO$ b) HCHO c) $C_6H_5CHO$ d) Salicyladehyde

105 Which acid is used in baking powder?
0.

a) Oxalic acid b) Citric acid c) Lactic acid d) Tartaric acid

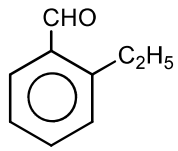
105 Which of the following statements are correct for benzoic acid?

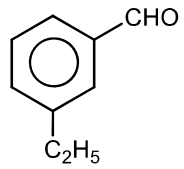
1.

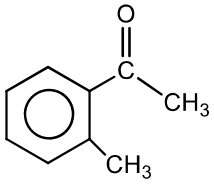
a) Nitration gives *o* and *p*-nitrobenzoic acid
b) Bromination gives *o*-bromobenzoic acid
c) The Friedel-Craft's reaction with $CH_3COCl/AlCl_3$ give *m*-carboxyaceto-phenone
d) The reaction with concentrated sulphonic acid gives 3-carboxybenzene sulphonic acid

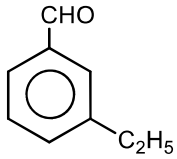
105 An aromatic compound '*X*' with molecular formula $C_9H_{10}O$ gives the following chemical tests

2. VIII. Forms 2, 4-DNP derivative,
IX. Reduces Tollen's reagent,
X. Undergoes Cannizaro reaction and,
XI. On vigorous oxidation 1, 2-benzenedicarboxylic acid is obtained.
X is

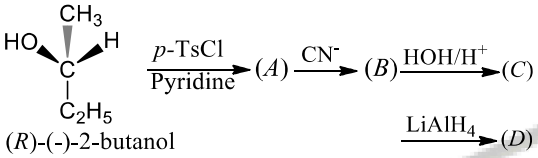
a) 


b) 

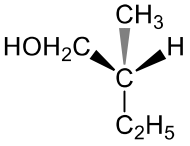

c) 

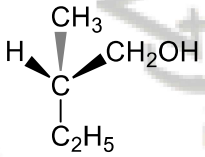

d) 

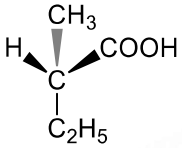

105 Give stereochemical formula for compound (*D*)

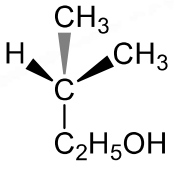
3. 

(*R*)-(-)-2-butanol

a) 


b) 


c) 


d) 


105 General formula of carbonyl compound is:

4.

a) $C_nH_{2n}O$ b) $C_nH_{2n+2}O$ c) $C_nH_{2n+1}O$ d) $C_nH_{2n+2}O_2$

105 The product *C* of the reaction,

5. $CH_3CN \xrightarrow{H_2O} A \xrightarrow{NH_3} B \xrightarrow{\Delta} C$ is:

a) Methyl amine b) Ammonium acetate c) Ethyl amine d) Acetamide

105 Formic acid and acetic acid are distinguished by

6.

a) $NaHCO_3$ b) $FeCl_3$ c) Victor Meyer test d) Tollen's reagent

105 Which of the following types of carbonyl groups will produce oxime on reaction with?

7.

a) $R-\underset{\underset{O}{\|}}{C}-OH$ b) $R-\underset{\underset{O}{\|}}{C}-H$ c) $R-\underset{\underset{O}{\|}}{C}-OCH_3$ d) $R-\underset{\underset{O}{\|}}{C}-NH-CH_3$

105 Aldehydes and ketones can be reduced to hydrocarbon by using

8.

a) $LiAlH_4$ b) $H_2/Pd - BaSO_4$ c) Na-Hg /HCl d) $NH_2 - NH_2/C_2H_5ONa$

105 Industrial preparation of formic acid involves:

9.

a) Reaction of CO with aqueous NaOH under pressure
b) Reaction of $CO_2$ with aqueous NaOH under pressure
c) Passing a mixture of CO and $H_2$ overheated copper at 473 K
d) Reaction of CO with methanol at 473 K

106 $CH_3COCH_3$ can be obtained by:

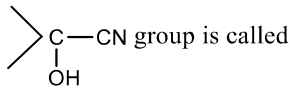
0.

a) Heating acetaldehyde with methanol

b) Oxidation of propyl alcohol

c) Oxidation of isopropyl alcohol

d) Reduction of propionic acid

106 


a) Hydroxy nitrile b) Hydroxy cyanide c) Cyanohydrin d) Hydroxy isocyanide

106 Vinegar is a solution of acetic acid which is

2.

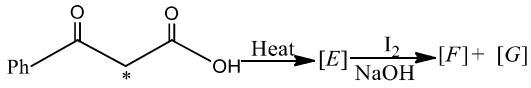
a) 15-20 % b) 20-25 % c) 6-8 % d) 2-4 %

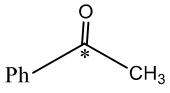
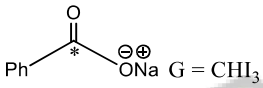
106 Which of the following is the strongest acid?

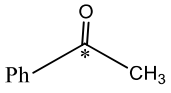
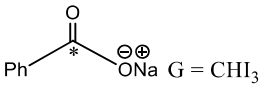
3.

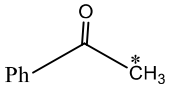
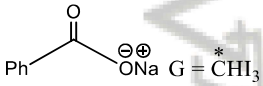
a) $CH_3COOH$ b) $HCOOH$ c) $ClCH_2COOH$ d) $Cl_2CHCOOH$

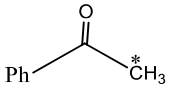
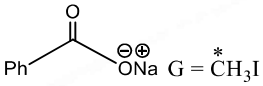
106 In the following reaction sequence, the correct structures of $E, F$ and $G$ are

4. 


a) $E =$  $F =$  $G = CHI_3$

b) $E =$  $F =$  $G = CHI_3$

c) $E =$  $F =$  $G = {}^{*}CHI_3$

d) $E =$  $F =$  $G = {}^{*}CH_3I$

106 Which of the following has high vapour pressure at temperature below its melting point?

5.

a) Citric acid b) Benzoic acid c) Salicylic acid d) All of these

106 Tollen's reagent is

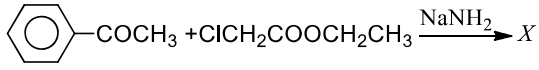
6.

a) $[Ag(NH_3)_2]NO_3$ b) $[Ag(NH_3)_2]Br$ c) Both (a) and (b) d) None of these

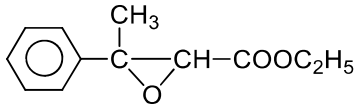
106 The Sulphur present in an organic compound is oxidized by fuming nitric acid into:

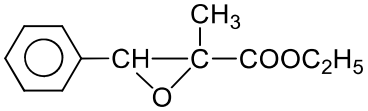
7.

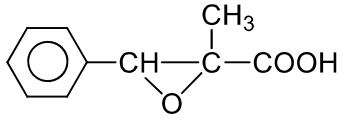
a) $SO_2$ b) $H_2SO_4$ c) $H_2S$ d) S

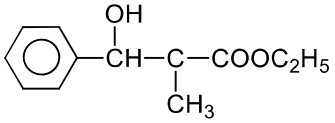
106 


8. Identify $X$ in the following reaction

a) 


b) 


c) 


d) 


106 $CH \equiv CH \xrightarrow[dil.H_2SO_4]{HgSO_4} A \xrightarrow[NaOH]{Dilute} B$

9. The compound $B$ is

a) $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - CHO$

b) $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - COONa$

c) 

d) 

$CH_3 - CH(OH) - CH_2 - C(CH_3)_2 - CH_3$ $\qquad$ $CH_3 - C(CH_3) - CH_2 - C(CH_3)_2 - CH_3$

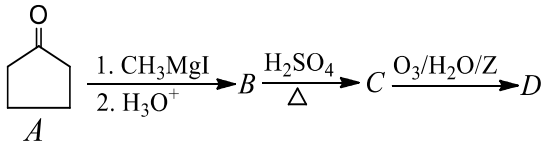
107 Aldol condensation of aldehydes and ketones takes place through the formation of:
0.

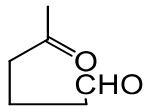
a) Carbene
b) Nucleophile
c) Electrophile
d) Free radical

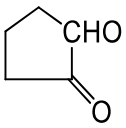
107 Acetic anhydride reacts with ammonia to give:
1.

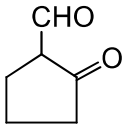
a) Acetamide b) Formamide c) Ethyl amine d) Methyl amine

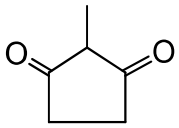
107 Identify the final product in the following reaction sequence
2.




a) 

b) 

c) 

d) 


107 Petroleum refining involves:
3.

a) Vacuum distillation
b) Steam distillation
c) Fractional distillation
d) Passing over activated charcoal

107 Acetyl bromide reacts with excess of $CH_3MgI$ followed by treatment with a saturated solution of
4. $NH_4Cl$ gives:

a) Acetyl iodide b) Acetamide c) 2-methyl propan-2-ol d) Acetone

107 Which of the following will not undergo Hell Volhard Zelinsky reaction?
5.

a) $CH_3COOH$
b) $CH_3CH_2COOH$
c) 2,2-dimethyl propionic acid
d) 2-methyl propionic acid

107 Which of the following will not undergo aldol condensation?
6.

a) Acetaldehyde
b) Propanaldehyde
c) Benzaldehyde
d) Trideuteroacetaldehyde

107 In a compound C, H and N are present in 9 : 1 : 3.5 by weight. If molecular weight of the compound is 108,
7. the molecular formula of compound is:

a) $C_2H_6N_2$ b) $C_3H_4N$ c) $C_6H_8N_2$ d) $C_9H_{12}N_3$

107 Which method is not used in the preparation of ketone?
8.

a) Dehydrogenation of 2° alcohol
b) Heating Ca salt of an acid
c) Acid hydrolysis of alkyl cyanide
d) Reaction of acid chloride with Grignard reagents

107 In the Cannizzaro's reaction given below,

9. $2Ph{-}CHO \xrightarrow{OH^-} Ph-CH_2OH + PhCOO^-$

the slowest step is:

a) The attack of $OH^-$ at the carbonyl group

b) The transfer of hydride to the carbonyl group

c) The abstraction of proton from the carboxylic acid

d) The deprotonation of $Ph{-}CH_2OH$

108 Which one is correct for acidic nature of the following?

0. (i) PhCOOH (ii) $o$-$NO_2C_6H_4COOH$

(iii) $p$-$NO_2C_6H_4COOH$ (iv) $m$-$NO_2C_6H_4COOH$

a) (ii) > (iii) > (iv) > (i) b) (ii) > (iv) >(iii) > (i) c) (ii) > (iv) > (i) >(iii) d) (i) >(ii) > (iii) > (iv)

108 The reagent which does not give acid chloride on treating with a carboxylic acid is

1.

a) $PCl_5$ b) $Cl_2$ c) $SOCl_2$ d) $PCl_3$

108 Separation of petroleum into its components is mostly done by:

2.

a) Chromatography

b) Sublimation

c) Distillation under reduced pressure

d) Fractional distillation

108 The product formed in the aldol condensation of acetaldehyde is

3.

a) $CH_3CH_2CH(OH)CHO$ b) $CH_3CH(OH)CH_2CHO$ c) $CH_3CH(OH)COCH_3$ d) $CH_3CH_2CH_2CHO$

108 A compound $X$ undergoes reduction with $LiAlH_4$ to yield $Y$. When vapours of $Y$ are passed over freshly

4. reduced copper at 300$^0$C, $X$ is formed. What is $Y$?

a) $CH_3COCH_3$ b) $CH_3CHO$ c) $CH_3CH_2OH$ d) $CH_3OCH_3$

108 Formaldehyde when treated with KOH gives methanol and potassium formate. The reaction is known as:

5.

a) Perkin's reaction

b) Claisen's reaction

c) Cannizzaro's reaction

d) Knoevenagel's reaction

108 The reagent with which both acetaldehyde and acetone react is

6.

a) Fehling's solution b) $I_2$/NaOH c) Tollen's reagent d) Carbonic acid

108 The compound obtained when acetaldehyde reacts with dilute aqueous sodium hydroxide exhibits

7.

a) Geometrical isomerism b) Optical isomerism

c) Neither optical nor geometrical isomerism d) Both optical and geometrical isomerism

108 Consider the acidity of the carboxylic acids

8. (i) PhCOOH

(ii) $o-NO_2C_6H_4COOH$

(iii)$p-NO_2C_6H_4COOH$

(iv)$m-NO_2C_6H_4COOH$

Which of the following order is correct?

a) (i) > (ii) > (iii) > (iv) b) (ii) > (iv) > (iii) > (i)

c) (ii) > (iv) > (i) > (iii) d) (ii) > (iii) > (iv) > (i)

108 Which of the following orders is wrong with respect to property indicated?

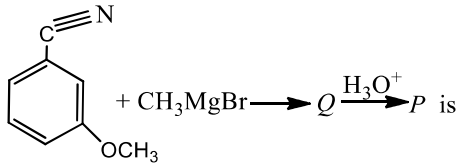
9.

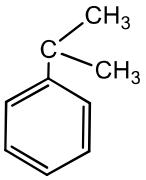
a) Formic acid > Acetic acid > Propionic acid (Acid strength)

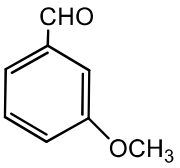
b) Fluoro acetic acid > Chloro acetic acid > Bromo acetic acid (Acid strength)
c) Benzoic acid > Phenol > Cyclohexanol (Acid strength)
d) Aniline > Cyclohexylamine > Benzamide (Base strength)

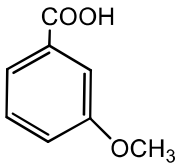
109 The product $P$ in the reaction,

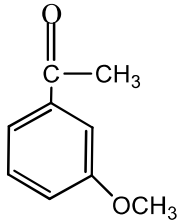
0.



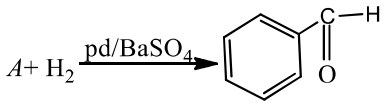

a) 

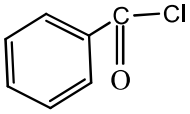

b) 

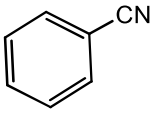

c) 

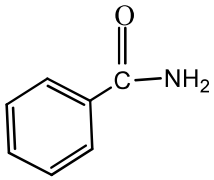

d) 

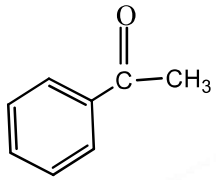

109 1.



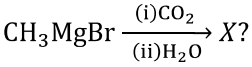

a) 


b) 


c) 

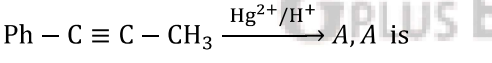

d) 

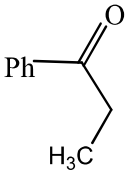

109 2. What is the product in the reaction

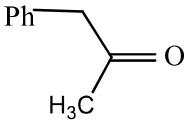


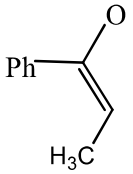

a) Acetaldehyde b) Acetic acid c) Formic acid d) Formaldehyde

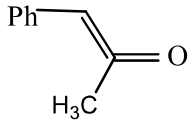
109 3.




a) 


b) 

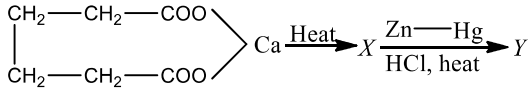

c) 


d) 


109 4. Organic compounds are studied separately from others, because:

a) Organic compounds do not confirm to the laws of chemical combination
b) Organic compounds are all covalent, while inorganic compounds are electrovalent
c) Special characteristics if carbon compounds like catenation, formation of compounds both with electropositive and electronegative elements and their tendency to show isomerism
d) It appears a convenient way of study

109 5. Identify the product $Y$ in the following reaction sequence




a) Pentane b) Cyclobutane c) Cyclopentane d) Cyclopentanone

109 6. A liquid was mixed with ethanol and a drop of concentrated $H_2SO_4$ was added. A compound with a fruity smell was formed. The liquid was

a) $CH_3OH$ b) HCHO c) $CH_3COCH_3$ d) $CH_3COOH$

109 Aldehydes are first oxidation product of:

7.

a) Primary alcohols b) Secondary alcohols c) Tertiary alcohols d) Dihydric alcohols