



CHEMISTRY

BOOKS - ACCURATE PUBLICATION

ALDEHYDES ,KETONES AND CARBOOXALIC ACIDS

Part A Aldehydes And Ketones True And False 1 Mark

1. Aldehydes and ketones react with electrophiles but not with nucleophiles.



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2. Wolff Kishner reduction of acetophenone gives toluene.



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3. Acetaldehyde can be reduced to ethane in the presence of $LiAlH_4$



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4. Acetaldehyde can be prepared by dry distillation of calcium acetate.

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5. Benzaldehyde cannot undergo Cannizzaro Reaction.

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6. Aldehydes are easily oxidised than ketones.

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7. Benzaldehyde reduces Fehling Solution.



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8. ketones give nucleophilic addition reactions more readily.



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9. Ethers on hydrolysis give



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10. Benzaldehyde forms addition product with sodium bisulphite but acetophenone does not.

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11. Calcium formate on heating gives acetaldehyde.

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12. The pK_a value of formic acid is smaller than that of acetic acid.



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13. The carbon-oxygen bond lengths in formic acid are equal.



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14. During the reaction of carboxylic acid with N_aHCO_3 .



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15. When benzoic acid is heated with soda lime, benzene is formed.

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16. Iodide ion is a better nucleophile than bromide ion.

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17. $Me_3CCH_2 - COOH$ is more acidic than Me_3SiCH_2COOH .

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18. Formic acid gives Silver mirror test Tollen's reagent.

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Part A Aldehydes And Ketones Multiple Choice Questions 1 Mark

1. Why potato is considered as a stem?

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2. Which of the following is used to make ropes?

A. cotton

B. wool

C. nylon

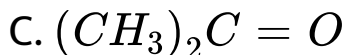
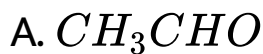
D. none of these

Answer: A



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3. Nucleophilic addition will be most favored in :



Answer: A



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4. Which of the following compounds with molecular formula C_5H_{10} will yield acetone on ozonolysis ?

- A. 3-Methylbut-1-ene
- B. Cyclopentane
- C. Cyclohexane
- D. 2,3-Dimethylbut-2-ene

Answer: D



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5. When a mixture of calcium acetate and calcium formate is distilled, the product formed is:

- A. Formaldehyde

B. Acetaldehyde

C. Acetone

D. None of these

Answer: B



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6. CH_3CHO and $C_6H_5CH_2CHO$ can be distinguished chemically by :

A. Benedict's test

B. Iodoform test

C. Tollen's reagent test

D. Fehling's solution test

Answer: B



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7. Which of the following reactions will not result in the formation of C - C bond ?

A. Cannizzaro reaction

B. Wurtz reaction

C. Reimer-Tiemann Reaction

D. Friedal Crafts Reaction

Answer: A



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8. The general formula $C_n H_{2n} O_2$ could be for open chain

A. Diketonecs

B. Carboxylic acids

C. Diols

D. Dialdehydes

Answer: B



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9. The reagent which can be used to distinguish acetophenone from benzophenone is :

A. 2,4-Dinitrophenyl hydrazine

B. Benedict solution

C. Tollen's reagent

D. I_2 and Na_2CO_3

Answer: D



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10. The strongest acid among the following compound is

A. HCOOH

B. CH_3COOH

C. $(\text{CH}_3)_3\text{CHCOOH}$

D. $(\text{CH}_3)_3\text{CCOOH}$

Answer: A



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11. Which of the following reagents may be used to distinguish between phenol and benzoic acid ?

- A. Tollen's reagent
- B. Molisch reagent
- C. Neutral ferric chloride
- D. Aqueous sodium hydroxide

Answer: C



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12. When propionic acid is treated with aqueous sodium bicarbonate CO_2 is liberated the source of carbon dioxide comes from

- A. methyl group
- B. carboxylic acid group
- C. methylene group
- D. bicarbonate

Answer: D



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13. Which of the following compounds will have the smallest pK_a value ?

A. benzoic acid

B. formic acid

C. Acetic Acid

D. phenyl acetic acid

Answer: B



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14. Which of the following cannot reduce Fehling solution?

A. Formic acid

B. Acetic Acid

C. formaldehyde

D. acetaldehyde

Answer: B



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15. What is the main reason for the fact that carboxylic acid can undergo ionization ?

- A. Absence of Alpha hydrogen
- B. higher reactivity of c-hydrogen
- C. resonance stabilization of carboxylate Ion
- D. hydrogen bonding

Answer: C



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16. When 2-hydroxy benzoic acid is distilled with zinc dust it gives

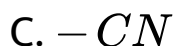
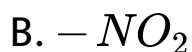
- A. phenol
- B. benzoic acid
- C. benzaldehyde
- D. a polymeric product

Answer: B



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17. Which of the following is ortho-para directing group ?

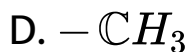
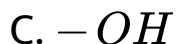


Answer: A



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18. Which of the following is a meta directing group ?



Answer: B



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19. In Cannizzaro reaction, two molecules of aldehydes are reacted to produce :

- A. Alcohol only
- B. Carboxylic acid only
- C. Alcohol and salt of carboxylic acid
- D. Alcohol, carboxylic acid and ketone

Answer: C



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20. HBr reacts fastest with _____

A. 2-methylpropan-2-ol

B. Propan-1-ol

C. Propan-2-ol

D. 2-methylpropan-1-ol

Answer: A



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21. Glycine and Alanine are different with respect to one substituent on the α -carbon. What are the other common substituent groups?



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22. Which of the following substance produce acetaldehyde on drydistillation ?



C. Both A and B

D. None

Answer: C



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23. Which of the following aldehyde is a gas at room temperature ?

A. Methanal

B. Ethanal

C. Propanal

D. Butanal

Answer: A



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24. The carbon atom of the carbonyl group is :

A. sp hybridized

B. sp^2 hybridized

C. sp^2 hybridized

D. dsp^2 hybridized

Answer: B



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25. Formalin is% solution of formaldehyde
in Water

A. 10 %

B. 20 %

C. 40 %

D. 60 %

Answer: C



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26. Which of the following substances does not give iodoform test?

A. Acetaldehyde

B. Ethyl alcohol

C. Methyl alcohol

D. Acetone

Answer: C



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27. Which of the following aldehydes shows rapid reaction with sodium nitroprusside ?

A. formaldehyde

B. acetaldehyde

C. benzaldehyde

D. acetone

Answer: D



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28. Which of the following reactions may be associated with aldehyde and ketone ?

A. Nucleophile addition

B. Polymerization

C. Oxidation

D. All of the above

Answer: D



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29. Ketones are comparatively less reactive than aldehydes. It is due to

A. Alkyl groups are electron donating

B. Steric hindrance

C. Both A and B

D. None

Answer: C



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30. Which of the following do not give aldol condensation reactions ?

A. Formaldehyde

B. Acetaldehyde

C. Dimethyl ketone

D. Propionaldehyde

Answer: A



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31. Which of the following is not a antacid ?

A. phenelzine

B. Ranitidine

C. Aluminium hydroxide

D. Cemetidine

Answer: D



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32. Formaldehyde and lactose are combined to produce throat lozenges named as

- A. Form a mint
- B. Lac to mint
- C. Aldo mint
- D. Formalactose

Answer: A



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33. The formula of haloform is :



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34. Formaldehyde condenses with phenol in the presence of dilute H_2SO_4 to yield :

A. Nylon 66

B. urotropinc

C. Aniline formaldehyde plastic

D. Bakelite

Answer: D



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35. On heating acetaldehyde, with Fehling's solution, we get a precipitate whose color is

A. Pink

B. Black

C. Yellow

D. Brick red

Answer: D



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36. Which of the following will not give addition reaction with $NaHSO_3$

A. HCHO

B. CH_3CHO

C. $CH_3 - CH_2 - CHO$

D. None of the above

Answer: C



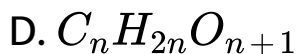
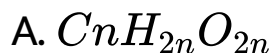
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37. Write the empirical formula of the compounds having the molecular formulas : $C_{10}H_8$



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38. Aldehyde and ketone have same general formula for homologous series



Answer: C



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39. Oxidation of primary alcohol gives :

A. Ketone

B. Aldehyde

C. Alkene then-COOH

D. Ester

Answer: B



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40. Nucleophilic addition reactions are catalyzed by:

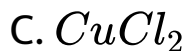
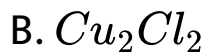
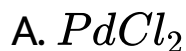
- A. Acid
- B. Base
- C. Both (a) and (b)
- D. None

Answer: C



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41. Ethanal is prepared industrially by air oxidation of ethylene using palladium chloride as a catalyst and as a promoter



Answer: C



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42. Acetaldehyde cyanohydrin on acid hydrolysis yields in

- A. Tartaric acid
- B. Propanoic acid
- C. Lactic acid
- D. Valeric acid

Answer: C



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43. Acetal on acid hydrolysis generates

A. Alcohol

B. Ketone

C. Both A&B

D. None of the above

Answer: C



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44. Which of the following is a symmetrical ketone ?

A. 3-hexanone

B. Acetone

C. 2-Butanone

D. 2-pentanone

Answer: B



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45. In base catalyzed reaction of carbonyl compound the catalyst

A. Increases the nucleophilic character of reagent

B. Increases the electrophilic character of carbonyl compound

C. Acidic character of reagent

D. Both A and B

Answer: A



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46. What is the other name of ester-interchange reaction ?

A. Ketonolysis

B. Alcoholysis

C. Aldehyde

D. None of the mentioned

Answer: B



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47. Complete the following reaction : $\text{C}_2\text{H}_5\text{COOH} + \text{KOH}(\text{aq}) \rightarrow$

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48. What is the disadvantage of hydrochloric Acid ?

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49. Which of the following carboxylic acids has the highest boiling point ?

A. Heptanoic acid

B. Octanoic Acid

C. Nonanoic Acid

D. Decanoic Acid

Answer: D



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50. The IUPAC name of $CH_3COCH(CH_3)_2$ is



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51. The pi bond in carbonyl carbon is formed by

- A. s-s overlap
- B. p-p overlap
- C. s-p overlapping
- D. p-d overlap

Answer: B



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52. Which of the following contain an aldehyde ?

A. Vanilla beans

B. Meadow sweet

C. Cinnamon

D. All of these

Answer: D



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53. Which of the following have pleasant smell ?

A. Methanal

B. Propanal

C. Ethanal

D. Hexanal

Answer: D



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54. Which of the following can be oxidized to the corresponding carbonyl group ?

A. 2-hydroxy-propane

B. Ortho-nitro phenol

C. Phenol

D. 2-methyl-2-hydroxy-propane

Answer: A



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55. Which one of the following on oxidation gives aketone ?

- A. Primary alcohol
- B. Secondary alcohol
- C. methyl alcohol
- D. All of these

Answer: B



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56. What is formed when primary alcohol undergoes catalytic dehydrogenation ?

A. Aldehyde

B. Ketone

C. Alkene

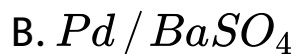
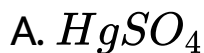
D. Acid

Answer: A



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57. The catalyst used in Rosenmund's reduction is



Answer: B



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58. The oxidation of toluene to benzaldehyde by chromyl chloride is called

A. Rosenmund reaction

B. Wurtz reaction

C. Etard reaction

D. Fitting reaction

Answer: C



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59. An aldehyde group can be present

- A. In between carbon chain
- B. At any position in carbon chain
- C. Only at the end of carbon chain
- D. At the second carbon atom of carbon chain

Answer: C



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60. Which of the following is not used for the preparation of ketone ?

- A. 1.Oxidation of secondary alcohols

B. 2. Dehydrogenation of secondary alcohols

C. 3. Pyrolysis of calcium acetate

D. 4. Acid hydrolysis of alkyl cyanide

Answer: D



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61. Which of the following forces explain the boiling point of aldehydes and ketones?

A. Hydrogen bonding

B. Vander waal's forces

C. Dipole-dipole interaction

D. None of these

Answer: C



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62. Which is highly soluble in water ?

A. Methanal

B. Propanal

C. Propanone

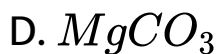
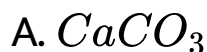
D. Butanone

Answer: A



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63. Acetone react with iodine to form iodoform in presence of:



Answer: B



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64. When glucose react with acetone in acidic medium, the main product is :

A. Laevulic acid

B. Glycosazone

C. Dioxopropylidene glucose

D. None of the above

Answer: C



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65. The conversion of Benzaldehyde into benzyl alcohol is known as:

- A. Cannizzaro reaction
- B. Kolbe's reaction
- C. Friedal craft reaction
- D. Wurtz scaction

Answer: A



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66. Which salt on treatment with soda lime gives ethane?

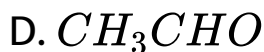
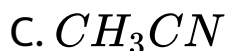
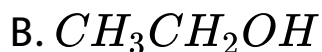
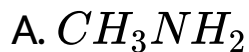
- A. Ethanoic acid
- B. Methanoic acid
- C. Propionic acid
- D. Ether

Answer: C



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67. When acetamide reacts with Bromine in presence of NaOH, there is formation of:



Answer: A



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68. Which of the following does not give benzoic acid on hydrolysis ?

- A. Phenyl cyanide
- B. Benzoyl chloride
- C. Benzyl chloride
- D. Methyl benzoate

Answer: C



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69. The reagent which does not give acid chloride on treating with carboxylic acid is :



Answer: B



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70. Conversion of carboxylic acid to an ester is known as

- A. Reduction
- B. Oxidation
- C. Esterification
- D. Polymerisation

Answer: D



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71. By which reaction a Ketone can be converted into hydrocarbon ?

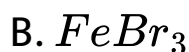
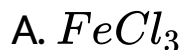
- A. Aldol condensation
- B. Reimer-Tiemann reaction
- C. Cannizzaro reaction
- D. Wolf-Kishner reaction

Answer: D



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72. Which of the following cannot be used in Friedal-craft's reaction?



Answer: D



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73. When dihydroxyacetone react with HIO_4 , the product is/are :

A. $HCHO$

B. $HCOOH$

C. $HCHO$ and $HCOOH$

D. $HCHO$ and CO_2

Answer: D



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74. Acetaldehyde reacts with NH_3 to form :

- A. An acidic solution
- B. A basic solution
- C. A neutral solution
- D. Urotropine

Answer: B



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75. Reactivity towards nucleophilic addition reaction of

I. HCHO *II. CH₃CHO* *III. CH₃COCH₃*

A. *II > III > I*

B. *III > II > I*

C. *I > II > III*

D. *I > II > III*

Answer: C



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76. Aldol condensation will not be observed in

- A. Ethanal
- B. Hexanal
- C. Phenyl acetaldehyde
- D. Chloral

Answer: D



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77. The compound obtained by the reduction of propionaldehyde by amalgamated zinc and

concentrated HCl is

- A. Propene
- B. Propane
- C. Propanol
- D. All of the above

Answer: B



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78. When a ketone is condensed into an aldol, the reagent used is

A. Alkali

B. $NaHCO_3$

C. Bromine water

D. Cl_2

Answer: A



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79. How does O_3 react with HCl



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80. Acetaldehyde cannot exhibit :

- A. Tollen's test
- B. Benedict's test
- C. Lucas test
- D. Iodoform test

Answer: C



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81. Base catalyzed aldol condensation occurs with

- A. Propionaldehyde
- B. 2,2-dimethylpropionaldehyde
- C. Benzaldehyde
- D. None of the above

Answer: A



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82. Which of the aldehydes is most reactive towards nucleophilic addition?

A. HCHO

B. CH_3CHO

C. $C_6H_5 - CHO$

D. All are equally reactive

Answer: A



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83. Aldehyde and ketones cannot be distinguished

by:

A. Molisch's test

B. Tollen's test

C. Benedict's test

D. Schiff's test

Answer: A



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84. Which of the following is incorrect?

A. $FeCl_3$ is used in the detection of phenol

B. Fehling solution is used in the detection of
glucose

C. Tollen's reagent is used in the detection of unsaturation

D. $NaHSO_3$ is used in the detection of carbonyl compounds

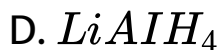
Answer: C



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85. Reduction of $>C=O$ to CH_2 can be carried out with :

A. Catalytic reduction



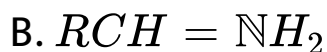
Answer: C



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86. During reduction of carbonyl compound by

H_2NNH_2 and KOH the first intermediate is :



C. $RCH=NH$

D. $RCONH_2$

Answer: B



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87. Cross aldol condensation occurs between

A. Two same aldehydes

B. Two same ketones

C. Two different aldehydes and ketones

D. None of these

Answer: C



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88. Vinegar is solution of acetic acid which is :

A. 15-20%

B. 20-25 %

C. 6-8%

D. 2-4%

Answer: C



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89. Lower carboxylic acids are soluble in water due to

- A. Low molecular weight
- B. Hydrogen bonding
- C. Dissociation into ions
- D. Easy hydrolysis

Answer: B



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90. Carboxylic acids are more acidic than phenols and alcohols because of

- A. Intermolecular hydrogen bonding
- B. Formation of dimers
- C. Highly acidic hydrogen
- D. Resonance stabilization of conjugate base

Answer: D



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91. The major product of nitration of benzoic acid is :

- A. 3- Nitrobenzoic acid
- B. 4- Nitrobenzoic acid
- C. 2-Nitrobenzoic acid
- D. 2,4-dinitrobenzoic acid

Answer: A



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92. 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 boiling point than corresponding alcohols.

Answer: C



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93. The elimination of CO_2 from carboxylic acids is known as

A. Hydration

B. Dehydration

C. Dehydration

D. Carboxylation

Answer: C



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94. Which of the following has maximum acidic strength ?

A. o - Nitrobenzoic acid

B. m-Nitrobenzoic acid

C. p-Nitrobenzoic acid

D. p-nitro phenol

Answer: A



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95. The product obtained by the reaction of an aldehyde and hydroxyl amine is :

- A. Hydradzone
- B. Aldoxime
- C. Primary amine
- D. Alcohol

Answer: B



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96. The reagent which does not react with both acetone and benzaldehyde :

A. Sodium hydrogen sulphite

B. Phenyl hydrazine

C. Fehling's solution

D. Grignard Reagent

Answer: C



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97. Fill in the blanks- The method of separating pieces of stones from the grain is called_____.



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98. If formaldehyde and KOH are heated, then we get

- A. Methane
- B. Methyl alcohol
- C. Ethyl formate
- D. Acetylene

Answer: B



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99. Fill in the blanks- _____ is a kind of sieve that is used to separate solid from liquid.



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100. When vapor of iso-propyl alcohol is passed over heated copper, the major product obtained is

A. Propylene

B. Acetone

C. Propane

D. Acetaldehyde

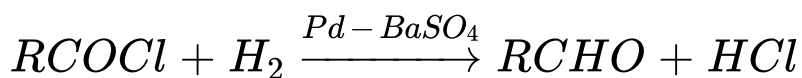
Answer: B



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Part A Aldehydes And Ketones 1 Mark Questions

1. What is the name of the reaction ?



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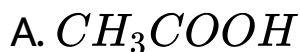
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2. The solution used to preserve biological specimens.



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3. Which of the following cannot reduce Fehling solution?



D. CH_3CHO

Answer: A



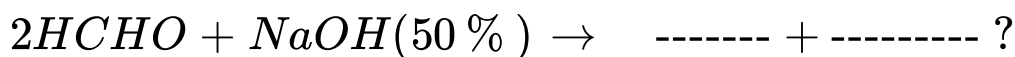
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4. The solution used to preserve biological specimens.



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5. Complete the following reaction :





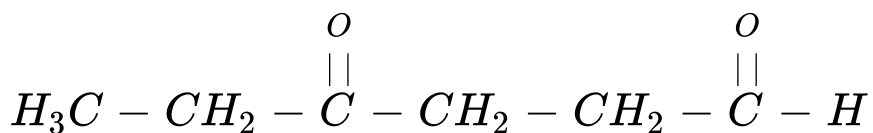
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6. Methyl ketones are characterized through



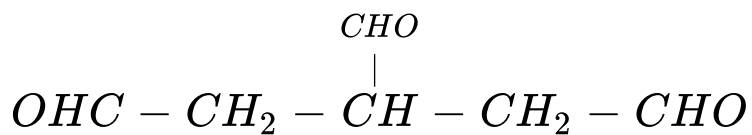
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7. Give IUPAC name.

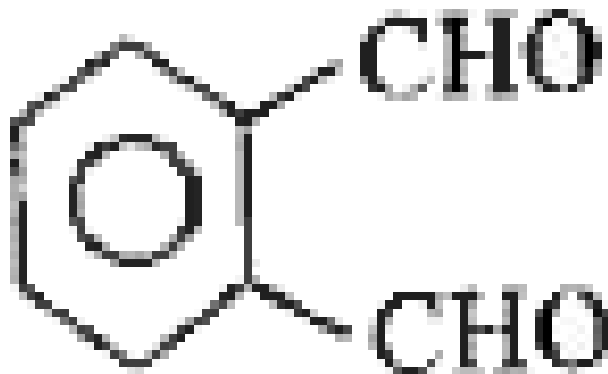


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8. Give IUPAC names of the following :



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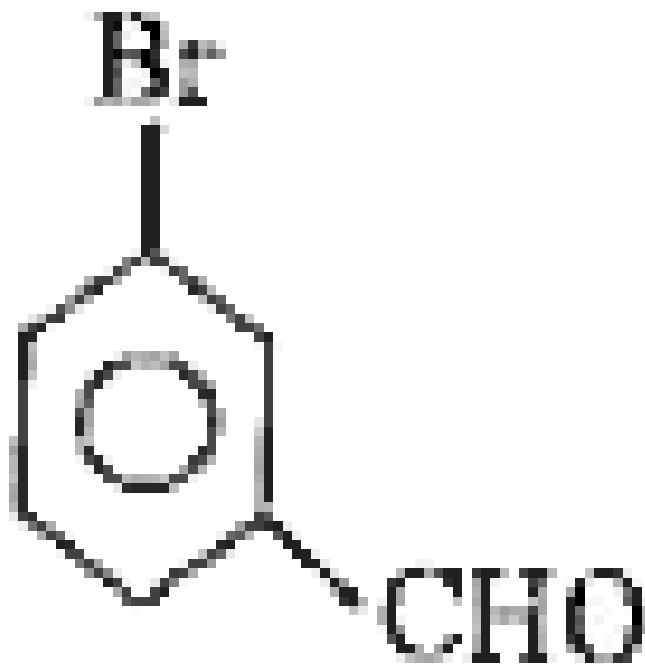


9.

IUPAC name:



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10.

Give IUPAC name:



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11. Give a chemical test to distinguish between aldehyde and ketone.

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12. How will you convert Benzene into acetophenone.

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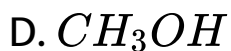
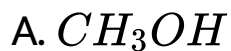
13. Ketones are comparatively less reactive than aldehydes. It is due to





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14. Which of following gives iodoform test?



Answer: B



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15. Complete the reaction and balance it : NaHCO_3
+ HCl →



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16. Write Cannizzaro reaction.



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17. What are weak acid?



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18. How will you convert Benzene into Benzaldehyde ?



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19. What is RDX ?



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20. One use of urotropine and its structure?



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21. Conversion of benzene to acetophenone can be brought by



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Carboxylic Acid 1 Mark Questions

1. Write the IUPAC name of salicylic acid.



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2. How benzoic acid is prepared from toluene ?



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3. How benzoic acid is prepared from benzamide ?



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4. How is benzoic acid prepared from ethyl benzoate ?



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5. How will you convert ethyl bromide into propanoic acid ?



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6. How will you convert ethyl bromide into ethyl cyanide ?



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7. How can you prepare ethanoic acid from grignard's reagent ?

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8. How can you prepare benzoic acid from Grignard's reagent?

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9. Arrange the following in the increasing order of acidity: $CHCl_2COOH$, $ClCH_2COOH$, $CH_2ClCOOH$

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10. Write short note on decarboxylation reaction.

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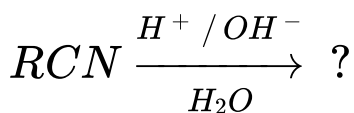
11. How is benzoic acid prepared from ethy benzoate ?

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12. How benzoic acid is prepared from benzamide ?

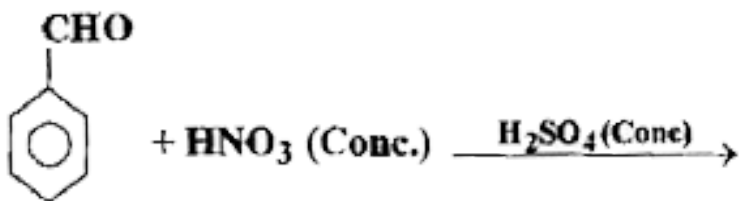
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13. Complete the following reactions :



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14.



Complete the reaction :

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15. Why are bond length of C = O in carboxylic acid is slightly larger than that in aldehyde and ketone ?

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16. Complete the reaction and balance it : Ca(OH)_2
+ $\text{CO}_2 \rightarrow$

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17. Write Hell Volhard Zelinsky reaction.



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18. What happens when malonic acid is decarboxylated ?



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19. Complete the reaction and balance it : $\text{CaCO}_3 + \text{CO}_2 + \text{H}_2\text{O} \rightarrow$



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20. What are weak base.



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Carboxylic Acid 3 Mark Questions

1. What are strong acid?



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2. Explain Clemmensen's reduction.



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3. Aldehydes have lower boiling points than the corresponding alcohols. Explain.

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

CH_3CHO , CH_3CH_2OH , CH_3OCH_3 , $CH_3CH_2CH_3$

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5. Write a chemical test to distinguish between benzaldehyde and acetaldehyde.

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6. Write the chemical equations when acetaldehyde reacts with hydroxyl amine.

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7. Write the reaction between acetone and semicarbazide.

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8. Give a chemical test to distinguish between aldehyde and ketone.

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9. What happens when Formaldehyde is treated with ammonia ?

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10. What is formalin solution ? Give its one use..

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11. Two uses of formaldehyde.

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12. What type of aldehyde and ketones undergo Cannizzaro's reaction ?

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13. What type of hybridisation is involved for carbon in a carbonyl group?



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14. The symbol of the elements cobalt , aluminium , helium and sodium respectively written by the student as follows . Which symbol is the correct one.

A. a. CO

B. b. AL

C. c. He

D. d. So

Answer:



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15. Carboxylic acid exists as dimers, explain why ?



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16. Why are the boiling points of carboxylic acids higher than the corresponding alcohols ?



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17. Carboxylic acids do not give the characteristic reactions of carbonyl group. Explain.



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18. Benzoic acid is stronger acid than acetic acid. Justify.



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19. Fluoroacetic acid is stronger than chloroacetic acid. Explain why ?



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20. Why carboxylic acids do not give characteristic reactions of -OH group.



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21. How will you account for the acidic nature of carboxylic acid ?

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22. Benzoic acid is stronger acid than acetic acid.
Justify.

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23. How will you account for the acidic nature of
carboxylic acid ?

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24. Why acetic acid is weaker than formic acid ?



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25. Why chloroacetic acid is stronger acid than acetic acid ?



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26. Benzoic acid is stronger acid than acetic acid. Justify.



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27. Why trichloro acetic acid is stronger than acetic acid ?



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28. Chloroacetic acid has lower pK_{α} value than acetic acid. Explain,



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29. Why dichloroacetic acid is stronger than monochloroacetic acid ?

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30. Carboxylic acid exists as dimers, explain why ?

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31. Most aromatic acids are solids while acetic acid and others of their series are liquids. Why ?

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32. Formic acid is stronger acid than acetic acid.

Justify.



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33. Benzoic acid is stronger acid than acetic acid.

Justify.



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34. p-Nitrobenzoic acid is a stronger acid than benzoic acid. Justify.



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35. Aldehyde are more reactive than ketone ?
Explain why.



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Distinguish Test

1. Discuss iodoform test. How will you distinguish between propane-1-ol and Propane-2-ol with this test ?



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2. Give chemical test to distinguish between acetaldehyde and acetone.



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3. Write a chemical test to distinguish between benzaldehyde and acetaldehyde.

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4. Give one test to distinguish between Acetophenone and Benzophenone.

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5. Write a chemical test to distinguish between Acetic acid and Acetone.





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