



CHEMISTRY

BOOKS - UNIVERSAL BOOK DEPOT 1960 CHEMISTRY (HINGLISH)

ALDEHYDES AND KETONES

Ordinary Thinking Objective Questions Introduction

1. A strong base can abstract an α -hydrogen from

- A. Ketone
- B. Alkane
- C. Alkene
- D. Amine

Answer: A



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2. Which of the following compounds does not contain an -OH group

- A. Phenol
- B. Carboxylic acid
- C. Aldehydes
- D. Alcohols

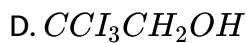
Answer: C



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3. Chloral is :

- A. CCl_3CHO
- B. CCl_3COCH_3
- C. CCl_3COCCL_3



Answer: A

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4. What is the compound called if remaining two valencies of a carbonyl group are satisfied by two alkyl groups ?

- A. Aldehyde
- B. Ketone
- C. Acid
- D. Acid chloride

Answer: B

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5. Which of the following is mixed ketone?

- A. Pentanone
- B. Acetophenone
- C. Benzophenone
- D. Butanone

Answer: B



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6. IUPAC name of $(C)Cl_3CHO$ is

- A. Chloral
- B. Trichloro acetaldehyde
- C. 1,1,1-trichloroethanal
- D. 2,2,2-trichloroethanal

Answer: D

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7. Which of the following types of isomerism is shown by pentanone

- A. Chain isomerism
- B. Position isomerism
- C. Functional isomerism
- D. All of these

Answer: D

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8. In aldehydes and ketones, carbon of carbonyl group is

- A. sp^3 hybridised

B. sp^2 hybridised

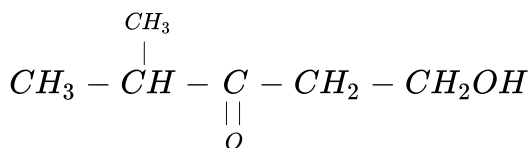
C. sp hybridised

D. Unhybridised

Answer: B

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9. The IUPAC name of following structure is



A. 1-hydroxy 4-methyl 3-pentanone

B. 2-methyl -hydroxy 3-pentanone

C. 4-methyl 3-oxo 1-pentanol

D. Hexanol-1, one-3

Answer: A





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10. Reaction of acetaldehyde with HCN followed by hydrolysis gives a compound which shows

- A. Optical isomerism
- B. Geometrical isomerism
- C. Metamerism
- D. Tautomerism

Answer: A



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11. Which of the aldehyde is most reactive ?

- A. $C_6H_5 - CHO$
- B. CH_3CHO

C. $HCHO$

D. All the equally reactive

Answer: C

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12. Which factor/s will increase the reactivity of



group?

- (i) Presence of group with positive inductive effect
- (ii) Presence of 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)

Answer: B

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13. Acetone and acetaldehyde are

- A. Position isomers
- B. Functional isomers
- C. Not isomers
- D. Chain isomers

Answer: C

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14. The compound obtained when acetaldehyde reacts with dilute aqueous sodium hydroxide exhibits

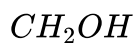
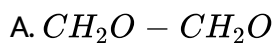
- A. Geometrical isomerism
- B. Optical isomerism
- C. Neither optical nor geometrical isomerism
- D. Both optical and geometrical isomerism

Answer: B

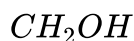


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15. Glyoxal is

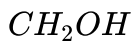


B. |





C. |



D. |

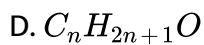
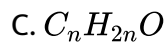
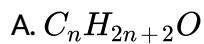


Answer: C



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16. The general formula of both aldehyde & ketone is



Answer: C



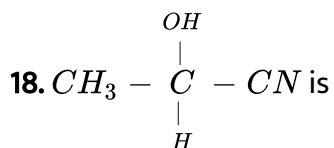
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17. Aldehydes are isomeric with

- A. Ketones
- B. Ethers
- C. Alcohols
- D. Fatty acids

Answer: A


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- A. Acetaldehyde cyanohydrin
- B. Acetone cyanohydrin
- C. Cyanoethanol
- D. Ethanol nitrile

Answer: A

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19. In the group  the carbonyl carbon is joined to other atoms by

- A. Two sigma and one pi bonds
- B. Three sigma and one pi bonds
- C. One sigma and two pi bonds
- D. Two sigma and two pi bonds

Answer: B

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Ordinary Thinking Objective Questions Preparation

1. CH_3COCH_3 can be obtained by

A. Heating acetaldehyde with methanol

B. Oxidation of propyl alcohol

C. Oxidation of isopropyl alcohol

D. Reduction of propanonic acid

Answer: C

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

A. Cannizzaro reaction

B. Wurtz reaction

C. Etard reaction

D. Reimer-Tiemann reaction

Answer: C

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3. Ketones $\left(R - \overset{O}{\parallel} C - R' \right)$ can be obtained in one step by (where R and R' are alkyl groups)

- A. Hydrolysis of esters
- B. Oxidation of primary alcohol
- C. Oxidation of secondary alcohol
- D. Reaction of acid halide with alcohols

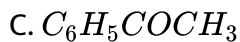
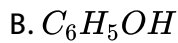
Answer: C

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4. Consider the following reaction

 The product 'A' is

A. C_6H_5CHO



Answer: A

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5. Reaction by which Benzaldehyde cannot be prepared



Answer: A

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6. Dry heating of calcium acetate gives

- A. Acetaldehyde
- B. Ethane
- C. Acetic acid
- D. Acetone

Answer: D



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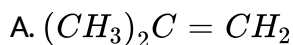
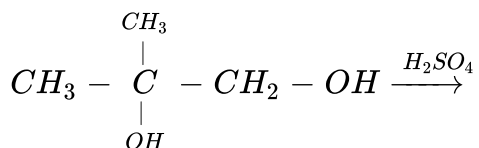
7. Acetophenone is prepared by the reaction of which of the following in the presence of $AlCl_3$ catalyst

- A. Phenol and acetic acid
- B. Benzene and acetone
- C. Benzene and acetyl chloride
- D. Phenol and acetone

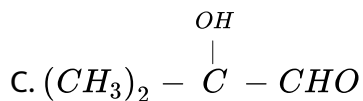
Answer: C

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8. The major product of the following reaction is



B. Butan-2-one



D. Isobutyraldehyde

Answer: D

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9. Catalyst $\text{SnCl}_2 / \text{HCl}$ is used in

- A. Stephen's reduction
- B. Cannizzaro's reaction
- C. Clemmensen's reduction
- D. Rosenmund's reduction

Answer: A

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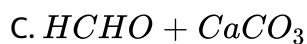
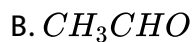
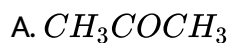
10. $CH_3 - CH_2 - C \equiv CH \xrightarrow[H_3O^{\oplus}]{R}$ Butanone, R is

- A. Hg^{++}
- B. $KMnO_4$
- C. $KClO_3$
- D. $K_2Cr_2O_7$

Answer: A

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11. On heating calcium acetate and calcium formate, the product formed is :



Answer: D



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12. Which of the following compound gives a ketone with Grignard reagent?

A. Formaldehyde

B. Ethyl alcohol

C. Methyl cyanide

D. Methyl iodide

Answer: C

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13. Acetophenone is prepared from :

A. Rosenmund reaction

B. Sandmayer reaction

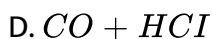
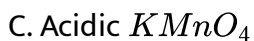
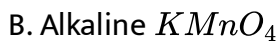
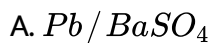
C. Wurtz reaction

D. Friedel craft reaction

Answer: D

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14. The reagent used in Gattermann -Koch aldehyde synthesis is



Answer: D



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15. When a mixture of calcium benzoate and calcium acetate is dry distilled, the resulting compound is

A. Acetophenone

B. Benzaldehyde

C. Benzophenone

D. Acetaldehyde

Answer: A



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16. Glycerol reacts with potassium bisulphate to produce

- A. Allyl iodide
- B. Allyl sulphate
- C. Acryl aldehyde
- D. Glycerol trisulphate

Answer: C



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17. Hydrolysis of ozonide of but-1-ene gives

- A. Ethylene only

- B. Acetaldehyde and Formaldehyde
- C. Propionaldehyde and Formaldehyde
- D. Acetaldehyde only

Answer: C

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18. An alkene of molecular formula C_9H_{18} on ozonolysis gives 2,2-dimethyl propanal and 2-butanone, then the alkene is

- A. 2,2,4-trimethyl-3-hexene
- B. 2,2,6-trimethyl-3-hexene
- C. 2,3,4-trimethyl-2-hexene
- D. 2,2,4-trimethyl-2-hexene

Answer: A

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19. Which of the following pathways produces 2-hexanone?

(i) 1-Hexyne is treated with H_2SO_4 , $HgSO_4$ and water

(ii) 3-Methyl-2-heptene is treated with O_3 followed by hydrolysis

n-Butyl magnesium bromide reacts with acetaldehyde followed by hydrolysis and then chromic acid oxidation

(iv) Hydroboration oxidation of 1-hexyne

A. (i),(ii) and (iii)

B. (i) and (ii) only

C. (i),(ii) and (iv)

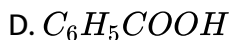
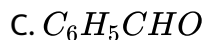
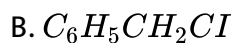
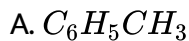
D. (i) and (iii) only

Answer: A



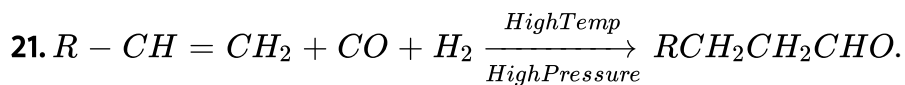
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20. $C_6H_6 + CO + HCl \xrightarrow{\text{Anhy. AlCl}_3} X + HCl$ compound X is



Answer: C

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A. Mendius reaction

B. Oxo process

C. Sandorn's reaction

D. Stephen's reaction

Answer: B

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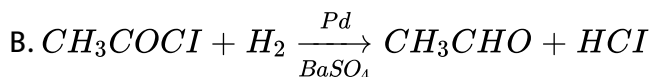
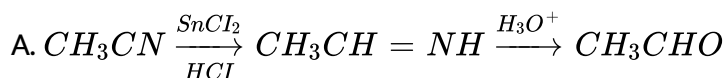
22. Which one of the following compounds is prepared in the laboratory from benzene by a substitution reaction ?

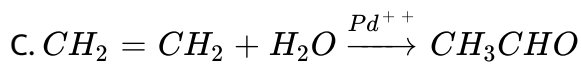
- A. Glyoxal
- B. Cyclohexane
- C. Acetophenone
- D. Hexabromo cyclohexane

Answer: C

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23. Which of the following is the industrial method of preparation of acetaldehyde



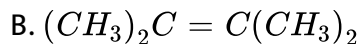
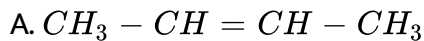


D. None of these

Answer: C

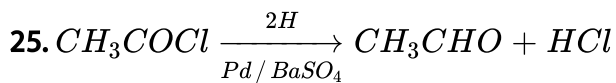
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24. Compound which gives acetone on ozonolysis



Answer: B

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The above reaction is called :

- A. Reimer-Tiemann reaction
- B. Cannizzaro reaction
- C. Rosenmund reaction
- D. Eformatsky reaction

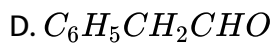
Answer: C



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26. Which of the following on reaction with NH_3 gives urinary antiseptic compound

- A. HCHO
- B. CH_3CHO
- C. $\text{C}_6\text{H}_5\text{CHO}$



Answer: A



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27. The oxidation of benzyl chloride with lead nitrate gives

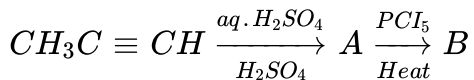
- A. Benzyl alcohol
- B. Benzoic acid
- C. Benzaldehyde
- D. p-chlorobenzaldehyde

Answer: C



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28. Consider the following reaction sequence,



The products (*A*) and (*B*) are, respectively,

- A. CH_3CHO and CH_3CH_2OH
- B. $HCHO$ and CH_3CH_2OH
- C. CH_3CH_2OH and CH_3CH_2CHO
- D. $HCHO$ and CH_3CHO

Answer: A



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29. Acetone will be obtained by the ozonolysis of

- A. 1-butene
- B. 2-butene
- C. Isobutene

D. 2-butyne

Answer: C



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30. O_3 reacts with $CH_2 = CH_2$ to form ozonide. On hydrolysis it forms _____.

A. Ethylene oxide

B. $HCHO$

C. Ethylene glycol

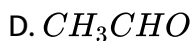
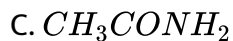
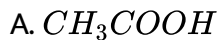
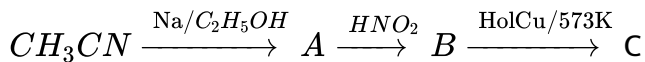
D. Ethyl alcohol

Answer: B



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31. Identify the product C in the series

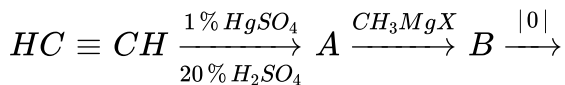


Answer: D



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32. The end product in the following sequence of reaction is



A. Acetic acid

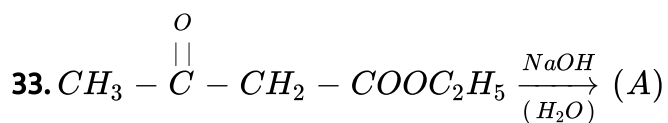
B. Isopropyl alcohol

C. Acetone

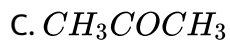
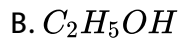
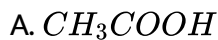
D. Ethanol

Answer: C

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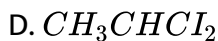
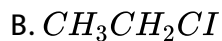
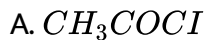
The product (A) in above reaction is :



Answer: B::C

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34. which of the following on heating with aqueous KOH produces acetaldehyde?



Answer: D



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35. Ozonolysis of an organic compound gives formaldehyde as one of the products. This confirms the presence of

A. Two ethylenic double bonds

B. A vinyl group

C. An isopropyl group

D. An acetylenic triple bond

Answer: B

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36. Calcium Acetate on heating under distillation gives

A. Acetaldehyde and Calcium oxide

B. Calcium carbonate and Acetic acid

C. Acetone and Calcium carbonate

D. Calcium oxide and CO_2

Answer: C

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37. Secondary nitroalkanes can be converted into ketones by using Y.

Identify Y from the following



A. Aqueous HCl

B. Aqueous $NaOH$

C. $KMnO_4$

D. CO

Answer: A



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38. When a mixture of methane and oxygen is passed through heated molybdenum oxide, the main product formed is

A. Methanoic acid

B. Ethanal

C. Methanol

D. Methanal

Answer: D

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39. Benzoin is

A. Compound containing an aldehyde and a ketonic group

B. α, β unsaturated acid

C. α -hydroxy aldehyde

D. α -hydroxy ketone

Answer: D

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40.  On reductive ozonolysis yields

- A. 6-oxoheptanal
- B. 6-oxoheptanoic acid
- C. 6-hydroxyheptanal
- D. 3-hydroxypentanal

Answer: A



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41. The oxidation product of 2-propanol with hot conc. HNO_3 is :

- A. Ethanoic acid
- B. Propanone
- C. Propanal
- D. None of these

Answer: B

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42. Assertion: Acetylene on treatment with alkaline $KMnO_4$ produce acetaldehyde.

Reason: Alkaline $KMnO_4$ is a reducing agent.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If the assertion and reason both are false

Answer: D

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43. Assertion: Formaldehyde cannot be prepared by Rosenmund's reduction.

Reason: Acid chlorides can be reduced into aldehydes with hydrogen in boiling xylene using palladium or platinum as a catalyst supported on barium sulphate. This is known as Rosenmund's reduction.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If the assertion and reason both are false

Answer: B



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1. Paraldehyde is used as a

A. Medicine

B. Poison

C. Polymer

D. Dye

Answer: A



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2. Which of the following fails to answer the iodoform test

A. Pentanone-1

B. Pentanone-2

C. Propanone-2

D. Ethanol

Answer: A

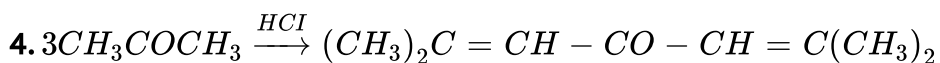
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3. Which one of the following reactions is a method for the conversion of ketone into a hydrocarbon

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

Answer: D

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(B)

This polymer (B) is obtained when acetone is saturated with hydrogen chloride gas. B can be

- A. Phorone
- B. Formose
- C. Diacetone alcohol
- D. Mesityl oxide

Answer: A



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

- A. 2,4-dinitrophenyl hydrazine
- B. Aqueous solution of $NaHSO_3$
- C. Benedict reagent

D. I_2 and Na_2CO_3

Answer: D



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6. Acetaldehyde reacts with

A. Electrophiles only

B. Nucleophiles only

C. Free radicals only

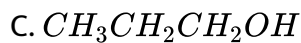
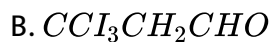
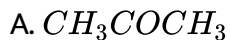
D. Both electrophiles and nucleophiles

Answer: d



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7. Which one of the following on oxidation will not give a carboxylic acid with the same number of carbon atoms ?

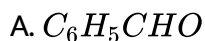


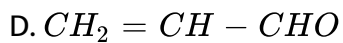
Answer: A



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8. Which of the following compound will undergo self - aldol condensation in the presence of cold dilute alkali?





Answer: B



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9. Which of the following compounds will give positive test with Tollen's reagent?

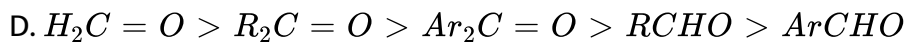
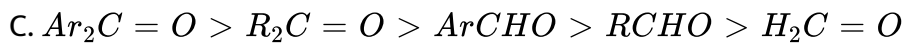
- A. Acetamide
- B. Acetaldehyde
- C. Acetic acid
- D. Acetone

Answer: B



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10. The general order of reactivity of carbonyl compounds for nucleophilic addition reactions is -

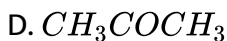
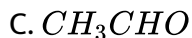


Answer: A



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11. Aldol condensation will not take place in



Answer: A

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12. Phenylmethanol can be prepared by reducing the benzaldehyde with :

A. CH_3Br

B. Zn and HCl

C. CH_3Br and Na

D. CH_3I and Mg

Answer: B

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13. Which of the following compound is resistant to nucleophilic attack by hydroxyl ions?

A. Methyl acetate

B. Acetonitrile

C. Dimethyl ether

D. Acetamide

Answer: C

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14. Glucose molecule reacts with X number of molecules of phenylhydrazine to yield osazone. The value of X is

A. One

B. Two

C. Three

D. Four

Answer: B

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15. Which of the following does not give iodoform test :

- A. Ethanal
- B. Ethanol
- C. 2-propanone
- D. 3-pentanone

Answer: D

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16. Benzaldehyde + $NaOH \rightarrow$

- A. Benzyl alcohol
- B. Benzoic alcohol
- C. Hydrobenzamide

D. Cinnamic acid

Answer: A

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17. Which of the following is incorrect

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

B. Fehling's solution is used in the detection of glucose

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

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

Answer: C

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18. When m-chlorobenzaldehyde is treated with 50 % *KOH* solution, the product (s) obtained is (are)

A. 

B. 

C. 

D. 

Answer: C



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19. A and B in the following reactions are



A. 

B. 

C. 

D. $A = RR'CH_2CN$, $B = NaOH$

Answer: A

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20. Clemmensen reduction of a ketone is carried out in the presence of which of the following ?

A. H_2 and Pt as catalyst

B. Glycol with KOH

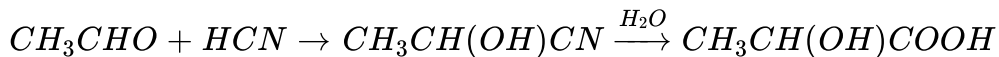
C. $Zn - Hg$ with HCl

D. $LiAlH_4$

Answer: C

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21. In the reaction



an asymmetric carbon is generated. The acid obtained would be

A. 20 % *D* + 80 % *L* – isomer

B. *D*-isomer

C. *L*-isomer

D. 50 % *D* + 50 % *L* – isomer

Answer: D



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22. A carbonyl compound reacts with hydrogen cyanide to form cyanohydrin which on hydrolysis forms a racemic mixture of α -hydroxy acid. The carbonyl compound *D*.

A. Diethyl ketone

B. Formaldehyde

C. Acetaldehyde

D. Acetone

Answer: C

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23. C_2H_5OH and CH_3COOR can be separated from CH_3CHO using

A. Tollen's reagent

B. $I_2 / NaOH$

C. NH_2NH_2

D. $NaHSO_3$

Answer: D

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24. The product formed in aldol condensation is

- A. A beta-hydroxy acid
- B. A beta-hydroxy aldehyde or a beta-hydroxy ketone
- C. An alpha-hydroxy aldehyde or ketone
- D. An alpha, beta unsaturated ester

Answer: B



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25. Reduction of aldehydes and ketones into hydrocarbons using

$Zn - Hg + HCl$ called.

- A. Clemmensen reduction
- B. Cope reduction
- C. Dow reduction
- D. Wolf-Kishner reduction

Answer: A



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26. Which one of the following undergoes reaction with 50% sodium hydroxide solution to give the corresponding alcohol and acid?

A. Butanal

B. Benzaldehyde

C. Phenol

D. Benzoic acid

Answer: B



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27. Acetophenone when reacted with a base, C_2H_5ONa , yields a stable compound which has the structure

A. 

B. 

C. 

D. 

Answer: B

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28. Trichloroacetaldehyde, CCl_3CHO reacts with chlorobenzene in presence of sulphuric acid and produces

A. 

B. 

C. 

D. 

Answer: D

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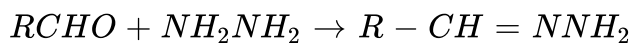
29. In which of the following reactions new carbon-carbon bond is not formed

- A. Cannizzaro reaction
- B. Wurtz reaction
- C. Aldol condensation
- D. Friedel-Crafts reaction

Answer: A

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30. Consider the reaction



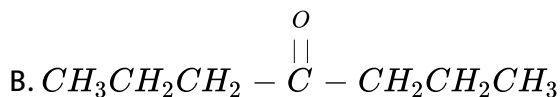
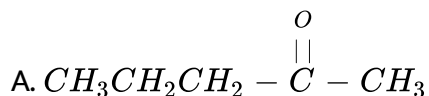
What sort of reaction is it?

- A. Electrophilic addition-elimination reaction
- B. Free radical addition-elimination reaction
- C. Electrophilic substitution-elimination reaction
- D. Nucleophilic addition-elimination reaction

Answer: D

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



Answer: D

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32. CH_3CHO and $C_6H_5CH_2CHO$ can be distinguished chemically by

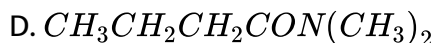
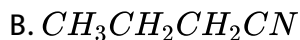
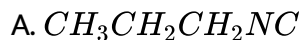
- A. Benedict test
- B. Iodoform test
- C. Tollen reagent test
- D. Fehling solution test

Answer: B

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33. On hydrolysis of a "compound", two compounds, are obtained. One of which on treatment with sodium nitrite and hydrochloric acid gives a

product which does not respond to iodoform test. The second one reduces Tollen's reagent and Fehling's solution The "Compound: is



Answer: A



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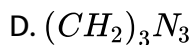
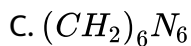
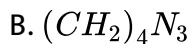
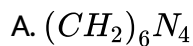
34. Which one is most reactive towards Nucleophilic addition reaction



Answer: B

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35. Formaldehyde reacts with ammonia to give urotropine. The formula of urotropine is



Answer: A

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36. The reagent that gives an orange coloured precipitate with acetaldehyde is

A. NH_2OH

B. $NaHSO_3$

C. Iodine

D. 2,4-DNP

Answer: D

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37. Which of the following does not give iodoform test

A. CH_3CH_2OH

B. CH_3OH

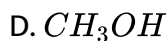
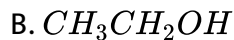
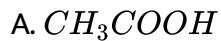
C. CH_3CHO

D. $PhCOCH_3$

Answer: B

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38. Reaction of 2-butene with acidic $KMnO_4$ gives



Answer: A



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39. Which of the following does not give brick red ppt. with Fehling solution ?

A. Acetone

B. Acetaldehyde

C. Formalin

D. D-glucose

Answer: A



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40. Acetaldehyde and acetone can be distinguished by

A. Molisch test

B. Bromoform test

C. Solubility in water

D. Tollen's test

Answer: D



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41. Acetaldehyde cannot show

A. Iodoform test

B. Lucas test

C. Benedict's test

D. Tollen's test

Answer: B

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42. The reagent used for the separation of Acetadehyde from acetophenone is

A. $NaHSO_3$

B. $C_6H_5NHNH_2$

C. NH_2OH

D. $NaOH - I_2$

Answer: A

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43. CH_3CHO reacts with aqueous NaOH solution to form

A. 3-hydroxy butanal

B. 2-hydroxy butanal

C. 4-hydroxy butanal

D. 3-hydroxy butanol

Answer: A

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44. Which of the following would undergo aldol condensation ?

A. $CCl_3 \cdot CHO$

B. $CH_3 - \overset{\overset{CH_3}{|}}{C} - CHO$
 $\quad \quad \quad |$
 $\quad \quad \quad CH_3$

C. $CH_3 \cdot CH_2 \cdot CHO$

D. $HCHO$

Answer: C

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45. The reaction

$C_6H_5CHO + CH_3CHO \rightarrow C_6H_5CH = CH - CHO$ is known as

- A. Perkin's reaction
- B. Claisen condensation
- C. Benzoin condensation
- D. Cannizzaro's reaction

Answer: B

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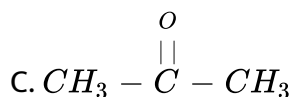
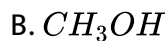
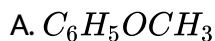
46. In which of the following reaction aromatic aldehyde is treated with acid anhydride in presence of corresponding salt of the acid to give unsaturated aromatic acid

- A. Friedel-Craft's reaction
- B. Perkin reaction
- C. Wurtz reaction
- D. None of these

Answer: B

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47. $NaOH / H^+$ reacts with



D. C_2H_5OH

Answer: C



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48. Acetone reacts with iodine to form iodoform in the presence of

A. $CaCO_3$

B. $NaOH$

C. KOH

D. $MgCO_3$

Answer: B



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49. $CH_3 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - CHO$ shows Cannizzaro's reaction due to

- A. Carbon is bounded by 3 methyl groups
- B. Absence of α -hydrogen atom
- C. Due to steric effect
- D. None of these

Answer: B



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50. Acetaldehyde reacts with chlorine to give

- A. CCl_4
- B. $CHCl_3$
- C. $CCl_3 \cdot COCH_3$
- D. $CCl_3 \cdot CHO$

Answer: D

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51. With which of the following reagents, carbonyl compound shows addition cum elimination reaction

A. PCl_5

B. Brady's reagent

C. HCN

D. All of these

Answer: B

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52. Which one of the following gives iodoform test?

A. Formaldehyde

B. Ethynol

C. Benzyl alcohol

D. Benzaldehyde

Answer: B

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53. Paraldehyde is :

A. A trimer of formaldehyde

B. A trimer of acetaldehyde

C. A hexamer of formaldehyde

D. A hexamer of acetaldehyde

Answer: B

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54. Which will not give acetamide on reaction with ammonia

- A. Acetic acid
- B. Acetyl chloride
- C. Acetic anhydride
- D. Methyl formate

Answer: D



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55. For C_6H_5CHO which of the following is incorrect

- A. On oxidation it yields benzoic acid
- B. It is used in perfumery
- C. It is an aromatic aldehyde

D. On reduction yields phenol

Answer: D

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56. When acetaldehyde is heated with Tollen's reagent which of the following is obtained ?

A. Methyl alcohol

B. Silver acetate

C. Silver mirror

D. Formaldehyde

Answer: C

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

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

Answer: C



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58. Which of the following products is obtained by the oxidation of propionaldehyde

- A. Acetic acid
- B. Formic acid and acetic acid
- C. Propanoic acid
- D. n-propyl alcohol

Answer: C



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59. Benzaldehyde reacts with ammonia to form

A. Benzaldehyde ammonia

B. Urotropine

C. Hydrobenzamide

D. Aniline

Answer: C



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60. The reagent with which both acetaldehyde and acetone react easily is

A. Fehling's reagent

B. Grignard reagent

C. Schiff's reagent

D. Tollen's reagent

Answer: B



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61. Which compound undergoes iodoform reaction ?

A. $HCHO$

B. CH_3CHO

C. CH_3OH

D. CH_3COOH

Answer: B



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62. Which of the following compounds would undergo Cannizzaro's reaction

- A. Propionaldehyde
- B. Benzaldehyde
- C. Bromobenzene
- D. Acetaldehyde

Answer: B



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63. Which gives difference between aldehyde and ketone

- A. Fehling's solution
- B. Tollen's reagent
- C. Schiff's reagent
- D. All of these

Answer:

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64. C_2H_5CHO and $(CH_3)_2CO$ can be distinguished by testing with

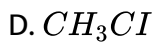
- A. Phenyl hydrazine
- B. Hydroxylamine
- C. Fehling solution
- D. Sodium bisulphite

Answer: C

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65. When CH_3COCH_3 reacts with

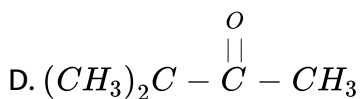
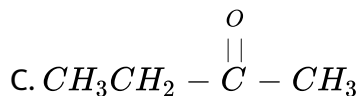
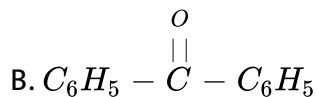
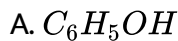
CI_2 and $NaOH$, which of the following is formed



Answer: A

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66. Which of the following gives aldol condensation reaction?



Answer: C



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67. An aldehyde on oxidation gives

- A. An alcohol
- B. An acid
- C. A ketone
- D. An ether

Answer: B



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68. An important reaction of acetone is auto condensation in presence of concentrated sulphuric acid to give the aromatic compound

- A. Mesitylene
- B. Mesityl oxide

C. Trioxan

D. Phorone

Answer: A

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69. Aldehyde with NH_2NH_2 forms

A. Hydrazones

B. Aniline

C. Nitrobenzene

D. None of these

Answer: A

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70. Claisen condensation is not given by

A. 

B. 

C. 

D. 

Answer: A



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71. Grignard's reagent reacts with ethanal

(acetaldehyde) and propanone to give

A. Higher aldehydes with ethanal and higher ketones with propanone

B. Primary alcohols with ethanal and secondary alcohols with propanone

C. Ethers with ethanal and alcohols with propanone

D. Secondary alcohols with ethanal and tertiary alcohols with propanone

Answer: D

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72. The reaction of an aldehyde with hydroxylamine gives a product which is called

- A. Aminohydroxide
- B. Hydrazone
- C. Semicarbazone
- D. Oxime

Answer: D

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73. Ketones reacting with Mg-Hg over water give

- A. Pinacolone
- B. Pinacols
- C. Alcohols
- D. None of these

Answer: B



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74. When dihydroxy acetone reacts 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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75. Which of the following does not reduce Fehling's solution

A. Benzaldehyde

B. Formic acid

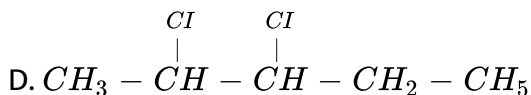
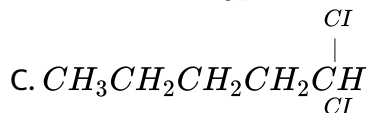
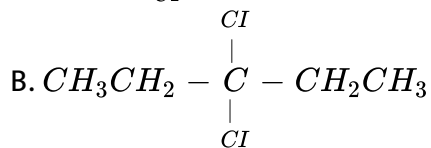
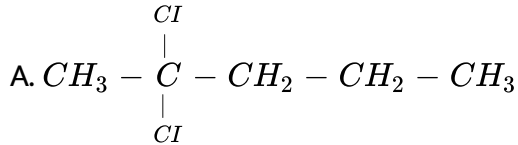
C. Glucose

D. Fructose

Answer: D

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76. A compound (A) $C_5H_{10}Cl_2$ on hydrolysis gives $C_5H_{10}O$ which reacts with NH_2OH , forms iodoform but does not give Fehling test (A) is :



Answer: A

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77. Aldol condensation of acetaldehyde involves the formation of which of the following intermediate

- A. Acetate ion
- B. A carbanion
- C. A carbonium ion
- D. A free radical

Answer: B

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78. The typical reactions of aldehyde is

- A. Electrophilic addition
- B. Nucleophilic substitution
- C. Nucleophilic addition
- D. Nucleophilic elimination

Answer: C

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79. Which of the following react with $NaHSO_3$

- A. CH_3COCH_3

B. CH_3CHO

C. $HCHO$

D. All of these

Answer: D

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80. Which of the following compounds containing carbonyl group will give coloured crystalline compound with



A. CH_3COCl

B. CH_3COCH_3

C. $CH_3CO(OC_2H_5)$

D. CH_3CONH_2

Answer: B



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81. Aldehydes and ketones can be reduced to corresponding hydrocarbons by _____.

- A. Refluxing with water
- B. Refluxing with strong acids
- C. Refluxing with soda amalgam and water
- D. Refluxing with zinc amalgam and concentrated HCl

Answer: D



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82. The diketone $CH_3 - \overset{O}{\parallel} C - (CH_2)_2 - \overset{O}{\parallel} C - CH_3$ on intramolecular aldol condensation gives the final product

A. 

B. 

C. 

D. 

Answer: C

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83. Aldehydes that do not undergo aldol condensation are

(1) propanal (2) trichloroethanal (3) 2- phenylethanal (4) ethanal (5) benzaldehyde

A. 3 and 4 only

B. 3 and 5 only

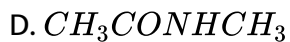
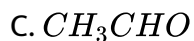
C. 1,2 and 3 only

D. 2 and 5 only

Answer:

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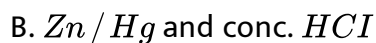
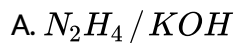
84. The compound that neither forms semicarbazone nor oxime is



Answer: D

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85. Which one of the following reagents is used to reduce an aldehyde to primary alcohols ?



C. $LiAlH_4$

D. Alkaline $CuSO_4$ containing Rochelle salt

Answer: C

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86. Magenta is

A. Alkaline phenolphthalein

B. Methyl red

C. p-rosaniline hydrochloride

D. Red litmus

Answer: C

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87. Formalin is an aqueous solution of

- A. Formic acid
- B. Formaldehyde
- C. Fluorescein
- D. Furfuraldehyde

Answer: B



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88. Aldol condensation involving $CH_3CHO + CH_3CHO$ gives the product

- A. $CH_3CHOHCH_2CHO$
- B. $CH_3COCH_2CH_3$
- C. $CH_3CH = CH_2$
- D. None of these

Answer: A



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89. Cannizzaro reaction is given by

A. $HCHO$

B. CH_3COCH_3

C. CH_3CHO

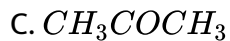
D. CH_3CH_2OH

Answer: A



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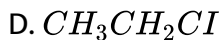
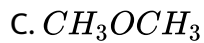
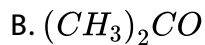
90. A compound has a vapour density of 29. on warming an aqueous solution of alkali, it gives a yellow precipitate. The compound is



Answer: A

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91. Haloform test is given by the following substance



Answer: B

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92. The synthesis of crotonaldehyde from acetaldehyde is an example of reaction

- A. Nucleophilic addition
- B. Elimination
- C. Electrophilic addition
- D. Nucleophilic addition-elimination

Answer: D



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93. When NH_2OH reacts with an usymmetrical ketone then numver of products formed is

- A. 1
- B. 2


C. 3

D. 4

Answer: B

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94. The most suitable reagent A, for the reaction

 is (are)

A. O_3

B. H_2O_2

C. $NaOH - H_2O_2$

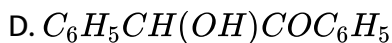
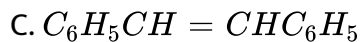
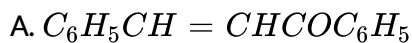
D. m-chloroperbenzoic acid

Answer: D

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95. Benzaldehyde on reaction with acetophenone

in the presence of sodium hydroxide solution gives

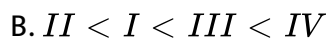


Answer: A



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96. Arrange the following compound in an increasing order of their reactivity in nucleophilic addition reactions : ethanal propanal, butanone, propanone.



C. $IV < III < II < I$

D. $I < II < III < IV$

Answer: C

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97. The aldol condensation reaction is given by

A. Acetophenone

B. Benzaldehyde

C. Benzophenone

D. Trichloroacetaldehyde

Answer: A

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98. Reduction of acetone in the presence of sodium borohydride gives

- A. 1-propanol
- B. 2-propanol
- C. Propene
- D. n-propane

Answer: B



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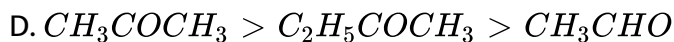
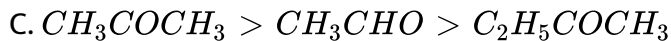
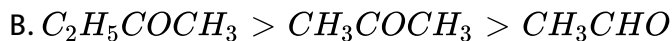
99. Hexamethylene tetramine is used as

- A. Analgesic
- B. Antipyretic
- C. Urinary antiseptic
- D. All of these

Answer: C

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100. Correct order of reactivity of CH_3CHO , $C_2H_5COCH_3$ and CH_3COCH_3 is



Answer: A

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101. When acetaldehyde reacts with PCl_5 the resulting compound is

- A. Ethyl chloride
- B. Ethylene chloride
- C. Ethylidene chloride
- D. Trichloro acetaldehyde

Answer: C

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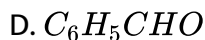
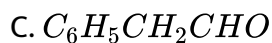
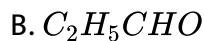
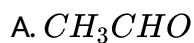
102. Reduction of an aldehyde produces

- A. Primary alcohol
- B. Monocarboxylic acid
- C. Secondary alcohol
- D. Tertiary alcohol

Answer: A

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103. The alkaline $CuSO_4$ containing sodium potassium tartrate does not react with

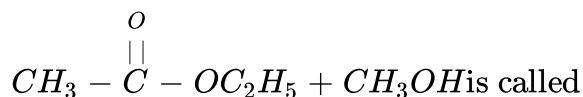
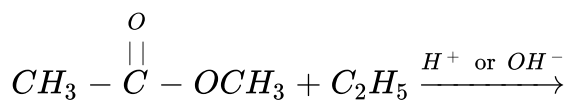


Answer: D



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104. The reaction.



- A. Perkin's reaction
- B. Claisen Schmidt reaction
- C. Esterification
- D. Trans-esterification

Answer: D

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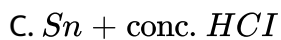
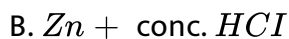
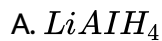
105. Which gives lactic acid on hydrolysis after reacting with HCN ?

- A. $HCHO$
- B. CH_3CHO
- C. C_6H_5CHO
- D. CH_3COCH_3

Answer: B

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106. Which of the following is a reducing agent ?



D. All of these

Answer: D



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107. Schiff bases or anils are formed, when aniline reacts with

A. Aliphatic aldehydes

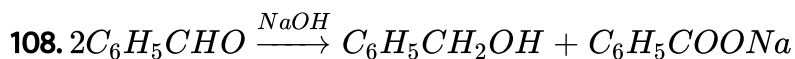
B. Aromatic aldehydes

C. Aliphatics ketones

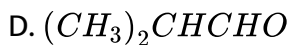
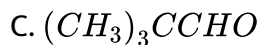
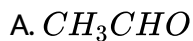
D. Aromatic ketones

Answer: B

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The similar reaction can take place with which of the following aldehyde?



Answer: C

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109. Which of the following will not give the iodoform test?

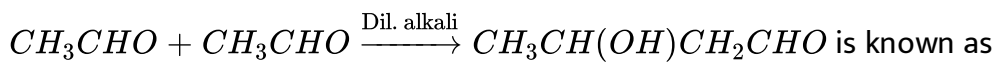
- A. Acetophenone
- B. Ethanal
- C. Benzophenone
- D. Ethanaol

Answer: C



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110. The reaction



- A. Cannizzaro's reaction
- B. Wurtz reaction
- C. Aldol condensation
- D. Clemmensen reduction

Answer: C

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111. Which one is used in the manufacture of mirror

- A. Red lead (litharge)
- B. Ammoniacal $AgNO_3$
- C. Ammoniacal $AgNO_3$ + Red lead
- D. Ammoniacal $AgNO_3$ + $HCHO$

Answer: D

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112. Which of the following organic compound exhibits positive Fehling test as well as iodoform test?

A. Methanal

B. Ethanaol

C. Propanone

D. Ethanal

Answer: D

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113. In the presence of a dilute base C_6H_5CHO and CH_3CHO react together to give a product. The product is

A. $C_6H_5CH_3$

B. $C_6H_5CH_2CH_2OH$

C. $C_6H_5CH_2OH$

D. $C_6H_5CH = CHCHO$

Answer: D

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114. Which of the following on reaction with conc. NaOH gives an alcohol ?

A. Methanal

B. Ethanal

C. Propanal

D. Butanal

Answer: A

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115. Acetal is produced by reacting alcohol in the presence of dry HCl with

A. Acetaldehyde

B. Ketone

C. Ether

D. Carboxylic acid

Answer: A

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116. Which of the following reagents react differently with HCHO , CH_3CHO and CH_3COCH_3 ?

A. HCN

B. NH_2NH_2

C. NH_2OH

D. NH_3

Answer: D

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117. The reaction in which sodium cyanide is used

- A. Perkin reaction
- B. Reimer-Tiemann reaction
- C. Benzoin condensation
- D. Rosenmund reaction

Answer: C



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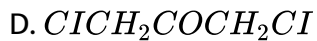
118. Tollen's reagent is

- A. $[Ag(NH_3)_2]NO_3$
- B. $[Ag(NH_3)_2]Br$
- C. Both (a) and (b)
- D. None of these

Answer: A

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119. The reaction of acetone with PCl_5 gives

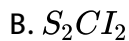


Answer: C

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120. CH_3CHO gives 1,1-Dichloroethane with it

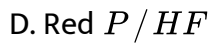
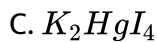




Answer: A

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121. Which of the following is called Bayer's reagent



Answer: A

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122. Which compound is soluble in H_2O

A. $HCHO$

B. CH_3CHO

C. CH_3COCH_3

D. All

Answer: D



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123. Which of the following reagents is used to distinguish acetone and acetophenone?

A. $NaHSO_3$

B. Grignard reagent

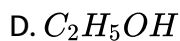
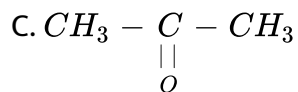
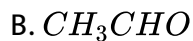
C. Na_2SO_4

D. NH_4Cl

Answer: A

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124. $A \xrightarrow[800^\circ C]{\Delta} CH_2 = C = O$, Reactant 'A' in the reaction is

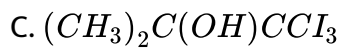
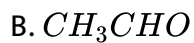


Answer: B

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125. Acetone and chloroform reacts to produce

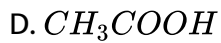
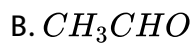




Answer: C

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126. Formalin is



Answer: A

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127. Benedict's solution is not reduced by

- A. Formaldehyde
- B. Acetaldehyde
- C. Glucose
- D. Acetic anhydride

Answer: D

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128. Which one of the following is reduced with zinc and hydrochloric acid to give the corresponding hydrocarbon?

- A. Acetamide
- B. Acetic acid
- C. Ethyl acetate
- D. Butan-2-one

Answer: D

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129. The increasing order of the rate of HCN addition to compound A-D is

(A) HCHO

(B) CH_3COOH_3

(C) $PhCOCH_3$

(D) $PhCOPh$

A. $A < B < C < D$

B. $D < B < C < A$

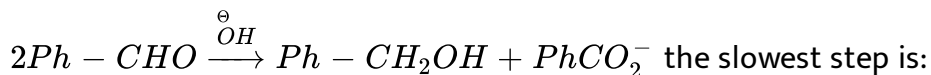
C. $D < C < B < A$

D. $C < D < B < A$

Answer: C

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130. In the Cannizzaro reaction given below:



- A. The attack of $\ominus\text{OH}$ at the carboxyl group
- B. The transfer of hydride to the carbonyl group
- C. The abstraction of proton from the carboxylic group
- D. The deprotonation of PhCH_2OH

Answer: B



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131. Trichloroacetaldehyde was subjected to cannizzaro'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-trichloroethanol
- B. Trichloromethanol

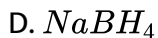
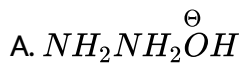
C. 2,2,2-trichloropropanol

D. Chloroform

Answer: A

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132. In the gives transformation, which the following is the most appropriate reagent



Answer: A

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133. What is the reaction of acetaldehyde with concentrated sulphuric acid

- A. No reaction
- B. Decomposition
- C. Charred to black residue
- D. Polymerisation

Answer: D



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134. Identify the correct statement

- A. Aldehydes on reduction gives secondary alcohols
- B. Ketones on reduction gives primary alcohols
- C. Ketones reduce Fehling's solution and give red cuprous oxide
- D. Ketones do not react with alcohols

Answer: D

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135. A Wittig reaction with an aldehyde gives

- A. Ketone compound
- B. A long chain fatty acid
- C. Olefin compound
- D. Epoxide

Answer: C

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136. Which of the do not react with fehling solution ?

- A. Acetaldehyde

B. Benzaldehyde

C. Glucose

D. Formic acid

Answer: B



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137. Dimethyl ketones are usually characterised through

A. Tollen reagent

B. Iodoform test

C. Schiff test

D. Benedict reagent

Answer: B



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138. Treatment of propionaldehyde with dilute $NaOH$ solution gives

- A. $CH_3CH_2COOCH_2CH_2CH_3$
- B. $CH_3CH_2CHOHCH(CH_3)CHO$
- C. $CH_3CH_2CHOHCH_2CH_2CHO$
- D. $CH_3CH_2COCH_2CH_2CHO$

Answer: B

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139. The aldehyde which react with $NaOH$ to produce an alcohol and sodium salt is

- A. $HCHO$
- B. CH_3CHO
- C. CH_3CH_2CHO
- D. $CH_3CH_2CH_2CHO$

Answer: A



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140. Cyanohydrin of which of the following forms lactic acid

A. $HCHO$

B. CH_3COCH_3

C. CH_3CHO

D. CH_3CH_2CHO

Answer: C



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141. Which of the following is used to detect aldehydes

A. Millon's test

B. Tollen's reagent

C. Neutral ferric chloride solution

D. Molisch's test

Answer: B

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142. Which of the following does not give brick red ppt. with Fehling solution ?

A. Benzaldehyde

B. Salicylaldehyde

C. Acetaldehyde

D. None of these

Answer: C

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143. $A \rightarrow (CH_3)_2C = CHCOCH_3$, A is

- A. Ketone
- B. Acetaldehyde
- C. Propionaldehyde
- D. Formaldehyde

Answer: A



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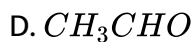
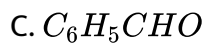
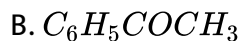
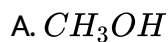
144. The end product in the Cannizaro's reaction of benzaldehyde is

- A. $PhCOO^- Na^+$, $PhCH_2OH$
- B. $PhCO_2H$, $PhCH_2CO_2H$
- C. $PhCH_2OH$, $PhCOCH_3$
- D. $PhCO_2H$, $PhCOCH_3$

Answer: A

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145. Which one of the following does not form sodium bisulphite addition product with sodium bisulphite solution



Answer: B

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146. Which is most reactive of the following ?

- A. Acetone
- B. Benzophenone
- C. Benzaldehyde
- D. Acetyl chloride

Answer: D

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147. Which of the following does not undergo Cannizzaro's reaction ?

- A. Benzaldehyde
- B. 2-methyl propanal
- C. p-methoxy benzaldehyde
- D. 2,2-dimethyl propanal

Answer: B

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148. A ketone gives a yellow precipitate, when treated with I_2 in an alkaline solution. Thus, the ketone is :

- A. A cyclic ketone
- B. A methyl ketone
- C. An unsaturated ketone
- D. None of these

Answer: B



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149. The order of susceptibility of nucleophilic attack on aldehydes follows the order

- A. $1^\circ > 3^\circ > 2^\circ$
- B. $1^\circ > 2^\circ > 3^\circ$

C. $3^\circ > 2^\circ > 1^\circ$

D. $2^\circ > 3^\circ > 1^\circ$

Answer: B

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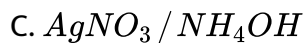
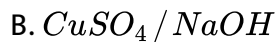
150. $OHC - CHO \xrightarrow{OH^-} HOH_2C - COOH$. The reaction given is

- A. Aldol condensation
- B. Knoevenegel reaction
- C. Cannizzaro reaction
- D. None of these

Answer: C

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151. $HCHO$ and $HCOOH$ are detected by



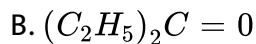
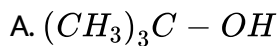
D. All of these

Answer: A



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152. Which can undergo haloform reaction ?



C. Acetophenone

D. Benzophenone

Answer: C

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153. $3\text{HCHO}_{aq.} \xrightleftharpoons{\text{cooled}} \text{X}$. X is

- A. Formalin
- B. Paraformaldehyde
- C. Paraldehyde
- D. Metaformaldehyde

Answer: D

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154. An aromatic compound 'X' with molecular formula $\text{C}_9\text{H}_{10}\text{O}$ gives the following chemical tests

- (i) Forms 2,4-DNP derivative

(ii) Reduces Tollen's reagent

(iii) Undergoes Cannizzaro reaction and

(iv) On vigorous oxidation 1,2-benzenedicarboxylic acid is obtained X is

A. 

B. 

C. 

D. 

Answer: A



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155. Aldehydes and ketones give addition reaction with

A. Hydrazine

B. Phenyl hydrazine

C. Semicarbazide

D. Hydrogen cyanide

Answer: D

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156. Only an aldehyde having....can undergo the aldol condensation

- A. At least one beta H atom
- B. At least one alpha H atom
- C. An aromatic ring
- D. No alpha H atom

Answer: B

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

A. Benzyl alcohol

B. Acetaldehyde

C. Acetone

D. Benzaldehyde

Answer: D



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158. Benzaldehyde and acetone can be best distinguished using FeCl_3 .

A. Fehling's solution

B. Sodium hydroxide solution

C. 2,4-DNP

D. Tollen's reagent

Answer: D

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159. The correct sequence of steps involved in the mechanism of cannizzaro's reaction is.....

- A. Nucleophilic attack, transfer of H^- and transfer of H^+
- B. Transfer of H^- , transfer of H^+ and nucleophilic attack
- C. Transfer of H^+ , nucleophilic attack and transfer of H^-
- D. Electrophilic attack by OH^- , transfer of H^+ and transfer of H^-

Answer: A

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160. An organic compound 'A' burns with a sooty flame. It is negative towards Tollen's reagent test and positive for Borsche's reagent test. The compound 'A' is

- A. Benzaldehyde
- B. Acetophenone
- C. Acetone
- D. Salicylic's acid

Answer: B



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161. Methyl ketones are usually characterised through

- A. Iodoform test
- B. Fehling solution
- C. Tollen reagent

D. Schiff reagent

Answer: A

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162. Which of the following compounds is most reactive towards nucleophilic addition reactions?

A. CH_3CHO

B. $PhCOCH_3$

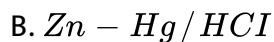
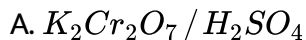
C. $PhCOPh$

D. CH_3COCH_3

Answer: A

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163. To distinguish between 2-pentanone and 3-pentanone which reagent can be used ?

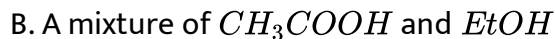


Answer: D



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164. The dipeptide Gln-Gly on treatment with CH_3COCl followed by aqueous work up gives :

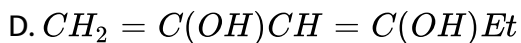
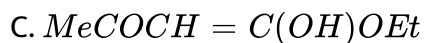
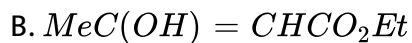
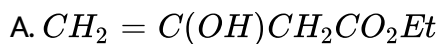


D. Only *EtOH*

Answer: A

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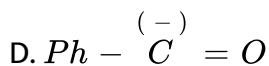
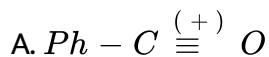
165. The most stable enol tautomer of *MeCOCH₂CO₂Et* is



Answer: B

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166. In the following species, the one which is likely to be the intermediate during benzoin condensation of benzaldehyde, is



Answer: C

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167. An optically active compound having molecular formula C_8H_{16} on ozonolysis gives acetone as one of the products. The structure of the compound is



C. 

D. 

Answer: B

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168. Bromination of *PhCOMe* in acetic acid medium produces mainly

A. 

B. 

C. 

D. 

Answer: D

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169. Cinnamic acid is formed when $C_6H_5 - CHO$ condenses with $(CH_3CO_2)O$ in the presence of

- A. Conc. H_2SO_4
- B. Sodium acetate
- C. Sodium metal
- D. Anhydrous $ZnCl_2$

Answer: B



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170. Aldehydes and ketones can be reduced to hydrocarbon by using

- A. $LiAlH_4$
- B. $H_2 / Pd - BaSO_4$
- C. $Na - Hg / HCl$
- D. $NH_2 - NH_2 / C_2H_5ONa$

Answer: D

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171. Which of the following will form two isomers with semi carbazide

- A. Benzaldehyde
- B. Acetone cyanohydrin
- C. Benzoquinone
- D. Benzophenone

Answer: A

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172. Predict the product



A. 

B. 

C. 

D. 

Answer: B

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173. Select the reagent for the following reaction



A. SeO_2

B. $O_3, Zn / H_2O$

C. $O_3, H_2O_2 - CH_3COOH$

D. PCC

Answer: B

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174. 

Find the organic acid product from the above reaction



B. 

C. 

D. None of the above

Answer: A

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175. The product of this reaction is



A. 

B. 

C. 

D. 

Answer: B

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176. Fehling A and Fehling B are :

A. $CuSO_4$ solution and NH_4OH solution

B. $CuSO_4$ solution and alkaline solution of sodium potassium tartarate

C. $CuSO_4$ solution and alkaline solution of sodium citrate

D. $CuSO_4$ solution and $NaOH$

Answer: B

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177. Total number of organic products obtained by the reduction of methyl ethanoate using $LiAlH_4$ is :

- A. 2
- B. 3
- C. 4
- D. 5

Answer: A



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178. Compound (A) undergoes Cannizzaro reaction and (B) undergoes positive iodoform test. Therefore

A. A = Acetaldehyde , B = 1-Pentanal

B. A = $C_6H_5CH_2CHO$, B = 3-Pentanone

C. A=Formaldehyde , $B = 2$ -Pentanone

D. A= Propionaldehyde , $B = 1$ -Pentanol

Answer: C

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179. Aldol condensation does not occur between

A. Two different aldehydes

B. Two different ketones

C. An aldehyde and ketone

D. An aldehyde and an ester

Answer: D

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180. Which of the following statements is not correct

- A. Aldehydes and ketones undergo nucleophilic additions
- B. Aldehydes and ketones undergo electrophilic substitutions
- C. Aldehydes and ketones contains polar carbonyl groups
- D. Lower members of aldehydes and ketones are soluble in water due to hydrogen bonding

Answer: B

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181. Benzophenone can be converted into benzene using

- A. Fused alkali
- B. Anhydrous $AlCl_3$
- C. Sodium amalgam in water

D. Acidified dichromate

Answer: A



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182. The product formed by the reaction of chlorine with benzaldehyde in the absence of a catalyst is

A. Chlorobenzene

B. Benzyl chloride

C. Benzoyl chloride

D. o-chlorobenzaldehyde

Answer: C



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183. Consider the following statement acetophenone can be prepared by

- (1) Oxidation of 1-phenylethanol
- (2) Reaction of benzylalcohol with methyl magnesium bromide
- (3) Friedel-Crafts reaction of benzene with acetyl chloride
- (4) Distillation of calcium benzoate

A. 1 and 2

B. 1 and 4

C. 1 and 3

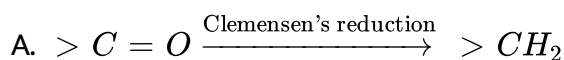
D. 3 and 4

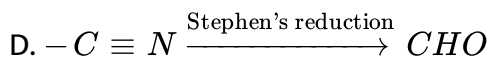
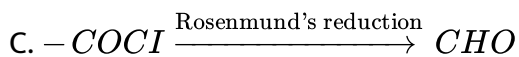
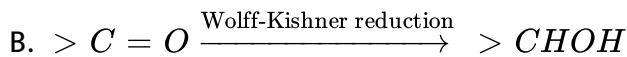
Answer: C



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184. Which one of the following pairs is not correctly matched ?





Answer: B

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185. The product of following reaction



A. 

B. 

C. 

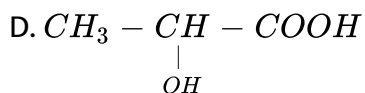
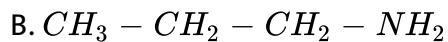
D. 

Answer: C

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Compound X on hydrolysis gives



Answer: D



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187. Which one of the following NOT give a primary alcohol on reduction ?

A. Propanoic acid

B. Propanal

C. Methyl propanoate

D. Propan-2-one

Answer: D

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188. One mole of an organic compound is found to require only 0.5mol of oxygen to produce an acid. Which class of compounds does the starting material belong to ?

A. Alcohol

B. Ether

C. Ketone

D. Aldehyde

Answer: D

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189. Contents of three bottles were found to react

- (i) Neither with Fehling's solution nor with Tollens reagent
- (ii) Only with Tollens reagent but not with Fehling's solution
- (iii) With both Tollens and Fehling's solution. If they contained ethanal (acetaldehyde) or propanone (acetone) or benzal (benzaldehyde), which bottle contained which

A. In (i) benzal, in (ii) ethanal and in (iii) propanone

B. In (i) benzal, in (ii) propanone and in (iii) ethanal

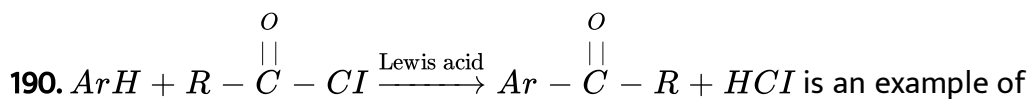
C. In (i) propanone, in (ii) benzal and in (iii) ethanal

D. In (i) propanone, in (ii) ethanal and in (iii) benzal

Answer: C



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- A. Friedel-Craft alkylation
- B. Friedel-Craft acylation
- C. Cannizzaro reaction
- D. Claisen condensation

Answer: B

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191. (A) Lower aldehydes and ketones are soluble in water but solubility decrease as the molecular masses increase.

(R) Distinction between aldehydes and ketones can be made by Tollen's reagent.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If the assertion and reason both are false

Answer: B

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192. Assertion: Acetaldehyde on treatment with alkali gives aldol.

Reason: Acetaldehyde molecules contains α hydrogen atom.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion

B. If both assertion and reason are true but reason is not the correct explanation of the assertion

C. If assertion is true but reason is false

D. If the assertion and reason both are false

Answer: A

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193. STATEMENT -1 : Acetophenone and benzophenone can be distinguished by iodoform test

STATEMENT -2 : Acetophenone and benzophenone both are carbonyl compound.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If the assertion and reason both are false

Answer: B

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194. Assertion: Isobutanal does not give iodoform test.

Reason : It does not have α -hydrogen.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If the assertion and reason both are false

Answer: C

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195. Assertion: Benzaldehyde is more reactive than ethanal towards nucleophilic attack.

Reason : The overall effect of $-I$ and $+R$ effect of phenyl group decrease

the electron density on the carbon atom of $>C=O$ group in benzaldehyde.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer:



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196. Assertion : Aldol condensation can be catalysed both by acids and bases.

Reason : β -hydroxy aldehydes or ketones readily undergo acid catalysed dehydration.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer: B



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197. Statement-I: Ketones are less reactive than aldehydes.

Because

Statement-II: Ketones do not give Schiff's test.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion

- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer: B

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198. Assertion: Oximes are less acidic than hydroxyl amine.

Reason: Oximes of aldehydes and ketones show geometrical isomerism.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer:

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199. Assertion: The bond energy of $>C=O$ is less than $>C=C<$ in alkenes.

Reason: The carbon atom in carbonyl group is sp^2 hybridised.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer:



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200. Assertion: $R - C \equiv O^+$ is more stable than $R - C^+ = O$.

Reason: Resonance in carbonyl compound provides C^+ and `

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer: B



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201. Assertion: CH_3CHO reacts with NH_3 to form urotropine.

Reason: Urotropine is used as medicine in case of urinary troubles.

- A. If both assertion and reason are true and the reason is the correct explanation of the assertion
- B. If both assertion and reason are true but reason is not the correct explanation of the assertion
- C. If assertion is true but reason is false
- D. If assertion is false but reason is true

Answer:



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202. Reaction of carbonyl compound with one of the following reagents involves nucleophilic addition followed by elimination of water. The reagent is:

- A. A Grignard reagent
- B. Hydrazine in presence of feebly acidic solution
- C. Hydrocyanic acid

D. Sodium hydrogen sulphite

Answer: B


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203. An organic compound 'X' having molecular formula $C_5H_{10}O$ yield phenylhydrazone and gives negative response to the iodoform test and Tollens test . It produces n-pentane on reduction. 'X' could be

- A. 2-pentanone
- B. 3-pentanone
- C. n-amyl alcohol
- D. pentanal

Answer: B

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204. Treatment of cyclopentanone  with methyl lithium gives which of the following species

- A. Cyclopentanonyl cation
- B. Cyclopentanonyl radical
- C. Cyclopentanonyl biradical
- D. Cyclopentanonyl anion

Answer: D



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205. The product formed by the reaction of an aldehyde with a primary amine is:

- A. Schiff base
- B. Ketone
- C. Carboxylic acid

D. Aromatic acid

Answer: A

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206. The correct structure of the product A formed in the reaction



A. 

B. 

C. 

D. 

Answer: C

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207. Of the following which is the products formed when cyclohexanone undergoes aldol condensation followed by heating

A. 

B. 

C. 

D. 

Answer: A

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Critical Thinking Objective Questions

1. The major organic product formed from the following reaction



A. 

B. 

C. 

D. 

Answer: B

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2. Match the compounds given in List I with List II and select the suitable option using the code given below

List I

List II

(A) Benzaldehyde

(i) Phenolphthalein

(B) Phthalic anhydride

(ii) Benzoin condensation

(C) Phenyl benzoate

(iii) Oil of wintergreen

(D) Methyl salicylate

(iv) Fries rearrangement

Code

A. (A) (B) (C) (D).

(ii) (iii) (iv) (i).

B. (A) (B) (C) (D).

(ii) (i) (iv) (iii).

C. (A) (B) (C) (D).

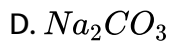
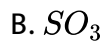
(iv) (i) (iii) (ii).

- D. (A) (B) (C) (D).
(iv) (ii) (iii) (i).

Answer: B

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3. Benzophenone does not react with



Answer: D

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4. Aldehyde and ketones can decolourise

A. Bromine water

B. Quick lime

C. Dil. H_2SO_4

D. None of these

Answer: D

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5. Which of the following pairs can be distinguished by sodium hypoiodite?

A. CH_3CHO and CH_3COCH_3

B. CH_3CH_2CHO and CH_3COCH_3

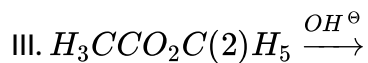
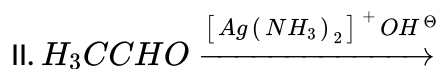
C. CH_3CH_2OH and $CH_3CH_2CHOHCH_3$

D. CH_3OH and CH_3CH_2CHO

Answer: B

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6. Consider the following reactions



Carboxylic acid is the final product only in the reduction (s)

A. I,II

B. II,III

C. II

D. III

Answer: B

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7. Identify the product (E) in the following sequence of reactions



A.

B.

C.

D.

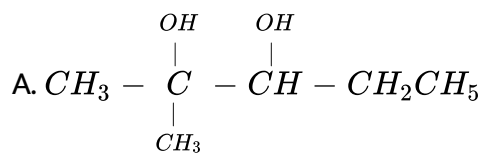
Answer: B



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8. On vigorous oxidation by permanganate solution

$(CH_3)_2C = CH - CH_2CH_2CH_3$ gives



B.

C. 

D. 

Answer: D

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9. Which is not true about acetophenone ?

A. Reacts to form 2,4-dinitrophenyl hydrazine

B. Reacts with Tollen's reagent to form silver mirror

C. Reacts with $I_2 / NaOH$ to form iodoform

D. On oxidation with alkaline $KMnO_4$ followed by hydrolysis gives benzoic acid

Answer: B

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10. A compound containing only carbon, hydrogen and oxygen has molecular mass of 44.0. On complete oxidation, it is converted into a compound of molecular mass 60.0. The compound is :

- A. An aldehyde
- B. An acid
- C. An alcohol
- D. An ether

Answer: A

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11. The key step in cannizzaro's reaction is the intermolecular shift of

- A. Proton
- B. Hydride ion
- C. Hydronium ion

D. Hydrogen bond

Answer: B

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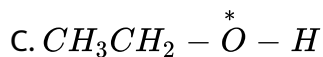
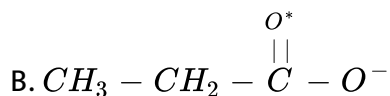
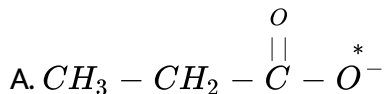
12. One of the following named reaction is an example of "disproportionation reaction". Identify it.

- A. Birch reduction
- B. Aldol condensation
- C. Reimer-Tiemann reaction
- D. Cannizzaro reaction

Answer: D

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13. $CH_3 - CH_2 - \overset{\overset{O}{||}}{C} - OC_2H_5 \xrightarrow[H_2O^*]{NaOH^*}$ Products of the above reaction contain

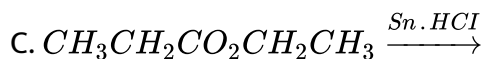
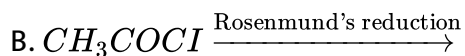


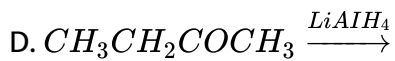
D. Both (a) and (b)

Answer: D

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14. In which of the following reactions, the product obtained is chiral ?





Answer: D

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15. The conversion of acetophenone to acetanilide is best accompanied by using :

- A. Backmann rearrangement
- B. Curtius rearrangement
- C. Lossen rearrangement
- D. Hofmann rearrangement

Answer: A

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16. Which of the following will not give iodoform test ?

A. Isopropyl alcohol

B. Ethanol

C. Ethanal

D. Benzyl alcohol

Answer: D



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17. Which of the following statements regarding chemical properties of acetophenone are wrong ?

I. It is reduced to methyl phenyl carbinol by sodium acid and ethanol

II. It is oxidised to benzoic acid with acidified $KMnO_4$

III. It does not undergo electrophilic substitution like nitration at meta position
IV. It does not undergo iodoform reaction with iodine and alkali.

A. 1 and 2

B. 2 and 4

C. 3 and 4

D. 1 and 3

Answer: C

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18. An organic compound 'A' has the molecular formula C_3H_6O , it undergoes iodoform test. When saturated with HCl it gives 'B' of molecular formula $C_9H_{14}O$. A and B, respectively are

A. Propanal and mesitylene

B. Propanone and mesityl oxide

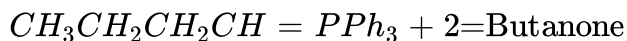
C. Propanone and 2,6-dimethyl-2,5-heptadien-4-one

D. Propanone and mesitylene oxide

Answer: C

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19. Which alkene is formed from the following ylide carbonyl pair



- A. 3-methyl-3-heptene
- B. 4-methyl-3-heptene
- C. 5-methyl-3-heptene
- D. 1-methyl-5-heptene

Answer: A

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20. The most reactive compound towards formation of cyanohydrin on treatment with KCN followed by acidification is

- A. Benzaldehyde
- B. p-nitrobenzaldehyde
- C. Phenyl acetaldehyde
- D. p-hydroxybenzaldehyde

Answer: B

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21. Which of the following will fail to react with potassium dichromate and dilute sulphuric acid?

- A. Ethyl alcohol (ethanol)
- B. Acetaldehyde (ethanal)
- C. Secondary propyl alcohol (2-propanol)
- D. Acetone (propanone)

Answer: D

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Jee Section Only One Choice Correct Answer

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

A. Cu

B. CuO

C. Cu_2O

D. $Cu(OH)_2$

Answer: C

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2. The Cannizzaro's reaction is not given by

A. Trimethyl acetaldehyde

B. Acetaldehyde

C. Benzaldehyde

D. Formaldehyde

Answer: B

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3. The compound that will not give iodoform on treatment with alkali and iodine is :

A. Acetone

B. Ethanol

C. Diethyl ketone

D. Isopropyl alcohol

Answer: C

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4. Which of the following compounds is oxidised to prepare methyl ethyl ketone?

- A. 2-propanol
- B. 1-butanol
- C. 2-butanol
- D. t-butyl alcohol

Answer: C

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5. Reaction  is

- A. Electrophilic substitution
- B. Electrophilic addition

C. Nucleophilic addition

D. Nucleophilic substitution

Answer: C



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6. The Grignard reagent, on reaction with acetone, forms :

A. Tertiary alcohol

B. Secondary alcohol

C. Acetic acid

D. Acetaldehyde

Answer: A



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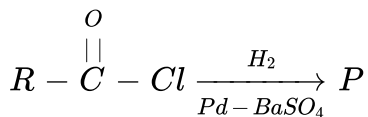
7. m-Chlorobenzaldehyde on reaction with conc. KOH at room temperature gives:

- A. Potassium m-chlorobenzoate and m-chlorobenzyl alcohol
- B. m-hydroxy benzaldehyde and m-chlorobenzyl alcohol
- C. m-chlorobenzyl alcohol and m-hydroxy benzyl alcohol
- D. Potassium m-chlorobenzoate and m-hydroxy benzaldehyde

Answer: A

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8. In the following reaction, product P is



- A. RCH_2OH
- B. $RCOOH$

C. $RCHO$

D. RCH_3

Answer: C



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9. Base catalysed aldol condensation occurs with

A. Benzaldehyde

B. 2,2-dimethyl propionaldehyde

C. Acetaldehyde

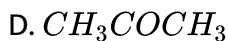
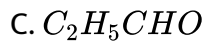
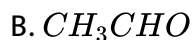
D. Formaldehyde

Answer: C



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10. Which of the following aldehydes is most reactive towards nucleophilic addition reactions ?

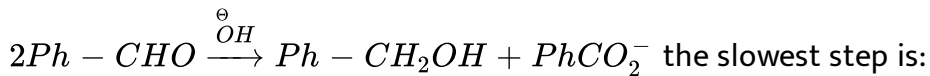


Answer: A



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11. In the Cannizzaro reaction given below:



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 group

D. The deprotonation of $Ph - CH_2OH$

Answer: B

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12. Among the given compounds, the most susceptible to nucleophilic attack at the carbonyl group is:

A. $MeCOCl$

B. $MeCHO$

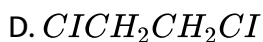
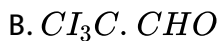
C. $MeCOOMe$

D. $MeCOOCOMe$

Answer: A

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13. Which of the following will react with water?

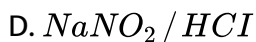
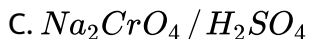
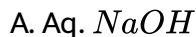
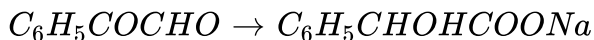


Answer: B



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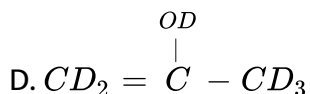
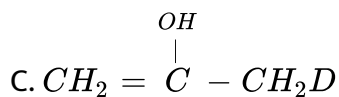
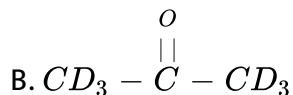
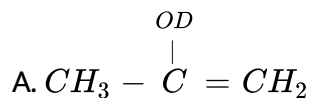
14. The following reagent converts



Answer: A

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



Answer: B

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16. Which one of the following will most readily be dehydrated in acidic condition

A. 

B. 

C. 

D. 

Answer: A

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17. Which of the following has the most acidic hydrogen ?

A. 3-hexanone

B. 2,4-hexanedione

C. 2,5-hexanedione

D. 2,3-hexanedione

Answer: B

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18. A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives

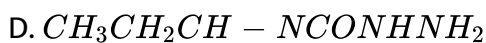
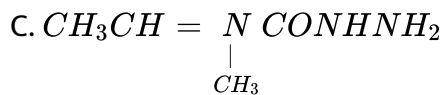
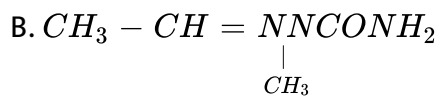
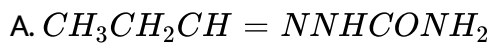
- A. Benzyl alcohol and sodium formate
- B. Sodium benzoate and methyl alcohol
- C. Sodium benzoate and sodium formate
- D. Benzyl alcohol and methyl alcohol

Answer: A



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19. 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 $H_2NCONHNH_2$ and sodium acetate gives a product 'C'. Identify the structure of 'C'



Answer: A

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20. 

Major product is

A. 

B. 

C. 

D. 

Answer: D



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21. 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. $NaHSO_3$

Answer: C



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

A.

B.

C. 

D. 

Answer: A

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23. The pair of compounds in which both the compounds give positive test with Tollen's reagent is

A. Glucose and Sucrose

B. Fructose and Sucrose

C. Acetophenone and Hexanal

D. Glucose and Fructose

Answer: D

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24. The order of reactivity of phenyl magnesium bromide with the following compounds is



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25. How will you convert butan -2-one to propanoic acid?

A. Tollen's reagent

B. Fehling solution

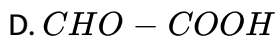
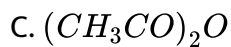
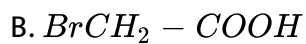
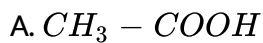
C. $NaOH / I_2 / H^+$

D. $NaOH / NaI / H^+$

Answer: C

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26. 



Answer: C

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



A. 

B. 

C. 

D. 

Answer: C

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28. The smallest ketone and its next homologue are reacted with NH_2OH to form oxime.

- A. Two different oximes are formed
- B. Three different oximes are formed
- C. Two oximes are optically active
- D. All oximes are optically active

Answer: B

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29. Cyclohexene on ozonolysis followed by reaction with zinc dust and water gives compound E. Compound E on further treatment with aqueous

KOH yields compound F. Compound F is

A. 

B. 

C. 

D. 

Answer: A



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30. The major product of the following reaction is



A. A hemiacetal

B. An acetal

C. An ether

D. An ester

Answer: B



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31. The number of aldol reaction(s) that occurs in the given transformation is



A. 1

B. 2

C. 3

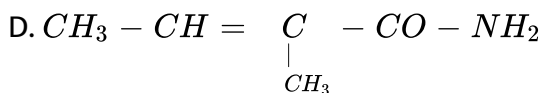
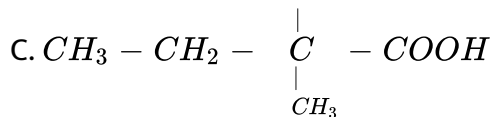
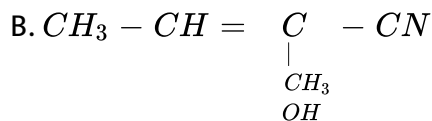
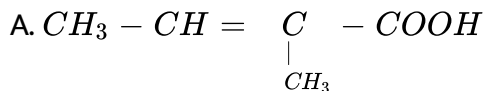
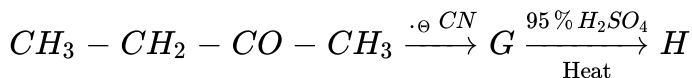
D. 4

Answer: C



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32. The major product H in the given reaction sequence is



Answer: a



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33. KI in acetone, undergoes $\text{S}_{\text{N}}2$ reaction with each P,Q,R and S. The rates of the reaction vary as



B. $S > P > R > Q$

C. $P > R > S$

D. $R > P > S > Q$

Answer: B

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34. The major organic compound formed by the reaction of 1,1,1-trichloroethane with silver powder is .

A. Acetylene

B. Ethene

C. 2-Butyne

D. 2-Butene

Answer: C

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35. The major product in the following reaction is



A. 

B. 

C. 

D. 

Answer: D



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36. The most suitable reagent for the conversion of

$RCH_2OH \rightarrow RCHO$ is

A. $KMnO_4$

B. $K_2Cr_2O_7$

C. CrO_3

D. PC C (Pyridine chloro chromate)

Answer: D

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37. The major product of the following reaction is



A. 

B. 

C. 

D. 

Answer: A

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38. The major product of the following reaction sequence is



A.

B.

C.

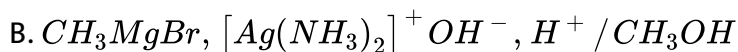
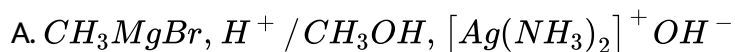
D.

Answer: A



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39. The correct sequence of reagents for the following conversion will be



D. $[Ag(NH_3)_2]^+ OH^-$, H^+ / CH_3OH , CH_3MgBr

Answer: D

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Jee Section More Than One Choice Correct Answer

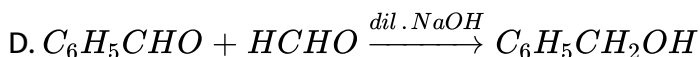
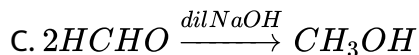
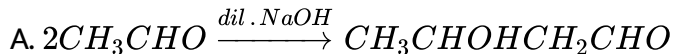
1. Which of the following compounds will react with ethanolic KCN?

- A. Ethyl chloride
- B. Acetyl chloride
- C. Chlorobenzene
- D. Benzaldehyde

Answer: A::B::D

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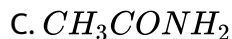
2. Which of the following are examples of aldol condensation ?



Answer: A::B::D

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3. Which of the following will give yellow precipitate with I_2 / NaOH -



Answer: A::D

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4. A new carbon-carbon bond formation is possible in

- A. Cannizaro's reaction
- B. Friedal Crafts's reaction
- C. Clemmensen reduction
- D. Reimer-Tiemann reaction

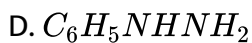
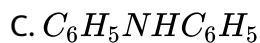
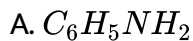
Answer: B::D

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5. Among the following compounds which will react with acetone to give

a _____ product _____ containing

containing $\text{>C}=\text{N}-?$



Answer: A::D



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6. Which of the following will undergo aldol condensation ?

A. Acetaldehyde

B. Propanaldehyde

C. Benzaldehyde

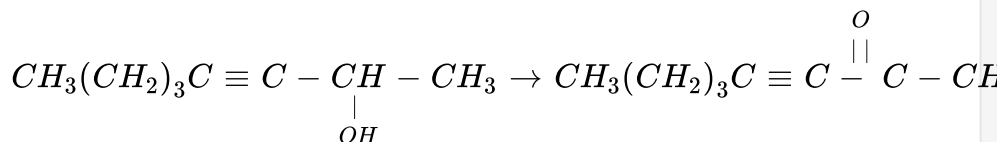
D. Trideutero acetaldehyde

Answer: A::B::D

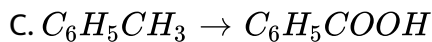
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7. Which of the following oxidation reactions can be carried out with chromic acid in aqueous acetone at $5 - 10^\circ C$

A.



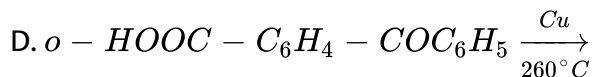
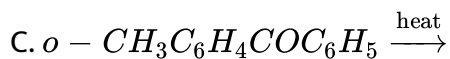
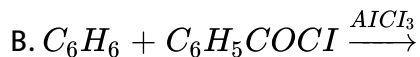
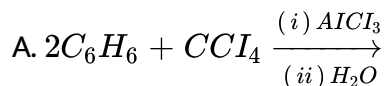
B.



Answer: A::B::C::D

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8. Which of the following reactions give benzophenone



Answer: B::D



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9. Silver Mirror test is given by which one of the following compounds?

A. Acetaldehyde

B. Acetone

C. Formaldehyde

D. Benzophenone

Answer: A::C

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10. After completion of the reactions (I and II), the organic compound(s) in the reaction mixtures is (are)



- A. Reaction I: P and Reaction II: P
- B. Reaction I: U acetone and Reaction II: Q, acetone
- C. Reaction I: T, U, acetone and Reaction II: P
- D. Reaction I: R, acetone and Reaction II: S, acetone

Answer: C

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11. Positive Tollen's test is observed for

A. 

B. 

C. 

D. 

Answer: A::B

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12. Reagent(s) which can be used to bring about the following transformation is (are)



A. $LiAlH_4$ in $(C_2H_5)_2O$

B. BH_3 in THF

C. $NaBH_4$ in C_2H_5OH

D. Raney Ni/H_2 in THF

Answer: C::D



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Jee Section Reasoning Type Questions

1. Statement-I: Acetic acid does not undergo haloform reaction.

Because

Statement-II: Acetic acid has no α hydrogen.

- A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1
- B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1
- C. Statement 1 is true, statement 2 is false
- D. Statement 1 is false, statement 2 is true

Answer: C



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2. Statement I Benzonitrile is prepared by the reaction of chlorobenzene with potassium cyanide.

Statement II Cyanide (CN^-) is a strong nucleophile.

- A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1
- B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1
- C. Statement 1 is true, statement 2 is false
- D. Statement 1 is false, statement 2 is true

Answer: D



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3. Assertion: Aromatic aldehydes can be distinguished from aliphatic aldehydes by fehling's solution

Reason : Fehing's solution is an alkaline solution of $CuSO_4$ containing Rochelle salt.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: B



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4. Assertion: Ethylenic acid ($CH_2 = CHCOOH$) is a weaker acid than benzoic acid (C_6H_5COOH).

Reason : Ethylenic double bond is lesser electron donating than benzene ring.

- A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1
- B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1
- C. Statement 1 is true, statement 2 is false
- D. Statement 1 is false, statement 2 is true

Answer: C



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1. A tertiary alcohol H upon acid catalysed dehydration gives a product I. Ozonolysis of I leads to compounds J and K. K on reaction with KOH give L and M.



Compound H is formed by the reaction of

A. 

B. 

C. 

D. 

Answer: B



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2. A tertiary alcohol H upon acid catalysed dehydration gives a product I. Ozonolysis of I leads to compounds J and K. K on reaction with KOH give L and M.



The structure of compound I is

A. 

B. 

C. 

D. 

Answer: A



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3. A tertiary alcohol H upon acid catalysed dehydration gives a product I. Ozonolysis of I leads to compounds J and K. K on reaction with KOH give L and M.



The structure of compounds J,K and L respectively are

A. $PhCOCH_3$, $PhCH_2COCH_3$ and $PhCH_2COO^- K^+$

B. $PhCHO$, $PhCH_2CHO$ and $PhCOO^- K^+$

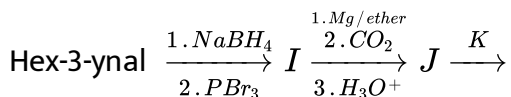
C. $PhCOCH_3$, Ph_2CHO and $CH_3COO^- K^+$

D. $PhCHO$, $PhCOCH_3$ and $PhCOO^- K^+$

Answer: D

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4. In the following reaction sequence, products I, J and L are formed, K represents a reagent.



The structure of the product I is

A. 

B. 

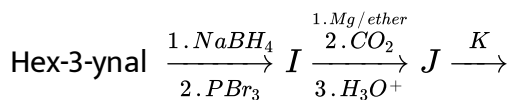
C. 

D. 

Answer: D

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5. In the following reaction sequence, products I, J and L are formed, K represents a reagent.



The structure of compounds J and K, respectively, are

A. 

B. 

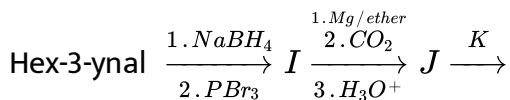
C. 

D. 

Answer: A

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6. In the following reaction sequence, products I, J and L are formed, K represents a reagent.



The structure of product L is

A.

B.

C.

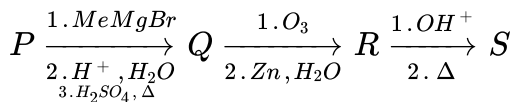
D.

Answer: C

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7. A carbonyl compound P, which gives positive iodoform test, undergoes reaction with $MeMgBr$ followed by dehydration to give an olefin Q. Ozonolysis of Q leads to a dicarbonyl compound R, which undergo

intramolecular aldol reaction to give predominantly S.



The structure of the carbonyl compound P is

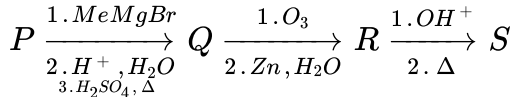


Answer: B



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8. A carbonyl compound P, which gives positive iodoform test, undergoes reaction with $MeMgBr$ followed by dehydration to give an olefin Q. Ozonolysis of Q leads to a dicarbonyl compound R, which undergo intramolecular aldol reaction to give predominantly S.



The structure of the products Q and R, respectively, are

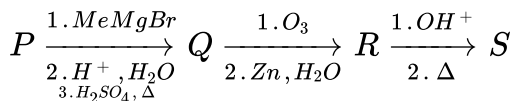


Answer: A



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9. A carbonyl compound P, which gives positive iodoform test, undergoes reaction with $MeMgBr$ followed by dehydration to give an olefin Q. Ozonolysis of Q leads to a dicarbonyl compound R, which undergoes intramolecular aldol reaction to give predominantly S.



The structure of the product S is

A. 

B. 

C. 

D. 

Answer: B

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10. Two aliphatic aldehydes P and Q react in the presence of aqueous K_2CO_3 to give compound R, which upon treatment with HCN provides compound S. On acidification and heating, S gives the product shown below



The compounds P and Q respectively are

A. 

B. 

C. 

D. 

Answer: B



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11. Two aliphatic aldehydes P and Q react in the presence of aqueous K_2CO_3 to give compound R, which upon treatment with HCN provides compound S. On acidification and heating, S gives the product shown below



The compound R is

A. 

B. 

C. 

D. 

Answer: A



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12. Two aliphatic aldehydes P and Q react in the presence of aqueous K_2CO_3 to give compound R, which upon treatment with HCN provides compound S. On acidification and heating, S gives the product shown below



The compound S is

A.

B.

C.

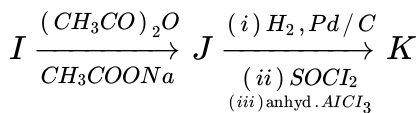
D.

Answer: D



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13. In the following reaction sequence, the compound J is an intermediate.



$J(\text{C}_9\text{H}_8\text{O}_2)$ gives effervescence on treatment with NaHCO_3 and positive Baeyer's test.

The compound K is

A. 

B. 

C. 

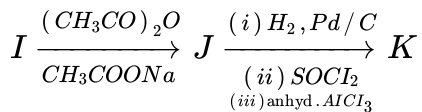
D. 

Answer: C



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14. In the following reaction sequence, the compound J is an intermediate.



$J(\text{C}_9\text{H}_8\text{O}_2)$ gives effervescence on treatment with NaHCO_3 and positive Baeyer's test.

The compound I is



Answer: A



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15.

<i>Column I</i>	<i>Column 2</i>	<i>Column 2</i>
(I) Toluene	(i) $\text{NaOH} / \text{Br}_2$	(P) Condensation
(II) Acetophenone	(ii) $\text{Br}_2 / h\nu$	(Q) Carboxylation
(III) Benzaldehyde	(iii) $(\text{CH}_3\text{CO})_2\text{O} / \text{CH}_3\text{COOK}$	(R) Substitution
(IV) Phenol	(iv) $\text{NaOH} / \text{CO}_2$	(S) Haloform

The only correct combination in which the reaction proceeds through radical mechanism is

A. (IV) (i) (Q)

B. (III) (ii) (P)

C. (II) (iii) (R)

D. (I) (ii) (R)

Answer: D



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16.

<i>Column1</i>	<i>Column2</i>	<i>Column3</i>
(I) Toluene	(i) $\text{NaOH} / \text{Br}_2$	(P) Condensation
(II) Acetophenone	(ii) $\text{Br}_2 / h\nu$	(Q) Carboxylation
(III) Benzaldehyde	(iii) $(\text{CH}_3\text{CO})_2\text{O} / \text{CH}_3\text{COOK}$	(R) Substitution
(IV) Phenol	(iv) $\text{NaOH} / \text{CO}_2$	(S) Haloform

For the synthesis of benzoic acid, the only CORRECT combination is

A. (II) (i) (S)

B. (I) (iv) (Q)

C. (IV) (ii) (P)

D. (III) (iv) (R)

Answer: A



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17.

Column I	Column 2	Column 3
(I) Toluene	(i) $\text{NaOH} / \text{Br}_2$	(P) Condensation
(II) Acetophenone	(ii) $\text{Br}_2 / h\nu$	(Q) Carboxylation
(III) Benzaldehyde	(iii) $(\text{CH}_3\text{CO})_2\text{O} / \text{CH}_3\text{COOK}$	(R) Substitution
(IV) Phenol	(iv) $\text{NaOH} / \text{CO}_2$	(S) Haloform

The only CORRECT combination that gives two different carboxylic acids is

A. (IV) (iii) (Q)

B. (II) (iv) (R)

C. (I) (i) (S)

D. (III) (iii) (P)

Answer: D



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18. Carbonyl compounds reacts with NH_2OH to form Aldoximes and Ketoximes. Configuration of these can be determined by Beckmann rearrangement as that group migrates which is anti w.r.t -OH



It is important to note that the migration of group is completely Retentive and no loss of optical activity is seen.



A. 

B. 

C. 

D. 

Answer: A



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19. Carbonyl compounds reacts with NH_2OH to form Aldoximes and Ketoximes. Configuration of these can be determined by Beckmann rearrangement as that group migrates which is anti w.r.t -OH



It is important to note that the migration of group is completely

Retentive and no loss of optical activity is seen.

$CH_3CHO + NH_2OH \xrightarrow{\Delta} P \xrightarrow{H^{\oplus}} Q \xrightarrow{Br_2 / KOH} R(CH_3NH_2)$ (as only product) Following is correct

A. Oxime P is syn form of geometrical isomer

B. Oxime P is anti form

C. Q is more basic than R

D. Q is $H - \underset{\begin{array}{c} || \\ O \end{array}}{C} - NH - CH_3$

Answer: B



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20. Carbonyl compounds reacts with NH_2OH to form Aldoximes and Ketoximes. Configuration of these can be determined by Beckmann rearrangement as that group migrates which is anti w.r.t -OH



It is important to note that the migration of group is completely

Retentive and no loss of optical activity is seen.



Following is true about product

- A. It is also (+) laevorotatory
- B. Both (+)(-) forms are obtained in equal amount
- C. It is having 'S' configuration for chiral carbon
- D. It is having R configuration for chiral carbon

Answer: D



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Jee Section Integer Type Questions

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



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2. How many of the osomeric ketones having the molecular formula $C_6H_{12}O$ undergo iodoform test?

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3. Amongst the following, total number of compounds soluble in sodium bicarbonate are: 2,4,6-trinitrophenol, benzoic acid, salicylic acid, acetyl chloride, acetic anhydride, trifluoroethanol, acetamide, benzenesulphonic acid

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4. Isomeric aldehydes and ketones having the formula $C_5H_{10}O$ are :

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Jee Section Matrix Match Type Questions

1. Match the entries listed in Column-I with appropriate entries listed in Column-II.



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Jee Section Jee Advanced 2018 More Than One Choice Correct Answer

1. The reaction(s) leading to the formation of 1,3,5-trimethylbenzene is (are)

A. 

B. 

C. 

D. 

Answer: A::B::D

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Jee Section Jee Advanced 2018 Comprehension Type Questions

1. Treatment of benzene with CO/HCl in the presence of anhydrous $AlCl_3/CuCl$ followed by reaction with $Ac_2O/NaOAc$ gives compound X as the major product. Compound X upon reaction with Br_2/Na_2CO_3 , followed by heating at $473K$ with moist KOH furnishes Y as the major product. Reaction of X with $H_2/Pd - C$, followed by H_3PO_4 treatment gives Z as the major product.

The compound Y is

A. 

B. 

C. 

D. 

Answer: C

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2. Treatment of benzene with CO/HCl in the presence of anhydrous $AlCl_3/CuCl$ followed by reaction with $Ac_2O/NaOAc$ gives compound X as the major product. Compound X upon reaction with Br_2/Na_2CO_3 , followed by heating at $473K$ with moist KOH furnishes Y as the major product. Reaction of X with $H_2/Pd - C$, followed by H_3PO_4 treatment gives Z as the major product.

The compound Z is

A. 

B. 

C. 

D. 

Answer: A



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Jee Section Jee Advanced 2018 Numeric Answer Type Question

1. In the following reaction sequence, the amount of D (in g) formed from 10 moles of acetophenone is _____ (Atomic weight in $gmol^{-1}$: $H = 1$, $C = 12$, $N = 14$, $O = 16$, $Br = 80$. The yield (%) corresponding to the product in each step is given in the parenthesis

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