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### **CHEMISTRY**

## **BOOKS - BODY BOOKS PUBLICATION**

# ALDEHYDES,KETONES AND CARBOXYLIC ACID



**1.** Write the IUPAC name of

 $CH_3 - CO - CH_2 - CH_2 - CH_3$ 



B. ester

C. alcohol

D. acid

#### **Answer:**



3. Addition of Grignard reagent to an aldehyde

or ketone gives.

A. acid

B. alcohol

C. ester

D. ather

#### **Answer:**





- 5. Another name of 2-butanone is
  - A. diemethyl ketone
  - B. diethyl ketone
  - C. methyl ethyl ketone
  - D. none of these

#### Answer:



**6.** Reduction of carbonyl compounds with hydrazine in the presence of strong base

A. Clemmensen's reduction

- B. Wolf-Kishner reduction
- C. Cannizzaro reduction
- D. none of these





7. Pick ester from the following:

A. methyl butyrate

- B. sodium acetate
- C. calcium formate

D. benzene





9. Write structure of the given compound 2-

chloro-3-methyl pentane.



#### 10. 40% aqueous solution of formaldehyde is

called.....

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#### 11. Urea formaldehyde resin and phenol

formaldehyde resin are..... polymers.

**12.** Ethers are stored in.....bottles.



**13.** Observe the relationship between the first two terms and fill in the blanks. A.Aldol condensation : Dil NaOH, b.lodoform reaction :

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. . . . . . . . . . . . . . . . . . . .

14. Choose correctly matched pairs.

A. Isobutyric acid : 2-Methyibutanoic acid

B. Formic acid : Butanoic acid

C. Acetic acid : Ethanoic acid

D.

Answer:

15. Benzoic acid ,when heated with sodalime

yields.....

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16. Hydrolysis of the ozanide of 1-butene

gives.....



17. Addition of Grignard reagent to an aldehyde or ketone gives.Watch Video Solution

### **18.** $CH_3CH_2CH_2COCl$ belongs to the class

of compounds known as.....

A. carboxylic acid

B. Acylhallde

C. Halide

#### D. ketone

#### Answer:

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#### 19. "Oxidation of aldehydes gives ethers". State

#### whether this statement is true or false ?



**20.** Identify the product formed when formaldehyde reacts with  $NH_3$ . Write the use of the compound formed.



#### **21.** Arrange the following in decreasing order:

 $CH_3CHO$ ,  $CH_3COCH_3$ , HCHO(reactivity

towards nucleophile).



**22.** Arrange the following in decreasing order: HCOOH,  $CICH_2COOH$ ,  $CH_3COOH$ (acidic strength).

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**23.** Give simple chemical tests to distinguish between the following pairs of compounds Propanal and propanone.

**24.** Give simple chemical tests to distinguish between the following pairs of compounds Phenol and benzoic acid.

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25. Predict the product and name the reaction,

when HCHO is allowed to react with NaOH.

**26.** Among the carbonyl compounds "Ketones are less reactive than aldehydes".Is this statement true?



**27.** Among the carbonyl compounds "Ketones are less reactive than aldehydes".Justify your

answer.



28. Illustrate Friedal Craft's acylation reaction.





30. Name the following compounds according

to IUPAC system. $CH_3CH = CHCHO$ 

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31. Name the following compounds according

to IUPAC system. $(CH_3)_2C - CH_2COOH$ .



#### 33. Formaldehyde gives Cannizzaro reaction

while acetaldehyde does not. Why?

**34.** Acetaldyde on warming with Tollen's reagent gives a bright mirror in the inner sides of the test tube.The bright mirror is due to deposition of .....

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**35.** Acetaldyde on warming with Tollen's reagent gives a bright mirror in the inner sides of the test tube.What is Tollen's reagent

?

**36.** Acetaldyde on warming with Tollen's reagent gives a bright mirror in the inner sides of the test tube.Can you do the above experiment using Ketones?



**37.** Giving a chemical equation for each, illustrate the following reactions of alkanoic acid : Decarboxylation.





**38.** Giving a chemical equation for each,illustrate the following reactions of alkanoic acid :HVZ reaction.

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**42.** A compound extracted from a plant has molecular formula  $,C_3H_6O_2$ . It reacts with ammonia to form an amide and methanol. Identify the compound.

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**43.** A compound extracted from a plant has molecular formula  $,C_3H_6O_2$ . It reacts with ammonia to form an amide and methanol. Comment on the possibility of two methods of

preparation of the compoundfrom the compounds methanol, ethanolc acid and ethanoyl chloride.

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**44.** A compound extracted from a plant has molecular formula  $,C_3H_6O_2.$ It reacts with ammonia to form an amide and methanol .Represent the change when the compounds is hydrolysedin presence of alkali.



**45.** Following are a group of compound showing acidic behaviour HCOOH.Give the IUPAC names of compounds.

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**46.** Following are a group of compound showing acidic behaviour  $CH_3COOH$ . Give the IUPAC names of compounds.

47. How will you convert acetaldehyde to the

following compounds ?Methane.

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48. How will you convert acetaldehyde to the

following compounds? Ethane.

**49.** An alcohol 'A' having molecular formula  $C_3H_8O$  gives iodoform test. 'A' on treatment with copper at 573k gives B. 'B' on treatment with sodium hydroxide 'C' obtained .Identify A,B andC.

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**50.** Phenols are more acidic than alcohols.

Name the product obtained when phenol is

treated with chloroform in the presence of

NaOH.



**51.** Phenols are more acidic than alchol . Name the product obtained when phenol is treated with chloroform in the presence of NaOH.Name the above reaction.

**52.** Phenols are more acidic than alcohols.

What is the product obtained when phenol is treated with conc. $HNO_3$ ?



### **53.** HCHO and $CH_3CHO$ are allowed to

react seprately with sodium hydroxide.Name

and explain the reactions involved .



54. How are the following conversions archieved? (i) Benzoyl chloride  $[C_6H_5COCl]$ to benzaldehyde  $(C_6H_5-CHO)$ 

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**55.** How are the following transformations occur? Give equations only. Ethanal to lactic acid.

Account for the following 56. statement.Benzoic acid is a stronger acid than ethanoic acid. Watch Video Solution Account for the foilowing 57. statement.Ketones are less reactive toward nucleophiles than aldehydes.

**58.** During the preparation of esters from carboxylic acid andalcohol In thepresence of acid catalyst, the water or the ester should be removed as soon as it is formed. Give reason.



59. Aldehydes, Ketones are the compounds having >C=O group. Choose the IUPAC name of the compound  $CH_3CH = CH = CHO$ 

A. propen-l-al

B. But-2-en-l-al

C. Butanal

D. But-2-en-2-al

#### Answer:

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#### 60. Aldehydes and ketones are the compounds

having >C=O group. Complete the following

reaction. $HCHO + ConKOH \xrightarrow{\Delta}$ 

**61.** Aldehydes and ketones are the compounds having >C=O group. Complete the following reaction. $CH_3CHO \xrightarrow{dil.NaOH}$ 

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62. Aldehydes and ketones are the compounds having >C=O group. Complete the following reaction. $CH_3CHO+H_2N-NH_2$  ightarrow




64. Aldehydes, Ketones are the compounds having >C=O group. Choose the IUPAC name of the compound  $CH_3CH=CH=CHO$ 

A. Butanoic acid

- B. Ethanoic acid
- C. 2-methyl propanoic acid
- D. Propanic acid

### Answer:

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**67.** Aldehydes and ketones are the compounds having >C=O group.Complete the following reaction: $CH_3CH_2CH_2CH_2COOH$ 

 $Br_2 \,/\, RedP$ 

**68.** Aldehydes and ketones are the compounds having >C=O group.Complete the following reaction:

### $CH_3CH_2CH_2CH_2COOH + CH_3OH$



69. Write the named reactions involved in the

following conversions: (i)  $CH_3 - CO_C l \xrightarrow{H_2/Pd - BaSO_4} CH_3 - CHO$ 



following conversions: (ii)

 $2HCHO \xrightarrow{NaOH} HCOONa + CH_3 - OH$ 



## 71. How are the following conversions achieved? (i) $CH_3 - CN ightarrow CH_3 - COOH$



72. Write suitable reagent or reagents usrd for

the following conversions:



### 73. Methanal (HCHO) is an aldehyde having no

 $\alpha$  hydrogen atom. What are the products

formed when methanal is treated with strong

KOH solution?



74. How are the following conversions archieved? (i) Benzoyl chloride  $[C_6H_5COCl]$ to benzaldehyde  $(C_6H_5 - CHO)$ 

**75.** How are the following conversions archieved? (ii) Acetic acid  $(CH_3COOH)$  to chloro acetic acid  $(CH_2Cl - COOH)$ 



# **76.** How are the following conversions archieved? (iii) Benzene to Benzaldehyde





79. Thionyl chloride is preferred to as the reagent to prepare acid chlorides. Why?Watch Video Solution

80. Write the chemical reaction to effect the

transformation of sodium acetate to ethane.

81. Draw the structure of the following compounds P-methylbenzaldehyde.
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82. Draw the structure of the following

compounds 4-chloropentan-2-one.



**83.** Which of the following compounds would undergo aldol condensation, or Cannizaro reaction ? Methanal.



84. Which of the following compounds would

undergo aldol condensation, or Cannizaro

reaction ? Benzaldehyde.

**85.** Which of the following compounds would undergo aldol condensation, or Cannizaro reaction ? Butane-1-ol.

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**86.** Which of the following compounds would undergo aldol condensation, or Cannizaro reaction ? Benzophenone.

**87.** Which of the following compounds would undergo aldol condensation, or Cannizaro reaction ?Cyclohexanone.

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88. How will you prepare the following

compounds from benzene? Methyl benzoate.

89. How will you prepare the following compounds from benzene? Phenylacetic acid.Watch Video Solution

90. How will you bring about the following

conversions ? Benzoic acid to Benzaldehyde.

**91.** How will you bring about the following conversions ? Benzene to m-nitroacetophenone.



## **92.** How will you convert ethanal into the following compounds ? Butane -1,3-diol.



93. How will you convert ethanal into the following compounds ? But-2-enal.Watch Video Solution

94. How will you convert ethanal into the

following compounds ? But-2-enoic acid.



**95.** Among the following which is more acidic ?

A. HCOOH

B.  $CH_3CH_2COOH$ 

 $\mathsf{C.}\,CH_3COOH$ 

D.  $H_3CH_2CH_2COOH$ 

**Answer:** 

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96. Give a chemical test to distinguish between

propanal and propanone.



97. Explain the following reactions: Rosenmund

reduction.



98. Explain the following reactions. Cannizzaro

reaction

**99.** Predict the products of the following reactions.  $\underbrace{I = 0 \\ + H_2 N - NH + I_2 N - NH + I_2 N - NO_2 - I_2 - I_2 NO_2 - I_2 NO_2 - I_2 NH + I_2 N - I_2 N - I_2 N + I_2 N - I_2 N + I$ 

**100.** Explain Haloform reaction.



Identify A and B.



**102.** Aromatic aldehydes undergo electrophilic substitution reactions. Write the nitration reaction of benzaldehyde with chemical equation.



### 103. Briefly describe Gatterman Koch reaction.

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# **104.** How would you account for the following:Aldehydes are more reactive than ketones towards nucleophilic addition reaction.

**105.** How would you account for the following:Bolling point of aldehydes are lower than alcohols.

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**106.** How would you account for the following:Addition reaction of sodium hydorgen sulphite Is useful for separation and purification of aldehydes.

**107.** The product obtained when benzene is treated with carbon monoxide and hydrogen chloride in presence of anhydrous  $AlCl_3$  is

A. Chlorobenzene

B. Phenol

C. Benzaldehyde

D. Benzoic acid

#### Answer:

### 108. Fill in the blanks.

Name	Dimension		Example
Cubic	a=b=c,α=β=	γ=(a)	(b)
Orthorhombic	(c)	(d)	Rhombic Sulphur
(e)	a=b≠c,α=β=(f)	γ=(g)	(h)



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### 109. How will you carry out the following

conversion?

 $CH_3CH_2COOH 
ightarrow CH_3CH_2CH_2OH$ 



**110.** How will you carry out the following conversions? (iv)

 $CH_3COOH \rightarrow CH_3CO - O - CO - CH_3$ 

(acetic anhydride)

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**111.** Explain the following Emulsification.

**112.** Explain the following:Tollen's test



**115.** Aldehydes, Ketones and Carboxylic acids are Carbonyl compounds. Aldehydes differ from Ketones in their oxidation reaction. Illustrate with one example.

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116. How will you prepare benzaldehyde by

Gatterman-Koch reaction?

**117.** Write the reactions of carboxylic acid with the following reagents. (Write the chemical equations) (i) Thionyl chlorides `(SOCl\_2)

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**118.** Aldehydes, Ketones and Carboxylic acids are Carbonyl compounds.Write the reactions of carboxylic acid with the following reagents. (Write the chemical equations). Chlorine in presence of small amount of red phosphorous.

**119.** Write the reactions of carboxylic acid with the following reagents. (Write the chemical equations) (iii) Lithium Aluminium hydride  $(LiAlH_4)$  ether.





121. How will you prepare benzaldehyde by

Etard's reaction?

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**122.** How will you bring about the following

conversions? (Write the chemical

equations).Ethanol  $\rightarrow$  Ethanoic acid

**123.** How will you bring about the following conversions? (Write the chemical equations).Benzamide  $\rightarrow$  benzoic acid Watch Video Solution 124. How will you bring about the following conversions? (Write the chemical equations).Benzaldehyde  $\rightarrow$  metanitro

benzaldehyde

**125.** Aldehydes, Ketones and Acids contain  $\rangle C = O$  group. Name the product obtained by the reaction between Acetic acid and Ethanol.



### **126.** Aldehydes, ketones and acids contain >C=0

group.Give any two tests to distinguish

between aldehydes and ketones.



**127.** Two chemical reactions are given below:

(1) Identify the products of each reaction.



**128.** Two chemical reactions are given below:

(2) Give the name of each reaction.







### 129. Suggest a method of preparation of

benzaldehyde from toluene.

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**130.** Aldehydes and ketones differ in their chemical reactions. How do they with the following.? Tollens's reagent

**131.** Aldehydes and ketones differ in their chemical reactions. How do they with the following.? Alcohol



### 132. How will you convert propanoic acid into

the following componds? Ethane


133. How will you convert propanoic acid into

the following compond? Butane



**134.** Complete the following. Write down the structures of A, B and C. (i)  $CH_3 - CH_2 - CHO \xrightarrow{KMnO_4} A$ 



# **136.** Complete the following. Write down the structure of C. Name the reaction?. $CH_3 - CH_2 - CH_2 - COOH \xrightarrow{Br_2/redP}_{H_2O} C$



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**138.** Explain the following reactions.

Cannizzaro reaction

139. Explain the following :

Esterification



140. Which named reaction is used to reduce

 $CH_3COCl$  to  $CH_3CHO$ ?

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141. Aldehydes and ketones undergo reactions

due to the presence of  $\alpha$ -hydrogen atom.

Write the name of the reaction of aldehyde which takes place only because of the presence of  $\alpha$ -hydrogen atom.

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142. Aldehydes and Ketones undergo reactions

due to the presence of  $\alpha$ -hydrogen atom. How

will you bring about the above reaction ?

143.  $CH_2ClCOOH$  is a stronger acid than

 $CH_3COOH$ . Why?

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### 144. How will you convert $CH_3COOH$ to

 $CH_2ClCOOH?$ 

**145.** Aldehydes resemble ketones in many respects. Give the reason for their resemblance.



**146.** Aldehydes resemble ketones in many respects. Give a reaction in which aldehydes

resemble ketones.



**147.** Aldehydes resemble ketones in many respects.Write two tests to distinguish between aldehydes and ketones.

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### 148. Aldehydes resemble ketones in many

#### respects. What is Cannizzaro reaction?

149. Suggest a method of preparation of benzaldehyde from toluene.
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**150.** Which among the following does not answer iodoform test?

A. 1- propanol

B. Ethanol

C. ethanal

### D. 2- propanol

#### Answer:

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### **151.** Write the IUPAC names of the compounds given below: $CH_3 - CH_2 - CO - CH_3$

152. Write the IUPAC names of the compounds

given below: $HOOC - CH_2 - COOH$ 

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**153.** Aldehydes and ketones differ in their chemical reactions. How do they with the following.? Tollens's reagent

**154.** Aldehydes and ketones differ in their chemical reactions. How do they with the following.? Alcohol



### **155.** Explain the following reactions.

**156.** Explain the following :

Esterification

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**157.** Aldehydes resemble ketones in many respects. Give the reason for their resemblance.

**158.** Aldehydes resemble ketones in many respects. Give a reaction in which aldehydes resemble ketones.



## **159.** Aldehydes resemble ketones in many respects. What is Cannizzaro reaction?



**160.** Following are a group of compounds showing acidic behaviour:

HCOOH, O, CH<sub>3</sub>COOH, CH<sub>3</sub>-CH<sub>2</sub>-COOH

Give the IUPAC names of these compounds.

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### 161. Name the product A.

$$+ 3Cl_2 \xrightarrow{UV} A$$