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## CHEMISTRY

## BOOKS - DISHA PUBLICATION CHEMISTRY

(HINGLISH)

## ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

## Jee Main 5 Years At A Glance

1. The major product $B$ formed in the following reaction
sequence is :


A.
B.

C. MeO


## Answer: D

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2. Which one of the following will most readily be dehydrated in acidic condition?
A. 4 -Hydroxypentan -2- one
B. 3 - Hydroxypentan -2- one
C. 1 -Pentanol
D. 2 - Hydroxycyclopentanone

## Answer: A

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3. The major product of the given reaction is :

A.

B.


C.
D.

## Answer: B

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4. The major product expected from the following reaction is :

A.

B.

C.

D.


## Answer: C

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

A. $\left[\mathrm{Ag}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+} \mathrm{OH}^{-}, \mathrm{H}^{+} / \mathrm{CH}_{3} \mathrm{OH}, \mathrm{CH}_{3} \mathrm{MgBr}$
B. $\mathrm{CH}_{3} \mathrm{MgBr}, \mathrm{H}^{+} / \mathrm{CH}_{3} \mathrm{OH},\left[\mathrm{Ag}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+} \mathrm{OH}^{-}$
C. $\mathrm{CH}_{3} \mathrm{MgBr},\left[\mathrm{Ag}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+}, \mathrm{H}^{+} / \mathrm{CH}_{3} \mathrm{OH}$
D. $\left[\mathrm{Ag}\left(\mathrm{NH}_{3}\right)_{2}\right]^{+} \mathrm{OH}^{-}, \mathrm{CH}_{3} \mathrm{MgBr}, \mathrm{H}^{+} / \mathrm{CH}_{3} \mathrm{OH}$

## Answer: A

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6. Sodium salt of an organic acid ' $X$ ' produces effervescence with conc. $\mathrm{H}_{2} \mathrm{SO}_{4}$. 'X' reacts with the acidified aqueous $\mathrm{CaCl}_{2}$ solution to give a white precipitate which decolourises acidic solution of $\mathrm{KMnO}_{4}{ }^{\prime} X^{\prime}$ is
A. $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COONa}$
B. HCOONa
C. $\mathrm{CH}_{4} \mathrm{COONa}$
D. $\mathrm{Na}_{2} \mathrm{C}_{2} \mathrm{O}_{4}$

## Answer: D

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7. The major product obtained in the following reaction is :

B.

R
C.
D.

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8. Bouveault - Blanc reduction reaction involves :
A. Reduction of an acyl halide with $H_{2} / P d$
B. Reduction of an anhydride with $\mathrm{LiAlH}_{4}$
C. Reduction of an ester with $\mathrm{Na} / \mathrm{C}_{2} \mathrm{H}_{5} \mathrm{OH}$
D. Reduction of a carbonyl compound with
$N a / H g$ and $H C l$.

## Answer: C

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9. The correct statement about the synthesis of erythritol
$\left(\mathrm{C}_{\left.\left(\mathrm{CH}_{2} \mathrm{OH}\right)_{4}\right)}\right)$ used in the preparation if PETN is :
A. The synthesis requires three aldol condensation and one

Cannizzaro reaction.
B. Alpha hydrogens of ethanol and methanol are involved in this reaction.
C. The synthesis required two aldol condensations and two Cannizzaro reactions.
D. The synthesis requires four aldol condensations between methanol and ethanol.

Answer: A
10. In the presence of a small amount of phosphorous, aliphatic carboxylic acids react with chlorine or bromine to yield a compound in which $\alpha$-hydrogen has been replaced by halogen. This reaction is known as :
A. Wolff - Kishner reaction
B. Rosenmund reaction
C. Etard reaction
D. Hell - Volhard - Zelinsky reaction

## Answer: D

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11. In the reaction sequences
$2 \mathrm{CH}_{3} \mathrm{CHO} \xrightarrow{\mathrm{OH}^{-}} A \xrightarrow{\Delta} B$ the product B is
A. $\mathrm{CH}_{3}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{OH}$
B. $\mathrm{CH}_{3}-\mathrm{CH}=\mathrm{CH}-\mathrm{CHO}$
C. $\mathrm{CH}_{\#}-\mathrm{cH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}_{3}$
D. $\mathrm{CH}_{3}-\stackrel{\stackrel{O}{\mathrm{C}}}{\mathrm{C}}-\mathrm{CH}_{3}$

## Answer: B

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12. Which compund will yield 5-keto -2 methyl hexanal upon treatment with $O_{3}$ ?
A.
B.
C.
D.

## Answer: D

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13. Which one of the following reactions will not result in the formation of carbon - carbon bond?
A. Reimer - Tieman reaction
B. Friedel Craft's acylation
C. Wurtz reaction
D. Cannizzaro reaction

## Answer: D

14. Which is the major product formed when acetone is heated with iodine and potassium hydroxide?
A. lodoacetone
B. Acetic acid
C. lodoform
D. Acetophenone

## Answer: C

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15. Tischenko reaction is a modification of
A. Aldol condensation
B. Claisen condensation
C. Cannizzaro reaction
D. Pinacol - pinacolon reaction

## Answer: C

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16. Phthalic acid reacts with resorcinol in the presence of concentrated $\mathrm{H}_{2} \mathrm{SO}_{4}$ to give:
A. Phenolphthalein
B. Alizarin
C. Coumarin
D. Fluorescein

## Answer: D

17. In the reaction

$$
\mathrm{CH}_{3} \mathrm{COOH} \xrightarrow{\mathrm{LiAlH}_{4}} A \xrightarrow{\mathrm{PCl}_{5}} B \xrightarrow{A l c . \mathrm{KOH}} C
$$

The product $C$ is
A. Acetaldehyde
B. Acetylene
C. Ethylene
D. Acetyl chloride

## Answer: C

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Exercise 1 Concept Builder Topicwise Topic 1 Methods Of Preparation Of Carbonyl Compounds

1. Calcium acetate on heating gives
A. acetic anhydride
B. acetone
C. acetaldehyde
D. ethyl alcohol

## Answer: B

## - Watch Video Solution

2. Benzaldehyde can be prepared by the hydrolysis of
A. benzal chloride
B. benzotrichloride
C. benzyl chloride
D. benzonitrile

## Answer: A

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3. The orbital picture of a singlet carbene $\left(\mathrm{CH}_{2}\right)$ can be drawn as
A.
B.
C.
D. none of these

Answer: A

D Watch Video Solution
4. Which of the following is an example of nucleophilic addition ?
A. $\mathrm{C}_{6} \mathrm{H}_{5} \stackrel{\mathrm{O}}{\mathrm{I}} \mathrm{C} \mathrm{CH}_{3} \xrightarrow{\mathrm{NH}_{2} \mathrm{NH}_{2}, \mathrm{H}^{+}} \mathrm{C}_{6} \mathrm{H}_{5} \stackrel{\stackrel{N N \mathrm{~N}_{2}}{\mathrm{C}} \mathrm{C} \mathrm{H}_{3}}{ }$

C. Both (a) \& (b)
D. None of these

## Answer: C

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5. In the Cannizzaro reaction given below
$2 \mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CHO} \xrightarrow{\mathrm{OH}^{-}} \mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}_{2} \mathrm{OH}+\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COO}^{-}$
the slowest step is
A. attack of $\mathrm{OH}^{-}$at the carbonyl group.
B. transfer of hydride ion to the carbonyl group.
C. abstraction of proton from the carboxylic acid.
D. feprotonation of $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}_{2} \mathrm{OH}$.

## Answer: B

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6. Which of the following acts as a nucleophilie in the Cannizzaro reaction involving benzaldehyde ?
(i) $\mathrm{OH}^{-}$
(ii) $\mathrm{C}_{6} \mathrm{H}_{4} \mathrm{COH}$
(iii) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CH}(\mathrm{OH}) \mathrm{O}^{-} \quad$ (iv) $\mathrm{H}_{2} \ddot{O}$ :
A. (i) and (iv)
B. (i) and (ii)
C. (i) and (iii)
D. only (i)

## Answer: C

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7. In the following sequence of reaction, the end product is :
$\left.H C \equiv C H \xrightarrow{\mathrm{Hg}^{2+} / \mathrm{H}_{2} \mathrm{SO}_{4}}(A) \xrightarrow[{\left[\mathrm{H}_{2} \mathrm{O}\right.}]\right]{\mathrm{CH}_{3} \mathrm{MgX}}(B) \xrightarrow{[\mathrm{O}]}(C)$
A. acetic acid
B. isopropyl alcohol
C. acetone
D. ethanol

## Answer: C

8. Acid catalysed hydrolysis of the cyclic acetal gives
A. ethanal and 2 -chlorocyclohexanol
B. ethanol and 2 -chlorocyclohexanol
C. 1, 2 - ethanediol and 2 - chlorocyclohexanone
D. 1, 2 - ethanediol 2 -chlorocyclohexanol

## Answer: C

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9. What is the product of the following reaction?
A. 2 - methyl -1- pentene
B. 4-methyl-1-pentene
C. 2 - methyl - 2 - propyloxirane
D. 1 - pentene

## Answer: A

## D View Text Solution

Exercise 1 Concept Builder Topicwise Topic 2 Properties Of Carbonyl
Compounds

1. Which of following compound is hemiacetal ?
A.
B.
.
C.
D. all of these

## Answer: D

## - Watch Video Solution

2. $\mathrm{CH}_{3} \mathrm{CHO} \xrightarrow[5^{\circ} \mathrm{C}]{10 \% \mathrm{NaOH}} \xrightarrow{\text { heat }} \xrightarrow[N i]{\mathrm{H}_{2}}(A)$,

Product ( $A$ ) of the reaction is
A. propanol
B. ethanol
C. butanol
D. pentanol

Answer: C
3. The presence of unsaturation in organic compounds can be tested with
A. Schiff's reagent
B. Tollens' reagent
C. Fehling's reagent
D. Baeyer's reagent

## Answer: D

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4. Which carbon atoms are most susceptible to nucleophilic attack?
$\underset{(A)}{\mathrm{CH}_{3}}-\underset{(B)}{\mathrm{CH}}=\underset{C}{\mathrm{CH}}-\underset{D}{\stackrel{\text { I }}{C}}-\mathrm{CH}_{3}$
A. A and B
B. B and C
C. B and D
D. A and D

Answer: C

## D Watch Video Solution

5. $2 \mathrm{CH}_{3} \mathrm{CHO} \xrightarrow{\mathrm{OH}^{-}} X \rightarrow Y \xrightarrow{\mathrm{H}_{2}-\mathrm{Pd} / \mathrm{C}} Z, Z$ is
A. $\mathrm{CH}_{3} \mathrm{CH}=\mathrm{CHCH}_{2} \mathrm{OH}$
B. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{OH}$
C. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{CHO}$
D. $\mathrm{CH}_{3} \mathrm{CH}=\mathrm{CHCHO}$

## Answer: C

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6. $\mathrm{CH}_{3} \mathrm{COCH}_{2} \mathrm{Cl} \xrightarrow{\mathrm{OH}^{-}, \mathrm{Cl}_{2}}$ Product P is
A. $\mathrm{ClCH}_{2} \mathrm{COCH}_{2} \mathrm{Cl}$
B. $\mathrm{CH}_{3} \mathrm{COCHCl}_{2}$
C. both a and b
D. $\mathrm{ClCH}_{2} \mathrm{COOH}+\mathrm{CH}_{3} \mathrm{Cl}$

## Answer: B

7. Formalin is an aqueous solution of
A. flurescein
B. formic acid
C. formaldehyde
D. furfuraldehyde

## Answer: C

## D Watch Video Solution

8. $\left(\mathrm{CH}_{3}\right)_{2} \mathrm{C}=\mathrm{CHCOCH}_{3}$ can be oxidised to
$\left(\mathrm{CH}_{3}\right)_{2} \mathrm{C}=\mathrm{CHCOOH}$ by
A. Chromic acid
B. NaOI
C. Cu at $300^{\circ} \mathrm{C}$
D. $\mathrm{KMnO}_{4}$

## Answer: B

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9. Aldehydes and ketones will not form crystalline derivatives with
A. sodium bisulphite
B. phenylhydrazine
C. semicarbazide hydrochloride
D. dihydrogen sodium phosphate.

## Answer: D

10. Which of the following compounds will undergo self aldol condensation in the presence of cold dilute alkali ?
A. $\mathrm{CH}_{2}=\mathrm{CH}-\mathrm{CHO}$
B. $\mathrm{CH} \equiv \mathrm{C}-\mathrm{CHO}$
C. $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CHO}$
D. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CHO}$.

## Answer: D

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11. Appropriate reducing agent for the following conversion is -

$$
\mathrm{CH}_{2}=\mathrm{CH}-\mathrm{CH}_{2}-\stackrel{\stackrel{-1}{\mathrm{C}}}{\mathrm{C}}-\mathrm{H} \rightarrow \mathrm{CH}_{3}-\mathrm{CH}_{\circ}-\mathrm{CH}_{2}-\mathrm{CH}_{2} \mathrm{OH}
$$

A. $\mathrm{LiAlH}_{4} / \mathrm{H}_{2} \mathrm{O}$
B. $\mathrm{NaBH}_{4} / \mathrm{H}_{2} \mathrm{O}$
C. $\mathrm{Na}+\mathrm{C}_{2} \mathrm{H}_{5} \mathrm{OH}$
D. $B_{2} H_{6} / H^{+}$

## Answer: D

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12. Which of the following is a disproportionation reaction ?
A. $2 \mathrm{HCHO} \xrightarrow{\mathrm{NaOH}} \mathrm{CH}_{3} \mathrm{OH}+\mathrm{HCOONa}$
B. $2 \mathrm{CH}_{3} \mathrm{CHO} \xrightarrow{\mathrm{NaOH}} \mathrm{CH}_{3} \mathrm{OH}_{\mathrm{OH}}$
C.
D. Both (a) \& (b)

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13. The reactant $(X)$ in the reaction,
$(X) \xrightarrow[\left(\mathrm{CH}_{3} \mathrm{CO}\right)_{2} \mathrm{O}]{\mathrm{CH}_{3} \mathrm{COONa}}$ Cinnamic acid is
A.
B.
C.
D.

## Answer: B

14. $\mathrm{C}_{16} \mathrm{H}_{16} \xrightarrow{\mathrm{O}_{3}} \underset{\mathrm{C}_{8} \mathrm{H}_{8} \mathrm{O}}{(B)} \xrightarrow[\mathrm{HO}^{-} / \mathrm{\Delta}]{\mathrm{NH}_{2}-\mathrm{NH}_{2}}$

Reactant (A) in this reaction is :
A.
B.
C.
D. both (b) and (c)

## Answer: D

D View Text Solution
15. $\mathrm{Ph}-\stackrel{\stackrel{\mathrm{O}}{\|} \mathrm{C}}{\mathrm{C}}-\mathrm{OH} \xrightarrow{\mathrm{SOCl}_{2}}(A) \xrightarrow[P d-\mathrm{BaSO}_{4}]{\mathrm{H}_{2}}(B)$

Product (B) is:
A. $P h-\stackrel{O}{\|}-H$
B. $\mathrm{Ph}-\mathrm{CH}_{2}-\mathrm{OH}$
C. $\mathrm{Ph}-\mathrm{CH}_{2}-\mathrm{Cl}$
D. $\mathrm{Ph}-\mathrm{CH}=\mathrm{CH}_{2}$

## Answer: A

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16. Arrange the followoing carbonyl compounds in decreasing order of their reactivity in nucleophilic addition reaction.
A. $(i i)>(i i i)>(i)>(i v)$
B. $(i i)>(i)>(i v)>(i i i)$
C. $(i i i)>(i i)>(i)>(i v)$
D. $(i i i)>(i)>(i v)>(i i)$

Answer: B

D View Text Solution
17.

In the above reaction, product $(\mathrm{B})$ is :
A.
B.
C.
D.

## Answer: B

18. Which of the major product of the following reaction?
$\mathrm{CH}_{3}-\stackrel{\stackrel{\mathrm{O}}{\mathrm{C}}}{\mathrm{C}}-\mathrm{CI} \xrightarrow{\mathrm{H}_{2} \mathrm{~S}}$ product
A. $\mathrm{CH}_{3}-\stackrel{{ }_{\mid}^{\mathrm{OH}}}{\stackrel{\mathrm{O}}{\mid} \mathrm{C}-\mathrm{Cl}}$ B. $\mathrm{CH}_{3}-\stackrel{\text { I }}{\mathrm{C}}-\mathrm{SH}$
C. $\mathrm{CH}_{3}-\stackrel{S}{\|} \mathrm{C}-\mathrm{Cl}$
D. $\mathrm{CH}_{3}-\stackrel{O}{\|} \stackrel{O}{\mathrm{C}}-\mathrm{S}-\stackrel{\text { II }}{\mathrm{C}}-\mathrm{CH}_{3}$

## Answer: B

19. Arrange the following compounds in order of their reactivity toward $\mathrm{LiAlH}_{4}$.
A. $I<i i<i i i$
B. $I<i i i<i i$
C. $i i<i<i i i$
D. $i i<i i i<i$

## Answer: D

## - View Text Solution

20. Which one of the following compounds will be most readily dehydrated?
A.
B.
C.
D.

## Answer: D

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21. Acetone is treated with excess of ethanol in the presence of hydrochloric acid. The product obtained is
$\stackrel{O}{\stackrel{\text { I }}{\mathrm{C}}}-\mathrm{CH}_{3}$
A. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2}-$
B. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2}-\stackrel{\text { | }}{\mathrm{C}}-\mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{CH}_{3}$
C.
D.

## Answer: D

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22. Consider the reaction

$$
\mathrm{RCHO}+\mathrm{NH}_{2} \mathrm{NH}_{2} \rightarrow \mathrm{R}-\mathrm{CH}=\mathrm{NNH}_{2}
$$

What sort of reaction is it?
A. Electrophilic addition - elimination reaction
B. Free radical addition - elimination reaction
C. Electrophilic substitution - elimination reaction
D. Nucleophilic addition - elimination reaction

## Answer: D

23. Which of the following compounds will give a yellow precipitate with iodine and alkali?
(i) Acetophenone
(ii) Acetamide
(iii) Methyl acetate (iv) 2-Hydroxypropane
A. (i), (ii) and (iii)
B. (i) and (iv)
C. (ii) and (iv)
D. (i), (iii) and (iv)

## Answer: B

24. The order of stability of the following tautomeric compounds is
(i). $\mathrm{CH}_{2}=\stackrel{\text { OH }}{\stackrel{\text { I }}{\mathrm{C}}} \mathrm{H}-\stackrel{\stackrel{O}{\mathrm{I}} \mathrm{CH}_{2}}{\mathrm{C}}-\mathrm{CH}_{3} \Leftrightarrow$
(ii). $\mathrm{CH}_{3}-\stackrel{O}{\mathrm{C}}-\mathrm{CH}_{2}-\stackrel{O}{\mathrm{O}}-\mathrm{CH}_{3} \Leftrightarrow$
(iii). $\mathrm{CH}_{3}-\stackrel{\stackrel{O H}{\mid}}{\stackrel{+}{\mathrm{C}}}=\stackrel{\stackrel{O}{\mathrm{O}} \mathrm{CH}}{\mathrm{C}}-\mathrm{CH}_{3}$
A. $I I I>I I>I$
B. $I I>I>I I I$
C. $I I>I I I>I$
D. $I>I I>I I I$

## Answer: A

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25. Which one is most reactive towards nucleophilic addition reaction?
A.
B.
C.
D.

## Answer: D

## D Watch Video Solution

26. An organic compound 'X' having molecular formula $\mathrm{C}_{5} \mathrm{H}_{10} \mathrm{O}$
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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27. 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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28. Of the following which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?
A.

B.
C.
D.

Answer: A
29. Which of the following pairs of reactants is most effective in forming an enamine ?
A. $\mathrm{CH}_{3} \mathrm{CH}_{2} \stackrel{\text { I }}{\mathrm{C}} \mathrm{H}+\left[\left(\mathrm{CH}_{3}\right)_{2} \mathrm{CH}\right]_{2} \mathrm{Nh}$
B.
.
C. $\left(\mathrm{CH}_{3}\right)_{3} \stackrel{O}{\mathrm{Cl}} \mathrm{H}+\left(\mathrm{CH}_{3}\right)_{2} \mathrm{NH}$
D. None of these form an enamine.

## Answer: C

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30. $\mathrm{R} \xrightarrow{\mathrm{NH}_{2} \mathrm{OH}}(A) \xrightarrow{H^{+}}(B) \xrightarrow{\text { LAH }}(C)$, Product (C) of the reaction is :
A.
B.
C.
D.

## Answer: B

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31. $X$, most likely the compound $X$ is
A.
B.
C.
D.

## D View Text Solution

32. The compound shown below is the cyclic hemiacetal of
A. 5 - hydroxyheptanal
B. 6-hydroxy-3-heptanone
C. 5 - hydroxy-2-heptanone
D. 6 - hydroxy heptanal

## Answer: C

## 33. What is the product of the following reaction ?

A.
B.

C.
D.

## Answer: A

## D View Text Solution

34. The reagents employed to carry the following transformation
A. $\mathrm{LiAlH}_{4}, \mathrm{H}_{2} \mathrm{SO}_{4} /$ heat
B. $\mathrm{PCC} / \mathrm{CH}_{2} \mathrm{Cl}_{2}$ followed by $\mathrm{HIO}_{4}$
C. $\mathrm{NaBH}_{4} / \mathrm{CH}_{3} \mathrm{OH}$ followed by $\mathrm{HIO}_{4}$
D. $\mathrm{O}_{3}$ followed by $\left(\mathrm{CH}_{3}\right)_{2} \mathrm{~S}$

## Answer: C

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35. The most acidic hydrogen for the following compound
A. 2
B. 1
C. 4
D. 3
36. What is the product of the following reaction?
A.
B.
C.
D.

## Answer: A

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Exercise 1 Concept Builder Topicwise Topic 3 Preparation And Properties Of Carboxylic Acids
1.

In the above sequence of reaction $X$ and $Y$ are respectively
A. $H_{2} / P t, B r_{2}$
B. $K M n O_{4}, H_{2} / P t$
C. $\mathrm{KMnO}_{4}(a q), \mathrm{HI} / \mathrm{P}$
D. $\mathrm{NH}_{2}-\mathrm{NH}_{2} / \mathrm{KOH}, \mathrm{HI} / \mathrm{P}$

## Answer: C

D View Text Solution
2. Hydrolysis of an ester may be achived under acidic as well as basic conditions. Pick up the correct statement regarding this
A. Acidic hydrolysis is faster than alkaline hydrolysis.
B. Alkaline hydrolysis is faster than acidic hydrolysis.
C. Both occur at the same rate.
D. In both, the first step is protonation of the -OH part of the -COOH group.

## Answer: B

## D View Text Solution

3. When propionic acid is treated with aqueous sodium bicarbonate, $\mathrm{CO}_{2}$ is liberated. The carbon of $\mathrm{CO}_{2}$ comes from
A. methyl group
B. carboxylic acid group
C. methylene group
D. bicarbonate

## Answer: D

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4. Formic acid is obtained when :
A. calcium acetate is heated with conc. $\mathrm{H}_{2} \mathrm{SO}_{4}$
B. calcium formate is heated with calcium acetate
C. glycerol is heated with oxalic acid at 373 K
D. acetaldehyde is oxisised with $\mathrm{K}_{2} \mathrm{Cr}_{2} \mathrm{O}_{7}$ and $\mathrm{H}_{2} \mathrm{SO}_{4}$.

## Answer: C

## - Watch Video Solution

5. an ester is boiled with KOH . The product is cooled and acidified with conc. HCl . A white crystalline acid separates . The ester is
A. methyl acetate
B. ethyl acetate
C. ethyl formate
D. ethyl benzoate

## Answer: D

6. Cyanohydrin of the following compound on hydrolysis gives optically active product:
A. diethyl ketone
B. formaldehyde
C. acetaldehyde
D. acetone

## Answer: C

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7. The compound $B$ is :
$\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{COOH} \underset{r e d P}{\mathrm{Cl}_{2}} A \xrightarrow{\text { Alc. } \mathrm{KOH}} B$
A. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{COCl}$
B. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CHO}$
C. $\mathrm{CH}_{2}=\mathrm{CHCOOH}$
D. $\mathrm{ClCH}_{2} \mathrm{CH}_{2} \mathrm{COOH}$.

## Answer: C

## - Watch Video Solution

8. Acetic anhydride reacts with diethyl ether in presence of anhydrous $A I C I_{3}$ to form
A. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{COOH}$
B. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{COOC}_{2} \mathrm{H}_{5}$
C. $\mathrm{CH}_{3} \mathrm{COOCH}_{3}$
D. $\mathrm{CH}_{3} \mathrm{COOC}_{2} \mathrm{H}_{5}$

## - Watch Video Solution

9. $\mathrm{CH}_{3} \mathrm{COOH} \xrightarrow{\Delta} \mathrm{CH}_{3} \mathrm{COCl}$, What is A ?
A. $\mathrm{PCl}_{5}$
B. $C l_{2}$
C. HCl
D. $\mathrm{COCl}_{2}$

Answer: A

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10. The compound which is not soluble in acetic acid is
A. $\mathrm{CaCO}_{3}$
B. $C a O$
C. $\mathrm{CaC}_{2} \mathrm{O}_{4}$
D. $\mathrm{Ca}(\mathrm{OH})_{2}$

## Answer: C

## - Watch Video Solution

11. In the following reaction
$\mathrm{RCH}_{2} \mathrm{COOH} \xrightarrow{B r_{2} / P} X \xrightarrow{\text { excess } N H_{3}} Y$
The major compounds $X$ and $Y$ are
A. $\mathrm{RCH}(\mathrm{Br}) \mathrm{CONH}_{2}, \mathrm{RCH}\left(\mathrm{NH}_{2}\right) \mathrm{COOH}$
B. $\mathrm{RCH}(\mathrm{Br}) \mathrm{COOH}, \mathrm{RCH}\left(\mathrm{NH}_{2}\right) \mathrm{COOH}$
C. $\mathrm{RCH}_{2} \mathrm{COBr}, \mathrm{RCH}_{2} \mathrm{COONH}_{4}$

D. $\mathrm{RCH}(\mathrm{Br}) \mathrm{COOH}, \mathrm{RCH}_{2} \mathrm{CONH}_{2}$

Answer: B

## - Watch Video Solution

12. Iodoform reaction is given by
A. $\mathrm{CH}_{3} \mathrm{COOCH}_{3}$
B. $\mathrm{CH}_{3} \mathrm{COOC}_{2} \mathrm{H}_{5}$
C. $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{COOCH}_{3}$
D. $\mathrm{CH}_{3} \mathrm{COOC}_{6} \mathrm{H}_{5}$

## Answer: B

13. Silver benzonate will react with bromine in acetone to give
A.
B.
C.
D.

## Answer: C

## - Watch Video Solution

14. An ester $A\left(C_{9} H_{10} O_{2}\right)$ with excess of $\mathrm{CH}_{3} \mathrm{MgBr}$ upon hydrolysis and then with conc. $\mathrm{H}_{2} \mathrm{SO}_{4}$ gives an olefin (B). Ozonolysis of (B) gave a ketone $\left(\mathrm{C}_{8} \mathrm{H}_{8} \mathrm{O}\right)$ which gave + ve iodoform test. What is A?
B.
C.
D.

## Answer: B

## - View Text Solution

15. Which one of the following is not resonance form of the enolate ion formed aceto acidic ester?
A.
B.

C.
D.

## D View Text Solution

16. (a) Give the Claisen ester condensation product of ethyl butanoate.
(b) Why does the Claisen ester condensation of ethyl-2-methyl propanoate ( $I$ ) not take place?
(c) Why does Claisen condensation of $(I)$ take place by the use of $P h_{3} C^{\ominus} N a^{\oplus}$ as a base ?
A.
B.

8
C.
D.

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17. Identify the missing reagent in the reaction given below
A. Diethyl carbonate $(\mathrm{EtO})_{2} \mathrm{C}=\mathrm{O}$
B. Ethyl acetate $\mathrm{CH}_{3} \mathrm{COOEt}$
C. Ethyl formate HCOOEt
D. Diethyl oxalate Et. OOC. COOEt

## Answer: A

18. Which lactone is formed by heating the following hydroxy acid?
A.
B.
C.
D.

## Answer: C

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19. The compound condensation of
A. ethyl-2-methyl pentanoate
B. ethyl-5-methyl hexanoate
C. ethyl - 4-methyl pentanoate
D. ethyl-3,3-dimethyl butanoate

## Answer: C

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20. The correct product of the following reactions
A. 2, 2 - dimetyl propane diol
B. 2 - methyl -1-propanol
C. 2, 2 - dimethyl propanedioic acid
D. 2 - methyl propanoic acid

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21. 

$X$ and $Y$ respectively are
A. 5 - bromosalicylic acid and 5 - nitrosalicylic acid
B. o-bromophenol and o-nitro-phenol
C. 2, 4, 6 - tribromophenol and picric acid
D. 3, 5 - dibromo salicylic acid and 3,5-dinitro salicylic acid

## Answer: C

1. 

Product ( $B$ ) is :
A.
B.
C.
D.

## Answer: B

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2. 

$\mathrm{HO}^{-}$
$\xrightarrow[\Delta]{ }$ $\underset{(72 \%)}{(C)}$, $\quad$ Product (C) is

## Product (C) is :

A.
B.
C.
D.

## Answer: C

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3. 

$(Q) \xrightarrow[\Delta]{\mathrm{BOH}} \mathrm{Ph}-\mathrm{CH}_{2}-\mathrm{OH}+\mathrm{Ph}-\mathrm{CO}_{2}$
$(R) \xrightarrow{O_{3}} P+Q$, Structure of $(\mathrm{R})$ is
A. $\mathrm{Ph}-\mathrm{CH}=\mathrm{CH}-\mathrm{CH}$
B.
C. $\mathrm{Ph}-\stackrel{\stackrel{C \mathrm{CH}_{3}}{\mathrm{~L}}}{\mathrm{C}}=\mathrm{CH}-\mathrm{CH}_{3}$
D. $\mathrm{Ph}-\stackrel{\mathrm{CH}^{\mathrm{C}}}{\mathrm{C}}=\mathrm{CH}_{2}$

## Answer: B

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4. 

The respectively compounds $A$ and $B$ are
A.
B.
C.
D.

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5. 

From the ozonolysis products, the two isomers $A$ and $B$ can be distinguished with the help of
A. Fehling solution
B. Tollen's reagent
C. Haloform test
D. only spectroscopy

## Answer: C

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6. 

Above compounds can be differentiated by following reagent :
A. 2-4 DNP (Brady reagent)
B. Tollen's reagent
C. Lucas reagent
D. $\mathrm{NaHSO}_{3}$

## Answer: B

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7. 

Product ( B ) in this reaction is :
A.
B.
C.
D.

## Answer: C

## D View Text Solution

8. 



The product formed in the reaction is -
A.
B. $M e-\stackrel{O}{\stackrel{O}{C}-\stackrel{O}{\|}-} \begin{aligned} & \text { C }\end{aligned}-P h$

D. $P h-C-C-O-M e$

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9. $(A) \xrightarrow[\text { dil. } \mathrm{H}_{2} \mathrm{SO}_{4}]{\mathrm{HgSO}_{4}}(B) \xrightarrow{\mathrm{LiAlH}_{4}} \underset{\text { recemic mixture }}{(C)}$
$\therefore$ reactant (A) is :
A. $\mathrm{CH}_{3}-\mathrm{C} \equiv \mathrm{CH}$
B. $H C \equiv C H$
C. $\mathrm{CH}_{3}-\mathrm{C} \equiv \mathrm{C}-\mathrm{CH}_{3}$
D. $\mathrm{Ph}-\mathrm{CH}=\mathrm{CH}_{2}$

Answer: C
10.
$\xrightarrow{P C C}(C) \xrightarrow[\Delta]{\mathrm{HO}^{-}}(D)$
What is the final product ( $D$ ) of the sequence?
A.
B.
C.
D.

Answer: A

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11.

Identify correct combination :
A. $(A)=1$

$$
\mathrm{CH}_{2}-\mathrm{SH}
$$

B. $(B)=N a B H_{4}$
C. $(C)=\mathrm{KMnO}_{4}$
D. $(D)=H_{3} O^{\oplus}$

## Answer: D

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12. Which of the following is the product of aldol condensation?
A.
B.
C.
D.

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13. Which of the following reagent(s) used for the conversion?
A. glycol/ $\mathrm{LiAlH}_{4} / \mathrm{H}_{3} \mathrm{O}^{+}$
B. glycol/ $\mathrm{NaH} / \mathrm{H}_{3} \mathrm{O}^{+}$
C. $\mathrm{LiAlH}_{4}$
D. $\mathrm{NaBi} \mathrm{H}_{4}$

Answer: A

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14. Which of the following reaction with $\left(\mathrm{CH}_{3} \mathrm{CH}_{2}\right)_{2} \mathrm{NH}$ to give the compound?
$\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}=\mathrm{CHN}\left(\mathrm{CH}_{2} \mathrm{CH}_{3}\right)_{2}$
A. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{CH}_{2} \mathrm{Br}$
B. $\mathrm{CH}_{3} \mathrm{CH}_{2}-\stackrel{\stackrel{O}{\mathrm{C}}-\mathrm{CH}_{3}}{ }$
C. $\mathrm{CH}_{3}-\mathrm{CH}_{2} \mathrm{CH}_{2}-\stackrel{\stackrel{O}{\mathrm{C}}}{\mathrm{C}}-\mathrm{H}$
D. $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{CH}_{2}-\stackrel{\stackrel{O}{\mathrm{C}}}{\mathrm{C}}-\mathrm{OH}$

## Answer: C

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15.
$\mathrm{CH}_{3}-\stackrel{\stackrel{\mathrm{O}}{\mathrm{C}}}{\mathrm{C}}-\mathrm{CH}_{2}-\mathrm{CH}_{3}+\mathrm{CH}_{3} \mathrm{MgBr} \rightarrow X \xrightarrow{\mathrm{H}_{3} \mathrm{O}^{+}} Y \xrightarrow[170^{\circ} \mathrm{C}]{\stackrel{\mathrm{H}_{2} \mathrm{SO}_{4}}{ }} Z$.
What is Z ?

B. $\mathrm{CH}_{3}-\underset{ }{\mathrm{C}} \mathrm{C}=\mathrm{CH}-\mathrm{CH}_{3} \mathrm{CH}$
D. $\mathrm{CH}_{2}=\underset{\mathrm{CH}_{3}}{\mathrm{C}}-\mathrm{CH}_{2}-\mathrm{CH}_{3}$

Answer: B

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The above aldol condensation does not involve the formation of
A. $\mathrm{C}_{6} \mathrm{H}_{5}-\stackrel{\stackrel{\mathrm{OH}}{\mathrm{C}}+\underset{+}{\mathrm{C}}-\mathrm{CH}_{3}}{ }$
B. $C_{6} H_{5}-\stackrel{\stackrel{O}{\mid}{ }_{+}^{+}}{+}-H$

D. Both (a) and (b)


## Answer: C

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17. The structure of the compound $Y$ in the following reactions should be
A.
B.
C.
D.

## Answer: C

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18. Reaction of cyclohexanone with dimethylamine in the presence of catalytic amount of an acid forms a compound if water during the reaction is continously removed. The compound formed is generally known as
A. an amine an imine
B. an enamine
C. an enaine
D. a schiff's base

## Answer: C

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19. The increasing order of the rate of HCN addition to compound A-D is
(A) HCHO
(B) $\mathrm{CH}_{3} \mathrm{COOH}_{3}$
( C) $\mathrm{PhCOCH}_{3}$
(D) PhCOPh
A. $D<C<B<A$
B. $C<D<B<A$
C. $A<B<C<D$
D. $D<B<C<A$

## Answer: A

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20. Which of the following statement is incorrect about the reaction of ammonia derivatives with carbonyl compounds?
A. pH of solution is maintained between 4 to 5
B. Addition of ammonia derivatives occurs followed by elimination of H 2 O
C. At very low (less than 3) ammonia derivatives are protonated and do not act as necleophile
D. At very high pH , reaction becomes explosive

## Answer: D

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21. 

A.
B.
C.
D.

Answer: A
22.

## Product A is :

A.
B. A
C.
D.

## Answer: C

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23. 

The compound $(X)$ is
A. $\mathrm{CH}_{3} \mathrm{COOH}$
B. $\mathrm{BrCH}-\mathrm{COOH}$
C. $\left(\mathrm{CH}_{3} \mathrm{CO}\right)_{2} \mathrm{O}$
D. $\mathrm{CHO}-\mathrm{COOH}$

## Answer: C

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24. What is Z in the following sequence of reactions?

Phenol $\xrightarrow[\text { dust }]{\mathrm{Zn}} X \xrightarrow[\text { Alhyd. } \mathrm{AlCl}_{3}]{\mathrm{CH}_{3} \mathrm{Cl}} Y \xrightarrow[\mathrm{KMnO}_{4}]{\text { Alkaline }} Z$ Phe
A. Benzene
B. Toluene
C. Benzaldehyde
D. Benzoic acid

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25. Which $\beta$-keto acid shown will not undergo decarboxylation?
A.
B.
C. $\mathrm{Ph}-\stackrel{\stackrel{O}{\|} \mathrm{C}}{\mathrm{C}}-\mathrm{CH}_{2}-\mathrm{CO}_{2} \mathrm{H}$
D. $\mathrm{CH}_{2}-\stackrel{\stackrel{O}{\mathrm{C}}}{\mathrm{C}}-\mathrm{CH}_{2}-\mathrm{CO}_{2} \mathrm{H}$

## Answer: B

26. The reaction of sodium with acetyl chloride proceeds through which of the following
A.
B.

C.
D.

## Answer: C

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27. Calculate number of molecules of Grignard reagent consumed by 1 molecule of following compound.
A. 5
B. 2
C. 3
D. 1

## Answer: A

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