



CHEMISTRY

JEE (MAIN AND ADVANCED) CHEMISTRY

ALDEHYDES AND KETONES



1. General molecular formula of carbonyl compounds

- A. $C_6H_{28}O_2$
- B. $C_n H_{2n+2} O_2$
- $\mathsf{C.}\, C_6 H_{2n} O$
- D. $C_n H_{2n+2}O$

Answer: C



2. The hybridisation of carbon in the carbonyl group is

A.
$$sp^{3}$$

B. sp^{2}
C. sp

D. sp^3d

Answer: B

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3. The IUPAC name of methyl isopropyl ketone

A. 3-methyl-2-pentanone

B. 3-methyl butan-2-one

C. 2-pentanone

D. 2-methyl pentanone

Answer: B



4. Which of the following statements is correct

A. Aldehydes & ketones exhibit chain isomerism

B. All aldehydes exhibit chain isomerismi

C. All ketones exhibit chain isomerism

D. All the above

Answer: A



5. Which of the following is correct

- A. Aldehydes exhibit positional isomerism
- B. All ketones exhibit positional isomerism
- C. Ketones with minimum five carbon atoms exhibit position

isomerism

D. Aldehydes with minimum four carbon atom exhibit position

isomerism

Answer: C

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6. Which of the following statements is correct

A. Aldehydes & ketones exhibit tautomerism

B. Aldehydes and ketones are functional isomers

C. All ketones exhibit functional isomerism as aldehydes

D. All the above

Answer: D



7. Which of the following statements is correct

A. Propanone possess higher B.P. than propanal

B. Propanol possess higher B.P. than propanal

C. B.P. of aldehydes & ketones are higher than alkanes of comparable

molecular mass

D. All the above

Answer: D



8. The characteristic reactions of aldehydes & ketones is

- A. Electrophilic additions
- **B.** Nucleophilic additions
- C. Free radical additions
- D. Nucleophilic substitutions

Answer: B

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9. Formalin is a solution of formaldehyde

A. 40% in water

B. 90% in water

C. 6% in water

D. 40% in ethanol

Answer: A

10. $CH_3CHO + NH_2OH
ightarrow X \xrightarrow[-H_2O]{} Y$

The number of σ bonds π bonds and lone pairs of electrons in the compound 'Y' are respectively

A. 9, 1 and 4

B. 11, 1, 5

C. 9, 2, 2

D. 8, 1, 3

Answer: D

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11. 2-pentanone and 3-pentanone are predominantly

A. Positional isomers

B. Functional isomers

C. Chain isomers

D. Ring chain isomers

Answer: A

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12. IUPAC name of a, a dichloro diethyl ketone is

A. 2, 5 - dichloro - 3 - pentanone

B. 2, 4 - dichloro - 3 - pentanone

C. 1, 4 - dichloro - 2- pentanone

D. 2, 5 - dichloro - 3- Hexanone

Answer: B

13. The IUPAC name of B-methyl valeraldehyde is

A. 2-methyl pentanal

B. 3-methyl pentanal

C. 2-methyl butanal

D. 2-methyl butanal

Answer: B

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14. IUPAC name of Isobutyraldehyde is

A. Butanal

B. Methyl propanal

C. Ethyl ethanal

D. Methyl Butanal

Answer: B



16. On the dry distillation of calcium acetate, a compound X' is formed,

the functional isomer of 'X' is :

A. Acetone

- B. Acetaldehyde
- C. Propionaldehyde
- D. Butanone

Answer: C

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17. Dehydrogenation of isopropyl alcohol gives

A. Methanol

B. Methanal

C. Ethanal

D. Propanone

Answer: D

18. $C_2H_5OH \xrightarrow[300^\circ C]{Cu} CH_3CHO$ The above process is

A. Reduction

B. Oxidation

C. Dehydrogenation

D. Both b and c

Answer: D

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19. The first oxidation product of isopropyl alcohol is

A. ethanal

B. propanone

C. ethanoic acid

D. methyl isopropyl ketone

Answer: B



20. Which carboxylic acid(s) gives acetaldehyde on strong heating in presence of catalyst

A. Only formic acid

B. Only acetic acid

C. mixture of formic acid and acetic acid

D. Calcium formate

Answer: C

21. Ketones cannot be prepared by

A. Rosenmund's reaction

B. The hydrolysis of terminal gem dihalides

C. The oxidation of primary alcohols

D. All of these

Answer: D

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22. Alkenes can be converted into aldehydes and ketones by an acidified

aqueous solution of $PdCI_2$ and $CuCl_3$. This process is known as

A. Wacker process

B. Pyrolysis

C. Williamson's synthesis

D. Clemmenson's reduction



A. C_2H_5CI, CH_3CHO

 $\mathsf{B.}\,CH_3CHO,\,CH_3CO_2H$

 $C. CH_3 CHO, CCI_2 CHO$

 $\mathsf{D}.\, C_2H_5CI,\, CCI_3CHO$

Answer: C

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

A. CH_3CH_2CI

 $\mathsf{B.}\, CH_2 CICH_2 CI$

 $\mathsf{C.}\,CH_3CHCI_2$

D. CH_3COCI

Answer: C

26. Ozonolysis of the following gives only acetaldehyde

A. 2-butene

B. 1-Butene

C. Isobutylene

D. Ethylene

Answer: A

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27. PCC is

A. $C_6H_5C^6CrO_2CI^{\,-}$

B. $[C_5H_5
ightarrow N]CrO_3CI^{\,-}$

C. $C_6H_5NH^+CI^-$

D.
$$C_6H_5N^+CrO_3CI^-$$

Answer: D





29. What reagent is used in the Rosenmund reduction ?

A. $H_2 \mid Pd - BaSO_4$

B. $LiAlH_4$

C. NH_2NH_2/KOH Ethylene Glycol

D. $Zn - Hg \mid HCI$

Answer: A



30. Which one of the following reactions is called Rosenmund's reaction?

A. Aldehydes are reduced to alcohols

B. Acids are converted to acid chlorides

C. Alcohols are reduced to hydrocarbons

D. Acid chlorides are reduced to aldehydes

Answer: D





A Br CH₂Cl



Β.



C.



Answer: C



32. Which of the following reaction is not correctly represented





Answer: C



33. In which of the following reactions Ketone is not obtained as product



Answer: C::D



product is









Answer: B





of the reaction is / are





Β.



Answer: A::B



36. Which of the following reacts at a faster rate to form cyanohydrin

A. HCHO

$\mathsf{B.}\, CH_3 CHO$





D.

Answer: A



37. Which of the following statements is right

A. Cyanohydrins are obtained by reaction of aldehydes & ketones with

HCN

B. Aldehydes form cyanohydrin easily than ketones

C. Cyanohydrins on hydrolysis give a -hydroxy carboxylic acids

D. All the above

Answer: D

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38. Which of the following represent an acetal/ ketal



Answer: A::B::C



40. Acetone adds up the following without the elimination of water molecule

A. $NH_2 - OH$

B. 2, 4 - DNP

 $\mathsf{C}.\,H_2N-NH_2$

 $\mathsf{D}.\,HCN$

Answer: D

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41. Which of the following gives oximes with acetaldehyde?

A. H_2NNH_2

 $\mathsf{B.}\,2,4-DNP$

 $\mathsf{C}.\,H_2NOH$

D. $H_2NNHCONH_2$

Answer: C

42. The following is more reactive towards nucleophilic addition reactions

A. CH_3COCH_3

 $\mathsf{B}.\,HCHO$

 $C. CH_3 CHO$

 $\mathsf{D.}\, C_2 H_5 CHO$

Answer: B

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43. The following does not undergo aldol condensation in the presence of

alkali

A. CH_3CHO

 $\mathsf{B.}\, CH_3COCH_3$

 $\mathsf{C.}\,CH_3CH_2CHO$

D. CCI_3CHO

Answer: D



44. Fehling's solution is

A. Alkaline $CuSO_4$ + Rochelle salt (Sod. pot. tartarate)

B. Alkaline $CuSO_4$ complexed with citrate ions

C. Ammonical $AgNO_3$ solution

D. Magenta solution in H_2SO_3

Answer: A



45. Aldehydes can be oxidised by

A. Benedicts solution

B. Tollen's reagent

C. Fehling's solution

D. All of these

Answer: D

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46. An example of hydrocarbon

A. Phorone

B. Mesitylene

C. Metaldehyde

D. Chloretone

Answer: B

47. Acetaldehyde and acetone cannot be distinguished by

A. Tollen's test

B. Benedicts test

C. lodoform test

D. Schiff's test

Answer: C

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48. The medium in which ethanol is oxidised to ethanal using PCC or PDC

is

A. any alcohol

B. Nitrobenzene

C. Methylene dichloride

D. Ether

Answer: C

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49. Ethanol and ethanal are separated from their mixture using the reagent

A. HCN

B. $NaHSO_4$

 $\mathsf{C.}\, C_6H_5NHNH_2$

D. All

Answer: B

50. The reagents used in the Wolff - Kishner reduction are

A. Zn - Hg and conc HCI

B. Anhydrous $ZnCl_2$ and conc HCI

C. Hydrazine, Glycerol and alkali

D. Zn and CH_3COOH

Answer: C

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51. Which one of the following reagents reacts with both acetaldehyde

and acetone?

A. Fehling's solution

B. Grignard reagent

C. Schiff's reagent

D. Tollen's reagent

Answer: B

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52. The interaction of acetone with methyl magnesium chloride followed by hydrolysis

A. Isobutyl alcohol

B. Tertiary butyl alcohol

C. n-butyl alcohol

D. Sec-butyl alcohol

Answer: B

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53. Acetone and Acetaldehyde can be distinguished using
A. Grignard reagent

B. $NaHSO_3$

C. Ammonical $AgNO_3$

D. PCI_5

Answer: C

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54. Haloform reaction is not given by

A. CH_3COCH_3

 $\mathsf{B.}\,CH_3COC_2H_5$

 $\mathsf{C.}\, C_6H_5COC_2H_5$

D. $CH_3CHOHCH_3$

Answer: C

55. Which of the following does not respond to iodoform test

A. Ethanol

B. Methanol

C. Acetaldehyde

D. Acetone

Answer: B

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56. Acetaldehyde and acetone can be identified by

A. Schiff's test

B. Tollen's reagent

C. Lucas test

D. 2, 4 - DNP

Answer: D



57. Acetone on reaction with chlorine gives normally

A. Monochloro acetone

B. Dichloroacetone

C. Trichloroacetone

D. Hexachloro acetone

Answer: C



58. Acetaldehyde cannot give

A. lodoform test

B. Lucas test

C. Benedict test

D. Tollens test

Answer: B

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59. C_2H_5CHO and CH_3COCH_3 can be distinguished from one another by testing with

A. phenyl hydrazine

B. 2, 4 dinitrophenyl hydrazine

C. Fehling solution

D. sodium bisulphite

Answer: C



60. An alkaline solution of and citrate ions is called

A. Silver nitrate , Fehling's solution

B. Cupric sulphate , Schiff's reagents

C. Silver chloride , Tollen's reagent

D. Cupric sulphate , Benedict's solution

Answer: D



LEVEL-I(EXERCISE-II)

1. Ethylene is converted to X on passing through a mixture of an acidified aqueous solution of palladium chloride and cupric chloride. Which of the following reagents readily take part in addition reaction with X ?

A. Br_2

 $\mathsf{B}.\,HBr$

 $\mathsf{C}.\,HCI$

 $\mathsf{D}.\,HCN$

Answer: D

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2. The product obtained when acetaldehyde is treated with dilute NaOH is

A. CH_3CH_2OH

B. CH_3COOH

 $\mathsf{C}.\,CH_3 - \mathop{C}_{egin{smallmatrix} H & - CH_2CHO \ & \cap & \cap \ & OH \ \end{array}$

D. $CH_3 - CH_3$

Answer: C

3. When acetaldehyde is heated with Fehling solution, a red precipitate is

formed. Which of the following is that ?

A. Cu_2O

 $\mathsf{B.}\,Cu$

 $\mathsf{C}.\,CuO$

D. $CuSO_4$

Answer: A

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4. An organic compound 'X' on treatment with pyridium dichromate in dichloromethane gives compound 'Y'. Compound 'Y' reacts with I_2 and alkali to form triiodomethane the compound 'X' is

A. C_2H_5OH

B. CH_3CHO

C. CH_3COCH_3

D. CH_3COOH

Answer: A

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5. The synthesis of crotonaldeyde from acetaldehyde is an example of.... Reaction.

A. Nucleophilic addition

B. Elimination

C. Electrophilic addition

D. Nucleophilic addition – elimination

Answer: D

6. In which of the following reactions, the final product is 2-methyl-2-propanol ?

$$\begin{array}{l} \mathsf{A.}\ CH_{3}CHO \xrightarrow{(i)\ CH_{3}Mg\ /\ dryether} \\ \hline (ii)\ H_{3}O^{+} \end{array} \\ \mathsf{B.}\ CH_{3}CHO \xrightarrow{(i)\ C_{2}H_{5}MgBr\ /\ dryether} \\ \hline (ii)\ H_{3}O^{+} \end{array} \\ \mathsf{C.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}Mg\ /\ dryether} \\ \hline (ii)\ H_{2}O^{+} \end{array} \\ \mathsf{D.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}Mg\ /\ wetether} \\ \hline (ii)\ H_{3}O^{+} \end{array}$$

Answer: C

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7. Iso propyl alcohol is obtained by the reaction of the following

A. Acetone with Clemmenson's reducing agent

B. Acetone with H_2 in presence of Ni

C. Acetaldehyde with H_2 in presence of Ni

D. Acetone with chloroform

Answer: B



8. Which one of the following undergoes aldol condensation and gives iodoform test

A. Actaldehyde

B. Ethyl alcohol

C. Acetic acid

D. formaldehyde

Answer: A

9. 2, 2-dichloro propane treated with aq. KOH gives an unstable product. It

is

A. CH_3COCH_3

- $\mathsf{B.}\, CH_3 CH(OH) CH_4$
- $\mathsf{C.}\,CH_3C(OH)_2CH_3$
- $\mathsf{D.}\, CH_3 CH(OH) CH_2 CHO$

Answer: C

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10. An alkene on ozonolysis gives acetaldehyde and acetone. The alkene in

question is

A.
$$CH_3-CH= egin{array}{c} CH_3 \ dot \\ C \end{array} - CH_3$$

$$\mathsf{B}.\,CH_3-CH=CH-CH_2-CH_3$$

 $\mathsf{C}.\,CH_2=CH-CH_3$

 $D. (CH_3)_2 C = C(CH_3)_2$

Answer: A

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11. The first oxidation product of the following alcohol is a ketone with the same number of carbon atoms

A. $CH_3CH_2CH_2OH$

 $\mathsf{B.} (CH_3)_2 CHCH_2 OH$

 $\mathsf{C.}\,CH_3CH(OH)CH_3$

 $\mathsf{D}.\,(CH_3)_3C-OH$

Answer: C

12.

Which of the above compounds undergo aldol condensation

A. Only II, III, IV and VI

B. Only II, IV and V

C. Only II and III

D. II & IV

Answer: D

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13. Tollen's reagent can be obtained by mixing aqueous $AgNO_3$ with aqueous NH_3 solution. The reagent mainly contains

A.
$$\left[Ag(NH_3)_2
ight]^+$$

 $\mathsf{B.}\,AgOH$

 $\mathsf{C}.\,Ag$

D. CH_3CHO

Answer: A



15. Acetylene on reaction with hypochlorous acid gives

A. Acetone

B. Chloro acetone

C. Dichloro acetaldehyde

D. Dichloro methane

Answer: C

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

A. NH_2OH

B. $NAHSO_3$

C. lodine

D. 2, 4 - DNP

Answer: D



17. The number of a bonds in the product formed by passing acetylene through dil. H_2SO_4 containing mercuric sulphate is

A. zero

B. one

C. two

D. three

Answer: B

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18. Which of the following can be detected by silver mirror test

A. CH_3COCH_3

B. CH_3COOH

 $\mathsf{C.}\, C_2 H_6$

 $\mathsf{D.}\, CH_3 CHO$

Answer: D

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19. What is X in the following reaction $2CH_3CHO \xrightarrow{dilNaOH} X$

A. $CH_3 - CH(OH) - CHO$

 $\mathsf{B.}\,CH_3-COCH_2CHO$

 $C. CH_3 - CH(OH) - CH_2 - CHO$

 $D. CH_3 - CH_2 - CH(OH) - CHO$

Answer: C

20. Which of the following converts acetone to acetone oxime

A. $H_2N - NH_2$

B.2, N - DNP

 $\mathsf{C.}\, C_6H_5CHCH_2$

D. NH_2OH

Answer: D

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21. Para rosaniline hydrochloride solution is decolourised by SO_2 is called

A. Bendict's solution

B. Fehling's solution

C. Schiff's reagent

D. Tollen's reagent

Answer: C



22. Acetone on distillation with bleaching powder and water gives chloroform and X. Ethyl alcohol on distillation with bleaching powder and water gives $CHCI_3$, and Y. X and Y together on distillation gives

A. CH_3CHO

B. CH_3COCH_3

 $\mathsf{C}.\,CH_2=CHOH$

D. $CH_3COC_2H_5$

Answer: A

23. When Acetaldehyde is treated with $LiAlH_4$ What is the product formed

A. CH_3COOH

 $\mathsf{B}. \, CH_3 - cH_2 - OH$

 $C. CH_3 - OH$

D. HCOOH

Answer: B

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24. Ethanal is reacted with acidified $K_2Cr_2O_2$ What is the product formed?

A. C_2H_5OH

 $\mathsf{B.}\, CH_3 COOH$

 $\mathsf{C.}\,C_2H_6$

D. CCI_3CHO

Answer: B



26. Acetaldehyde is reduced with hydrogen in the presence of Nickel. What is the compound formed.

A. Ethanol

B. n-propanol

C. Methanol

D. Isopropanol

Answer: A

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27. What is the "X" in the following reaction $2CH_3COCH_3 \xrightarrow{Ba(OH)_2} oX$

A.
$$CH_3 - \stackrel{|}{\overset{|}{C}}_{CH_3} - CH_2 - \stackrel{|}{\underset{OH}{CH_3}}_{OH} - CH_2 - CH_3$$

B. $CH_3 - \stackrel{|}{\overset{|}{C}}_{CH_3} - CH_2 - CH_2 - CHO$

 $\mathsf{C}.\,CH_3-CH(CH_3)-CH_2=CO-CH_3$

Answer: A



28. An organic compound X gives a red precipitate on heating with Fehling's solution. Which one of following reactions yields X as major product ?

A.
$$HCHO \xrightarrow{(i) CH_3MgI}_{(ii) H_2O}$$

B. $C_2H_5Br + AgOH \xrightarrow{\Delta}$
C. $2C_2H_5Br + Ag_2O \xrightarrow{\Delta}$
D. $C_2H_2 + H_2O \xrightarrow{40\% H_2SO_4}_{1\% H_gSO_4, 60^\circ C}$

Answer: D

29. Which one of the following compounds reacts with saturated solution

of sodium bisulphite to give colourless crystalline products?

A. C_2H_5OH

 $\mathsf{B.}\, C_2 H_6$

 $\mathsf{C.}\,CH_3CHO$

D. $CHCI_3$

Answer: C

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30. Identify acetaldoxime

A. $CH_3CH = N - NH_2$

 $\mathsf{B.}\, CH_2CH=N-OH$

 $\mathsf{C}.\,(CH_3)_2C=N-OH$

 $\mathsf{D}.\,CH_2=N-OH$

Answer: B



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

A. NH_2OH

B. $PhNHNH_2$

 $\mathsf{C}.\, NH_2 NHCONH_2$

 $\mathsf{D}.\,HCN$

Answer: B

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32. 3-Hydroxy butanal is formed when (X) reacts with (Y) in dilute (Z) solution. What are(X),(Y) and(Z)?

A.
$$X$$
 Y Z CH_3CHO $(CH_3)_2CO$ $NaOH$ B. X Y Z CH_3CHO CH_3CHO $NaCI$ C. X Y Z $(CH_3)_2CO$ $(CH_3)_2CO$ HCI D. X Y Z CH_3CHO CH_3CHO $NaOH$

Answer: D



33. Which of the following reagents converts both acetaldehyde and acetone to alkanes

A. Ni/H_2

B. $LiAIH_4$

 $\mathsf{C.}\,I_2\,/\,NaOH$

D. Zn - Hg/conc.~HCI

Answer: D

34. Which of the following reacts at a faster rate to form cyanohydrin

A. HCHO

 $\mathsf{B.}\,CH_3CHO$



Answer: A

35. Which of the following statements is right

A. Cyanohydrins are obtained by reaction of aldehydes & ketones with

HCN

- B. Aldehydes form cyanohydrin easily than ketones
- C. Cyanohydrins on hydrolysis give a -hydroxy carboxylic acids

D. All the above

Answer: D

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36. Which of the following statements are true

A. 3-penten-2-one is more stable than 4-penten-2-one

B. 2-propanol possess higher b.p. than propanone

C. The dipole moment of proponal is greater than 1-butene

D. Propanone possess higher boiling point that propanol

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



37. Which sequence of steps is useful to convert benzene to p-chlorobenzadehyde

A. $Br_2/Fe, Mg$ /ether, HeHO, Cl_2 /Fe, CrOz/pyridine

B. $CI_2 rac{\cdot}{F} e, \; {
m Mg/ether}, CH_3 CHO, Br_2/{
m Fe}, CrO_3/{
m pyridine}$

C. $CH_3COCI/AICI_3, Cl_2/Fe, CrO_3$ /pyridine

D. $CH_3CH_2CI / AICI_3, Cl_3 / Fe, CrO_3$ zpyridine

Answer: A

38. Which of the following reaction gives $(CH_3)_2CHCH_2COCH_3$

A.
$$(CH_3)_2 CHCH_2 - C \equiv CH \xrightarrow{H_2O, H_3SO_4. H_2SO_4} \rightarrow$$

B.
$$(CH_3)_2 CHCH_2 CN + CH_3 MgI
ightarrow$$

C. $(CH_3)_2 CHCH_2 CH_2 CN + CH_2 MgI
ightarrow$

 $\mathsf{D}. (CH_3)_2 CHCH_2 CHOHCH_3 \xrightarrow{KmnO_4}$

Answer: A::B::D

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39. Which of the following is the product of the sequence of the reactions

HOOC
$$-$$
 CHO $(2:0.0)$
A HOOC $-$ CHO $(2:0.0)$
B. HOOC $-$ CH₂OH





Answer: A::B





40.

products formed is/are















The structure of the major product 'B' is





Answer: B



43. Acetone when allowed to react with excess benzaldehyde in presence

of NaOH gives

A. $C_6H_5CH = CHCOCH_3$ B. $C_6H_5CH = C < CH_3$ C. $C_6H_5CH = CHCOCH = CHC_6H_5$ D. $C_6H_5CH = CHCOCH_3$

Answer: C

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44. Which of the following is likely to have lowest p^{Ka} value



Answer: A



45. α – hydrogens of nitroalkane behave like acidic hydrogens. Consider $CH_3NO_2(I)$ and $C_6H_5CH_2NO_2(II)$ which statement about I & II is correct

A.
$$p^{ka}$$
 of II is greater than that of I

B. p^{ka} of II is less than that of I

C. p^{Ka} values of both I & II are almost same

D. cannot be predicted

Answer: B

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structure of the product is








Answer: C

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47. For which of the following compound equilibrium constant for enol/keto will be higher

A. CH_3CHO

B. CH_2COCH_3

 $C. CH_3COCH_2COCH_3$

 $\mathsf{D.}\, CH_3 CH_2 COCH_2 CH_3$

Answer: A





Answer: A



49. Which of the following forms stable semicarbazone





 $\mathsf{C.}\,CH_3-CO-CH_3$

D. CH_3CHO

Answer: A



50. Compound 'X'($C_9H_{10}O$) does not add on Br, in CCI_4 Vigorous oxidation of 'X' gives benzoic acid and reacts with 2,4-D N P which of the following is the structure of X.

A. $C_6H_5COCH_2CH_3$

B. $C_6H_5CH_2COCH_3$

 $\mathsf{C.}\, C_6H_5CH_2CH_2CHO$

D. $C_6H_5- egin{array}{c} C & H-CHO \ ert O \\ CHO \end{array}$

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

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51. In aldehydes -CHO may be attached to

A. Alkyl group

B. H atom

C. Aryl group

D. Alkyl /aryl/ H atom

Answer: D

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52. Consider the following statements A) On reaction with Grignard reagent followed by hydrolysis acetone gives tertiary alcohol B) Mesitylene is a polymer of acetone C) Chloroform gives chloretone on reaction with acetone D) Acetone ammonia is an addition product of acetone with NH_3

A. All are correct

- B. The correct statements are
- C. A is correct

D. A, B and C are correct

Answer: A



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List - 1

A) CH<sub>3</sub>CHO \rightarrow Aldol

B) CH<sub>3</sub>COOH \rightarrow CH<sub>3</sub>CH<sub>2</sub>OH

C) CH<sub>3</sub>COCH<sub>3</sub>\rightarrow CH<sub>3</sub>CH<sub>2</sub>CH<sub>5</sub>

D) CH<sub>3</sub>CHO \rightarrow (CH<sub>3</sub>CHO),
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List - II 1) LiAlH₄ 2) Zn₂ Hg; Con. HCl 3) Con.H₂SO₄; ∆ 4) NaOH 5) KMnO₄, H^{*}

54.

the correct match is

A.	Ι	II	III	IV
	5	2	1	3
В.	Ι	II	III	IV
	4	1	2	3
c				
c	Ι	II	III	IV
C.	I2	II5	III 1	IV 4
C.	$egin{array}{c} I \\ 2 \\ I \end{array}$	11 5 11	III 1 III	IV 4 IV

Answer: B

55. Match the following

List - 1
A)
$$CH_3COCH_3 \xrightarrow{Zn-Hg}_{cone HCl}$$

B) $CH_3CHO \xrightarrow{H_2,N_1}$
C) $CH_3 - CH = CH_2 + PdCl_2 + H_2O \xrightarrow{CaCl_2}_{H^*}$
D) $CH_3COCH_3 \xrightarrow{Conc}_{H_2SO_4}$
(2) $CH_3 - CH = CH_2 + PdCl_2$
(3) $H_2O(H_2 - H_2O(H_2 - H_2O(H_2$

the correct match is



Answer: B

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List - II

1) Phorone

CH₃CHO

- 3) CH₃COCH₃
- 4) CH₃CH₃
- 5) CH₃CH₂CH₃
- 6) CH₃CH₂OH
- 7) C₆H₃(CH₃)₃

56. Match the following lists :

List - I

- A) Grignard reagent
- B) Clemmensen reduction
- C) Rosenmund reduction
- D) Wolff-Kishner reduction

- List H
- 1) $H_2/Pd \sim BaSO_4$ 2) $N_2H_4 |KOH|Glycol$
- 3) CH₃MgX
- 4) Zn Hg I conc. HCl
- 5) H₂ | Ni

the correct answer is

A.	A	B	C	D
	3	4	2	1
Β.	A	B	C	D
	3	4	1	2
~				
c	A	B	C	D
C.	A 2	B1	$C \ 4$	$D \\ 5$
C.	$egin{array}{c} A \\ 2 \\ A \end{array}$	B 1 B	C 4 C	$D \\ 5 \\ D$

Answer: B



57. When 1,1-dichloropropane and 2,2-dichloro propane are reacted separately with aqueous potassium hydroxide solution compounds A and

B are formed. Both A and B gave the same product C on reduction using amalgamated zinc and HCl. Identify C

A. Propyl alcohol

B. Isopropyl alcohol

C. Propyl chloride

D. Propane

Answer: B

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

A. CH_3OH

 $\mathsf{B.} \left(CH_3 \right)_3 C - OH$

 $C.(CH_3)_2$ CHOH

D. CH_3CH_2OH

Answer: B



59. 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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LEVEL-II LECTURE SHEET (EXERCISE-I)

1.
$$CH_3 - \overset{O}{\overset{||}{C}} - CI + H_2 \xrightarrow[Pd/BaSO_4]{ ext{xylene}} CH_3CHO + HCI$$
 is

A. Stephen's reaction

B. Rosenmund reaction

C. Hofmann reaction

D. Cannizzaro's reaction

Answer: B

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2. In the given reaction $CH_3- \overset{OH}{CH_3}- \overset{OH}{CH_3} \overset{OH}{-} CH_3 \overset{HIO_4}{\underset{CH_3}{HIO_4}}a+b$ and B

respectively be

A. CH_3CHO and CH_3CHO

B. CH_3COCH_3 and CH_3CHO

 $C. CH_3COCH_3$ and CH_3COCH_3

D. CH_3COOH and CH_3COCH_3

Answer: B

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3. Compound A (molecular formula C_3H_8O) is treated with acidifed potassium dichromate to form a product B (molecular formula C_3H_6O). B forms a shining sliver mirror on warming with ammonical silver nitrate, B when treated with an aqueous solution of $NH_2NHCONH_2$ and sodium acetate gives a product C. Identify the structure of C

A. $CH_3CH_2CH = NHHCONH_2$

 $\mathsf{B}.\,(CH_3)_2C=\mathbb{N}HCOC\mathbb{N}H_2$

 $C. (CH_3)_2 C = NCONHNH_2$

 $\mathsf{D}. CH_3 CH_2 CH = NCONHNH_2$

Answer: A

4. $PhCHO + (CH_3CO)_2O \xrightarrow{CH_2COONa} A$ the product A is

A. $C_6H_5CH = CHCOOH$

 $\mathsf{B.}\, C_6H_5CH_2CH_2COOH$

 $\mathsf{C.}\, C_6H_5CH=CHCOCH_3$

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D. $C_6H_5CH_2COCH_3$

Answer: A



which reagent



B. KOH and KAH

C. excess HCHO and KOH

D. KCN followed by SBH

Answer: C

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6. Cyanohydrin of which compound on hydrolysis will give lactic acid?

A. C_6H_5CHO

B. HCHO

 $\mathsf{C.}\,CH_3CHO$

 $\mathsf{D}.\,CH_3-cH_2-CHO$

Answer: C

7. Cyanohydrin formation constant will be highest for ?



Answer: A











Answer: B



9. An organic compound A, C_5H_8O reacts with H_2ONH_3 and CH_3COOH

as described below:



$$\begin{array}{l} \mathsf{A}.\, CH_{3}CH = \mathop{C}_{CH_{3}} - CHO \\ \stackrel{|}{_{CH_{3}}} \end{array} \\ \mathsf{B}.\, CH_{2} - \mathop{C}_{H} HCH - CHO \\ \stackrel{|}{_{CH_{3}}} \end{array} \\ \mathsf{C}.\, CH_{3} - cH_{2} - \mathop{C}_{H} = C = O \\ \stackrel{|}{_{CH_{3}}} \end{array} \\ \mathsf{D}.\, CH_{3} - CH_{2} - \mathop{C}_{H_{2}} - \mathop{C}_{H_{3}} = C = O \\ \stackrel{|}{_{CH_{2}}} \end{array}$$

Answer: C

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10. Which of the following ketones do not react with $NaHSO_3$?

B. Pentan-3 – one

C. Acetone

D. Buteonine

Answer: B

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11. Acetone can be converted into pinacol by

A. Mg/Hg

B. Zn/Hg

C. Na/Hg

D. All of these

Answer: A

12. 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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13. After completion of the reactions (I and II), the organic compound(s) in

the reaction mixture is(are)



A. Reaction I : P and Reacation 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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14. Mark out the correct order of dipole moment for the following compounds :

$$H - egin{array}{ccc} O & O & O \ ert ecl{H} & eclt{H} & ecl{H} & eclt{H} & ecl{H} & ec$$

A. I > II > III

 $\mathsf{B}.\,II>III>I$

 $\mathsf{C}.\,III>II>I$

 $\mathsf{D}.\,III>I>II$

Answer: C



15. Arrange the following compounds in decreasing order of nucleophilic

addition reaction

$$CH_{3} - CH_{3} - C$$

A.
$$II > V > I > IV > III$$

$$\mathsf{B}. III > IV > I > V > II$$

$$\mathsf{C}.\,II > I > V > III > IV$$

$$\mathsf{D}.\,IV > III > V > I > II$$

Answer: A

16. In the given reaction



A and B will respectively be :



Answer: B



17. Arrange the compound in order or decreasing reactivity for nucleophilic addition reaction

$$CH_3 - \overset{O}{\overset{}{C}} - \overset{O}{\underset{(I)}{C}} H_2 - CICI - CH_2 - \overset{O}{\overset{}{C}} \overset{O}{\overset{}{C}} - HH - \overset{O}{\overset{}{C}} \overset{O}{\underset{(III)}{C}} - HH_3C - \overset{O}{\overset{}{C}} \overset{O}{\underset{(IV)}{C}} - CH_3$$

A. I > IV > II > III

 ${\rm B.}\,I>II>III>IV$

 $\mathsf{C}.\,II>III>I>IV$

 $\mathsf{D}.\,II > I > III > IV$

Answer: C

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18. In the given reaction





D. all of these

Answer: C

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19. Which carbonyl group of the given compound in most reactive for nucleophilic addition reaction ?



A. 1

B. 2

C. 3

D. all have equal reactivity

Answer: B

20. In the given reaction the main product will be :



21. In the given reaction the main product will be :



Answer: A

22. Which one of the following compounds would form most stable hydrate ?

$$A. CI_{3}C - \overset{O}{C} - H$$

$$B. CI_{3}C - \overset{O}{C} - H$$

$$C. F_{3}C - \overset{O}{C} - CF_{3}$$

$$O$$

$$D. H - \overset{O}{C} - H$$

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Answer: C



will be



Answer: B



 $(\#\#AKS_TRG_AO_CHE_XII_V02_B\ _\ C03_E02_{024}\ _\ Q01.\ png\ \ {
m width}{=}80\ \%\ >$

overet(PhMgBr)to (X), X` will be





Answer: B

D.







A.











Answer: D













D.

Answer: A





structure of B














Answer: C





Answer: C



31. Find the product of the following reaction :





A.





C.

D. none the these

Answer: B







Answer: A



33. Find the product of the following reaction :











D.

Answer: C





Find out final product of reaction :



Answer: B













D.

Answer: C



36. What is the prodcut (X) of the following reaction ?









Answer: A



37. Find the product of the following reaction :

$$Ph-CH_2-\overset{O}{C}-CH_2-Ph+Ph-\overset{O}{C}-\overset{O}{C}-Phrac{NaOH}{\Delta}$$







D. none the these

Answer: A

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38. Find the major product of the given reaction :



A.
$$Ph-CH=CH-CH_2-\overset{O}{\overset{||}{C}}-H$$

$$B. CH_3CH_2 - CH = \begin{array}{c} O \\ CH_3CH_2 - CH = \begin{array}{c} O \\ CH_3 \end{array} - \begin{array}{c} O \\ CH_3 \end{array} - \begin{array}{c} O \\ CH_3 \end{array}$$

Answer: D









Β.

A.





Answer: A



40. Which of the following is an example of aldol condensation reaction ?



Answer: D



41. Consider the following sequence of reaction

$$\underbrace{10_{j}}_{2.2n, \Pi_{2}O} \land \underbrace{NuUH}_{\Lambda} B$$
B product A

and B respectively



D.

Answer: B



Reactant (A) and product (B) are respectivly



Answer: D



$$(\bigcirc) - CH_2 - CH_2 - C - H \xrightarrow{SeO_2} X \xrightarrow{KOH} Y$$
43.

Identify final product 'Y'

A.
$$Ph - CH = CH - C - OK^{\oplus}$$

B. $Ph - CH_2 - C - OH$



Answer: A

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44.







Answer: B

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45. How many products will obtain in the following reaction ?



A. 2

B. 3

C. 4

D. 1

Answer: C

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Answer: A





Answer: A



48.
$$CH_3 - CH_2 - \overset{O}{\overset{||}{C}} - \overset{CH_3}{\overset{|}{\overset{C}{C}}} - CH_3 \xrightarrow{PhCO_2H}$$
 A, A will be



A.



Β.





Answer: D



Find out structure of B :





Β.





Answer: C





Identify struture of 'Y'





C.



D.

Answer: B







Major product (X) is











D.

Answer: C



52. Which halide will give witting reaction ?









Answer: D



$$2CH_3CH_2-\ \stackrel{O}{-}OC_2H_5\ \stackrel{O}{\stackrel{C_2H_5O}{\stackrel{H_3^\oplus O}{\longrightarrow}}}(X)$$
 'X will be

A.
$$CH_3 - CH_2 - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} H - \overset{O}{\overset{||}{C}} - OC_2H_5$$

$$\mathsf{B}.\,CH_3-CH_2-\overset{||}{C}-CH_2-CH_2-\overset{||}{C}-OC_2H_5$$

$$\stackrel{O}{\overset{O}{\overset{O}{}}}_{C.\,2CH_2CH_2}-\stackrel{O}{\overset{O}{}}_{C}-OH$$

$$\mathsf{D}.\,CH_3 - \underbrace{CH}_{CH_2 - C} - \underbrace{CH}_{O} - \underbrace{CH_2 - C}_{U} - OC_2H_5 - \underbrace{CH_2 - OC_2H_5}_{U}$$



Identify 'X' :









D.

Answer: C





Identify name of reaction :

A. Aldol condensation

B. Cannizzaro condensation

C. Crossed claisen condensation

D. Tischenko reaction

Answer: C

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Identify

final product 'Y'

56.





D. none the these

Answer: A





Identify A

and B



D. none the these

Answer: B

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58.

Find structure of 'X'





Β.



C.



D.

Answer: D








Answer: D



A.
$$Ph - \overset{O}{\overset{||}{C}} - \overset{C}{\underset{OH}{C}} H - Ph$$

B. $Ph - \overset{O}{\overset{||}{C}} - \overset{\Theta}{OK}^{\oplus}$ and $Ph - CH_2OH$
C. $Ph - \overset{O}{\overset{||}{C}} - H$

D.
$$Ph - \stackrel{O}{C} - \stackrel{O}{C} - Ph$$



61. Compound 'X' C_4 _ 8O which gives 2,-4 DNP derivative and netgative

iodoform test is







Answer: D









Answer: C





63.

Identify

final product 'A'

A. CHI_3

$$\mathsf{B}. \, Ph - \displaystyle \mathop{C}\limits_{\substack{|\\ \\ |\\ \\ CH_3}}^{OH} - Ph$$



D.

Answer: B







Answer: C

65.
$$CH_3 - \overset{O}{C} - H \xrightarrow{CF_3CO_3H} X$$
: 'X' will be
A. $CH_3 - \overset{O}{C} - OH$
B. $CH_3 - O - \overset{O}{C} - H$
C. $H - O - CH_2 - \overset{O}{-} H$
D. $H - \overset{O}{c} - OH$



$$\begin{array}{c} \begin{array}{c} O & CH_{3} \\ \mathbf{66.} \ CH_{3} - CH_{2} - \overset{||}{C} - \overset{||}{C} - \overset{||}{C} - CH_{3} \xrightarrow{PhCO_{2}H} \mathbf{A}, \mathbf{A} \text{ will be} \\ \\ \mathbf{A.} \ CH_{3} - CH_{2} - O - \overset{||}{C} - \overset{||}{C} - CH_{3} \\ & \overset{||}{C} \\ \mathbf{B.} \ CH_{3} - CH_{2} - \overset{||}{C} - O - \overset{||}{C} - CH_{3} \\ & \overset{||}{C} \\ \mathbf{B.} \ CH_{3} - CH_{2} - \overset{||}{C} - O - \overset{||}{C} \\ - O - \overset{||}{C} \\ - O - CH_{3} \\ & \overset{||}{C} \\ \\ CH_{3} \\ \end{array}$$

D. none the these

Answer: B





product .

Find the product









Answer: B

68. Which of the following compounds contains most acidic hydrogen ?

$$A. H_{3}C - \overset{O}{C} - H$$

$$B. H_{3}C - \overset{O}{C} - CH_{2} - \overset{O}{C} - CH_{3}$$

$$C. H_{3}C - \overset{O}{C} - CH_{2} - \overset{O}{C} - CH_{3}$$

$$O = \overset{O}{C} - CH_{2} - \overset{O}{-} OCH_{3}$$

$$O = \overset{O}{C} - CH_{2} - \overset{O}{-} OCH_{3}$$

Answer: B

69. Which hydrogen of the given compound is least acidic in nature ?





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

Answer: C



Compound B is











Answer: B





(Y) is





Answer: C



72.

product

product will be









D.

Answer: D

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X will be







Answer: C

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74. Which of the following compound would be most reactive for perkin

condensation with acetic anhydride ?

о || _С_Н O₂N-√⊂







75. Cinnamic acid from benzaldehyde would be prepared by which of the

following reaction

A. Perkin reaction

- B. Reformatsky reaction
- C. Knoevengel condensation
- D. all of these









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77.

compound A and B can be differentiated by

A. 2,4-DNP

B. Fehling's solution

C. Lucas test

D. $NaHSO_3$

Answer: B





C. Lucas test

D. $NaHSO_3$

Answer: B





Find out

final product (X) :





Answer: D



product (X)









Answer: B



81.

Major

product (X) :

A.

















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Answer: C











C.





Answer: B





final



product Y is











Answer: C

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product (X) . Find out (X) of the reaction

A.









'Y' will be



D.





87.

will be



A.





C.

D. none the these

Answer: C









Answer: D













D.

Answer: B





find out

major product (A)








Answer: B



required for above conversion is

A. $LiAIH_4, H^{\oplus}, \Delta$ B. $\overset{\Theta}{OH}/\Delta, H^{\oplus}$ C. $H^{\oplus}, \overset{\Theta}{OH}/\Delta$ D. $NaBH_4, H^{\oplus}$

Answer: B

92. Consider the following carbonyl compounds



which of the following is correct decreasing order of their dipole moment ?

A. P > R > Q > SB. S > R > Q > PC. S > Q > R > PD. Q > S > R > P

Answer: C

93.
$$G \longrightarrow C \longrightarrow CH_1 \longrightarrow CH_1 \longrightarrow CH_2 \longrightarrow CH_2 \longrightarrow G$$

which of the following is correct decreasing rate of homologoation with various G ?

Answer: C

94.
$$CH_3 - \overset{O}{C} - H$$
 react most readily with :

A.
$$H_2N-NH_2$$

B. $H_2N-NH- \mathop{C}_{\substack{||\\ O}} - NH_2$

 $C. Ph - NH - NH_2$

D. $H_2N - OH$

Answer: A

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95. The posible number of stereisomers of the product of following reaction would be :

$$Ph-CH=CH-CH-CH-C=O \stackrel{H_2N-OH}{\underset{CH_3}{ert}} + O \stackrel{H_2N-OH}{\overset{H_2N-OH}{
ightarrow}} +$$

- A. 2
- B. 6
- C. 8

D. 4

Answer: C

96. Give the correct sequence of reagents for the following conversions



Answer: A



product 'T' Is







Answer: D

B.



Answer: B





99.

product





Β.



C.



Answer: B







which of following sets of reagents is the most appropriate to perform

the above converation ?

 $\stackrel{\Theta}{\rightarrow}$ A. $HIO_4, \stackrel{\Theta}{OH}, zn - Hg/HCI$ B. cold $KmnO_4, Pb(Oac)_4, \stackrel{\Theta}{OH}, Li/NH_3$ C. $O_3/Me_2S, \stackrel{\Theta}{OH}, Li/NH_3$ D. $KMnO_4, \stackrel{\Theta}{OH}/\Delta, N_2H_4/OH, \Delta$

Answer: D





102. Reaction

the suitable reactant is





Answer: B



103. Which of the following reactants on reaction with conc NaOH followed by acidification given the following lactone as the only product?









Answer: C













D.

Answer: D



105. The stucture of major product of following reaction is

`(##AKS_TRG_AO_CHE_XII_V02_B_C03_E02_105_Q01.png" width="80%">



D.

Answer: B

106. Find the major product of reaction









C.

A.



Answer: D

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107. What would be the major product of following reaction



____ОН

A.



D. No reaction

Answer: C









C.

D. No reaction

Answer: B











Answer: C









C.







Answer: B











Answer: D

D.

C.



112.
$$C_{3H_{0}O} \xrightarrow{C_{H_{1}O}} \xrightarrow{CH_{1}} \xrightarrow{B_{T}} \xrightarrow{(CH_{1})_{2}C_{O}OK} Product :$$







C.

A.

Β.



Answer: B

D.



113.

Major

prodcut :

Β.









D.

Answer: C

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LEVEL-II LECTURE SHEET (EXERCISE-II)

1. Which of the following give N-subtituted amide from ketoxime ?

A. PCI_5

 $\mathsf{B.}\,SO_3$

 $\mathsf{C}.BF_3$

D. $\dot{NH_3}$

Answer: A::B::C

2. Acetaldehyde can be obtained from from which of the following reaction ?

$$\begin{array}{l} \mathsf{A.} CH_{3}CH_{2}OH \xrightarrow{Cr/\Delta} \\ \end{array} \\ \mathfrak{B.} CH_{3} - \overset{O}{C} - CI \xrightarrow{Pd - BuSO_{4}} \\ \mathfrak{B.} CH_{3} - \overset{O}{C} - CI \xrightarrow{Pd - BuSO_{4}} \\ \mathfrak{B.} CH_{3} - CH = CI \xrightarrow{Pd - BuSO_{4}} \\ \mathfrak{B.} CH_{3}C - CH = CI \xrightarrow{Pd - BuSO_{4}} \\ \mathfrak{B.} CH_{3}C - CH = CI \xrightarrow{Pd - BuSO_{4}} \\ \mathfrak{B.} CH_{3}C - CH \xrightarrow{O_{3}} \\ \mathfrak{B.} CH_{3}$$

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

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3. Which of the following do not give cannizzaro reaction ?

A.
$$CI_3C-\overset{O}{\overset{||}{C}}-H$$



Answer: A::D



4. Which of the following yield yellow precipitate on reacction with I_2 and

NaOH?





Β.





D.

Answer: A::B::D

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5. Which of the following compounds exhibit acid base reaction with NaOH



A.



Β.







D.

Answer: B::C::D





in the reaction X and Y may be

A. P and $Ph_3p = CH_2$

B. $PDCwithPh_3P = CH_2$

C. P and $Ph_3P = CH - CH_3$

 $\mathsf{D}. p ext{ and } Me_2S = CH_2$

Answer: B::D

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7. Which of the following are correct for reaction

`(##AKS_TRG_AO_CHE_XII_V02_B_C03_E02_120_Q01.png" width="80%">









Answer: A::B::D



8. Select the reactions involved in the above reaction



A. Michael addition

- B. Aldol condensation
- C. Dehydration
- D. Perkin condensation

Answer: A::B::D

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9. Select the correct combination :

$$A. H_3C - \overset{\bigcup}{C} - H \xrightarrow{\Theta}{OH} H_2C - CH = CH - \overset{\bigcup}{C} - H$$
$$B. Ph - \overset{\bigcup}{C} - H \xrightarrow{KOH} Ph - \overset{O}{C} - \overset{O}{OK} \oplus + Ph - CH_2 - OH$$

Answer: A::B::C

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10. which of the following reactions involve hydride ion transfer ?

A.
$$2H - \overset{O}{C} - H \xrightarrow{\Theta} \overset{O}{\longrightarrow} H - \overset{O}{C} - \overset{O}{O} + CH_3 - OH$$

B. $2H_3C - \overset{O}{C} - H \xrightarrow{\Theta} \overset{O}{\longrightarrow} H_3C - CH = CH - \overset{O}{C} - H$
C. $2H_3C - \overset{O}{C} - H \xrightarrow{AI(Oet)_2} CH_3 - \overset{O}{C} - O - - CH_2CH_3$
D.

Answer: A::C::D

11. Which of the following statements are correct?

A. Carbonyl compounds give nuclephilic addition reaction while

alkenes give electrophiliv addition reaction

B. c=0 bond has larger dipole than c=c

C. Aldehyde and terminal alkyne both react with Tollen's reagent

D. Aldehydes and ketons can be distinguished by 2,4-DNP

Answer: A::B::C

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12. Which of the following pairs are not correctly matched ?

A.
$$c = o \xrightarrow{Zn - Hg} CH_2$$

B. $c = o \xrightarrow{N_2 H_4 / \delta_H} CH - oH$



Answer: B::D

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13. Which of the following compounds will not show enolisation




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



14. Which compound will be oxidised by HIO_4 ?



Β.

$$OH \\ C. \ CH_3 - \overset{OH}{C} H - CH_2 - CH_3 \\ CH_2 - OH \\ | \\ D. \ C = O \\ | \\ CH_2OH$$

Answer: A::B::D



15. Which of the following reactions can produce benzaldehyde as major

product ?



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

16. The suitable reagent for the following reaction are :



$$A. \xrightarrow{PCI_5} \xrightarrow{NaOH} \Delta$$

$$B. \xrightarrow{I_2 + NaOH} \xrightarrow{H^{\oplus}} \xrightarrow{NH_3} \xrightarrow{Br_2 + KOH} \Delta$$

$$C. \xrightarrow{NH_2OH} \xrightarrow{PCI_5} \xrightarrow{dilNaOH} \xrightarrow{N_3H} \Delta$$

$$D. \xrightarrow{H_2N - OH} \xrightarrow{\Delta} \rightarrow$$

Answer: B::C

17. Which of these carbonyl compounds on reduction with Zn - Hg/HCI will give the same product ?



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Answer: A::B::C



are









Answer: A::B::C



and 'C' are :









Answer: B::C

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20. Which of the following reactions will produce aldehyde ?

A.
B.
$$(H_3C - CH = CH_2) \xrightarrow{CO_{H-2}}_{CO_2(CO)_8}$$

C. $H_3C - C \equiv CH \xrightarrow{Br_2H_6}_{\Theta H/H_2O}$
D. $H_3C - C \equiv CH \xrightarrow{Hg^{+2}, H_2SO_4}$

Answer: B::C

21. Which of the following compounds will give positive Tollen's test ?



Answer: A::B::C

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22. Silver mirror test with Tollen's reagent is given by

A.
$$Ph - C - H$$

 $|| O$
B. $Ph - N - OH$
 $|| H$
C. $Ph - CH_2 - C - CH_2 - OH$
 $|| O$
D. $H_3C - C \equiv CH$

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



23. Which of the following form stable hemiketal ?

$$A. Ph - C - Ph$$

$$B. HO - (CH_2)_3 - C - CH_3$$

$$C. HOH_2C - C - C - (CHOH)_3 - CH_2OH$$

$$D. HO - CH_2 - (CH_2)_4 - C - CH_3$$

Answer: B::C::D

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24. A new C-C bond formation is possible in

A. Aldol condensation

- B. Friedek -Crafts alkylation
- C. Clemmensen reduction
- D. Reimer -Tiemann reaction

Answer: A::B::D

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25. Which of the following reactions would give identical product ?



$$\begin{array}{c} \stackrel{O}{\mathsf{B.}} CH_3 - \stackrel{O}{\overset{||}{C}} - H \xrightarrow{CH_3MgBr} \stackrel{pcc}{\longrightarrow} \\ \stackrel{\Theta}{\overset{H}{}_{H/H_2O}} \stackrel{CH_3}{\longrightarrow} \\ \mathsf{C.} CH_3 - \stackrel{|}{\overset{O}{}_{C}} = CH - CH_3 \xrightarrow{O_sO_4} \stackrel{HIO_4}{\longrightarrow} \\ CI \end{array}$$

D.
$$CH_3 - \overset{CH-CH_3 \xrightarrow{alc, KOH}}{\longrightarrow} \overset{O_3}{\xrightarrow{zn-H_2O}}$$

Answer: A::B







D. 📄

Answer: A::B::D



28. When Salicyl aldehyde is treated with $(CH_3CO)_2O$ in presence of $CH_3COO^{\Theta}Na^{\oplus}, \Delta$:





C. 📄

D. This reaction is perkin condensation

Answer: B::C::D

Polar (due to electronegativeity difference between carbon and oxygen positive charge on carbonyl compound towards nucleophilic . this addition is catalysed by acid . REactivity of carbonyl compound towards nuclephilic addotion increase with increase in teh electron deficiency at carbonyl carbon Thus (-I.E) groups increase while (+I.E) groups decreases the reactivity of carbonyl compound .

which among the following is most reactive towards nuclephilic addition

A. FCH_2CHO

 $\mathsf{B.}\, CICH_2CHO$

 $\mathsf{C.} BrCH_2 CHO$

D. ICH_2CHO

Answer: A



Polar (due to electronegativeity difference between carbon and oxygen positive charge on carbonyl compound towards nucleophilic . this addition is catalysed by acid . REactivity of carbonyl compound towards nuclephilic addotion increase with increase in teh electron deficiency at carbonyl carbon Thus (-I.E) groups increase while (+I.E) groups decreases the reactivity of carbonyl compound .

Carbonyl compounds show nucleophilic addition with :

A. HCN

 $\mathsf{B.}\, NaHSO_3$

 $C.(CH_3OH)$

D. all of these

Answer: D

Polar (due to electronegativeity difference between carbon and oxygen positive charge on carbonyl compound towards nucleophilic . this addition is catalysed by acid . REactivity of carbonyl compound towards nuclephilic addotion increase with increase in teh electron deficiency at carbonyl carbon Thus (-I.E) groups increase while (+I.E) groups decreases the reactivity of carbonyl compound .

which among the following carbonyl compound is most polar ?

A. 📄

В. 📄

C. 📄

D. 📄

Answer: A

Polar (due to electronegativeity difference between carbon and oxygen



positive charge on carbonyl compound towards nucleophilic . this addition is catalysed by acid . REactivity of carbonyl compound towards nuclephilic addotion increase with increase in teh electron deficiency at carbonyl carbon Thus (-I.E) groups increase while (+I.E) groups decreases the reactivity of carbonyl compound .

select the least reactive carbonyl compound towards nuclephilic addition



Answer: A

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5. Aldehydes and ketons are susceptible to nuclephlic addition because carbonylgroup

Polar (due to electronegativeity difference between carbon and oxygen positive charge on carbonyl compound towards nucleophilic . this addition is catalysed by acid . REactivity of carbonyl compound towards nuclephilic addotion increase with increase in teh electron deficiency at carbonyl carbon Thus (-I.E) groups increase while (+I.E) groups decreases the reactivity of carbonyl compound . which among the following isomeric compound is most reactive towards nucleophilic addition

$$\begin{array}{c} & \stackrel{O}{\overset{O}{\underset{}}}\\ \text{A. } CH_3 - CH_2 - CH_2 - CH_2 - \overset{O}{\overset{}C} - H\\ \text{B. } CH_3 - CH_2 - CH_2 - \overset{O}{\overset{}C} - CH_3\\ \text{C. } CH_3 - CH_2 - \overset{O}{\overset{}C} - CH_2 - CH_3 \end{array}$$

D. all are equally reactive

Answer: A



6. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

$$R-CHO \xrightarrow{ ext{Tollens reagents}} R-COOh+Ag$$
 (silver mirror)

strong oxidatising agents like

$\mathit{KMnO_4} \, / \, \mathit{H^+} \, , \, \mathit{HNO_3} , \, \mathit{K_2Cr_2O_7} \, / \, \mathit{H^+} \,$ oxidise

Aldehydes as well as ketons . open chain ketons in oxidation give mixture of two carbonylic acids . oxidation as well as ketons of unsymmetrical ketons takes place according to popoff's rule .According to this rule α carbon whose bond breaks in oxidation always belongs to the alkyl group which has more number of carbons

Tollens reagent gives positive test with

A. RCHO

 $\mathsf{B}.\,R-C\equiv CH$

 $\mathsf{C}.\,HCOOH$

D. all of these

Answer: D



7. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

 $R-CHO \xrightarrow{ ext{Tollens reagents}} R-COOh+Ag$ (silver mirror)

strong oxidatising agents like

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the reagent which oxidise only aliphatic ketone is :

A. Tollen's reagent

B. Fehling's solution

C. Bayer reagent

D. $K_2 Cr_7 O_7 \,/\, H^{\,+}$

Answer: D

8. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

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Tollens reagent gives positive test with

A. $HOOC - (CH_2)_4 - COOH$

 $\mathsf{B.} CH_3 - (CH_2)_4 - COOH$

Answer: A

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9. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

 $R-CHO \xrightarrow{\mathrm{Tollens\ reagents}} R-COOh+Ag$ (silver mirror)

strong oxidatising agents like

 $KMnO_4/H^+, HNO_3, K_2Cr_2O_7/H^+$ oxidise

Aldehydes as well as ketons . open chain ketons in oxidation give mixture of two carbonylic acids . oxidation as well as ketons of unsymmetrical ketons takes place according to popoff's rule .According to this rule α carbon whose bond breaks in oxidation always belongs to the alkyl group which has more number of carbons

2 methyl cyclohexanone in oxidation wil give

A. $HOOC - (CH_2)_5 - COOH$

B. $HOOC(CH_2)_3CH(CH_3)COOH$

C. $HOOCCH_2CH(CH_3)(CH_2)_2$)COOH

 $\mathsf{D}.\,(CH_3)_2 CH(CH)_2 CH_2 COOH$

Answer: B



10. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

 $R-CHO \xrightarrow{ ext{Tollens reagents}} R-COOh+Ag$ (silver mirror)

strong oxidatising agents like

 $KMnO_4$ / H^+ , HNO_3 , $K_2Cr_2O_7$ / H^+ oxidise

Aldehydes as well as ketons . open chain ketons in oxidation give mixture of two carbonylic acids . oxidation as well as ketons of unsymmetrical ketons takes place according to popoff's rule . According to this rule α -carbon whose bond breaks in oxidation always belongs to the alkyl group which has more number of carbons

which of the following is most reactive towards oxidation ?

A. HCHO

 $\mathsf{B.}\,CH_3CHO$

C. CH_3COCH_3

D. CH_3CH_2CHO

Answer: A



11. Carbonyl compounds give different oxidation products with different reagents .Several oxidising agents can be used to oxidise carbonyy compounds .Ammonical silver nitate (tollens reagent) oxidises aliphatic as well as aromatic aldehydes .

 $R-CHO \xrightarrow{\mathrm{Tollens\ reagents}} R-COOh+Ag$ (silver mirror)

strong oxidatising agents like

$\mathit{KMnO_4} \, / \, \mathit{H^+} \, , \, \mathit{HNO_3} \, , \, \mathit{K_2Cr_2O_7} \, / \, \mathit{H^+} \,$ oxidise

Aldehydes as well as ketons . open chain ketons in oxidation give mixture of two carbonylic acids . oxidation as well as ketons of unsymmetrical ketons takes place according to popoff's rule .According to this rule α carbon whose bond breaks in oxidation always belongs to the alkyl group which has more number of carbons

Most acidic ketone among the followin is



Answer: D

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LEVEL-II LECTURE SHEET (EXERCISE-IV)

1.	Complete	the	following	reaction
A) Aromatic aldehyde		$\begin{array}{c} \text{COLUMN - II} \\ p) R(\text{COO})_2 \text{ Ca} \xrightarrow{\text{heat}} \end{array}$		
B) Aromatic ketone		q) $ArCH_3 + CrO_2Cl_2$		
C) $\alpha - \beta$ unsaturated aldehydes		r) Friedel - Craft aldehyde acylation		
D) A	cyclic ketone	s) R-CH ₂	-CHO— <u>OH</u> -→	

2. Complete the following reaction













1. How many functional isomers are possible for the formula C_4H_8O ?



2. Ethyl cyanide is reduced with $SnCl_2$ and HCI, compound (A) is formed, which on hydrolysis gives product (B). The no. of pure orbitals present in the compound(B)

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3. When acetaldehyde treated with conc. H_2SO_4 at room temperature

gives compound (A). No. of oxygen atoms present in compound (A)

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4. During the formation of metaldehyde how many molecules of acetaldehydes are involved.



5. How many products are formed during the reaction between acetaldehyde & propanaldehyde in the presence of dil. base





How many double bond equivalents are present in compound (B)

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7. Total aldol products obtained by the reaction of acetone and butanone

is

8. Examine the structural formulas given below and identify number of

compounds which are reduced by $NaBH_4$



9. Find out number of substrates those cannot undergo Cannizzaro's reaction



10. Examine the structrual formulas of compounds given below and identify number of compounds which show positive iodoform test



11. Of the following compounds how many would give positive test with

Tollen's reagent



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12. Of the following carbonyl compounds, how many would give aldol condensation reaction


13. Consider the following reactions and identify how many reactions can give carbonyl compounds as major product



14. Consider the following reactions and find out number of reaction which are claisen condensation in nature



15. Examine the structural formulas of following compounds and find out

number of compounds which show higher rate of nucleophilic addition



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16.
$$R - \overset{O}{\overset{||}{C}} - R \xrightarrow{?} R - CH_2 - R$$

identify numbers of reagent that can be used be used for above conversion .

$$egin{aligned} (a)Zn-Hg/HCI&(b)LIAIH_4&(c)CHCI_3+NaOH\ &egin{aligned} \Theta&CH_2-SH\ (d)N_2H_4/OH&(e)\mid&,H_2/Ni&(f)SeO_2\ &CH_2-SH \end{aligned}$$





2.

From the above reaction what should be the structure of A?



Answer: B

3. Which of the following compounds on hydrolysis with aqueous alkali give a product which does not give positive iodoform reaction but gives positive silver mirror test. The compound is



Answer: B



$$O - OH + CHC1_3 + NaOH \rightarrow O - O Na^{-1}$$

The

electrophile involved in the above reaction is

A. dichlorocarbene $\langle CCI_2 \rangle$ B. trichloromethyl anion $(\overrightarrow{C} CI_3)$ C. formyl cation $\begin{pmatrix} \oplus \\ CHO \end{pmatrix}$ D. dichloromethly cation $\begin{pmatrix} \oplus \\ CHCI_2 \end{pmatrix}$

Answer: A

4.

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5. Stephen reaction is the reaction involving:

A. Reduction of alkanoyl chloride with Pd/Ba SO_4

B. Reduction of alkyl isocyanide with sodium and alcohol

C. Reduction of alkyl cyanide with $SnCl_2$ and HCl and hydrolysing the

intermediate aldimine

D. Reduction of carbonyl compound with zinc amalgam and HCI

Answer: C

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6.
$$PhCHO + BrCH_2CO_2Et - rac{(1) zn}{2H_2O} (A) \xrightarrow[-H_2O]{}$$
 (B) Product of (B) of

the above reaction is:

A. $Ph - CH = CH - CH_3$

 $B. Ph - CH = CH - CO_2 Et$

 $\mathsf{C}. \, Ph - CH = CH - CH_2 - OH$

 $\mathsf{D}. Ph - CH = CH - CH_3$

Answer: B



Identify the products



с.



Answer: C



8. which one can be easily hydrated ?





Answer: C

D.

$C_6H_5CHO+CH_3COCH_3 \stackrel{OH^-}{\longrightarrow} C_6H_5CH(OH)CH_2 ightarrow C_6H_5CH=CHOCH_2$

this Reaction is known as

A. Aldol condensation

B. Cross aldol condensation

C. The Claisen-Schmidt reaction

D. None of these

Answer: C

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10. Which of the following on oxidation give acetic acid only

A. $CH_3CH_2CH_2CHO$

 $\mathsf{B.}\, CH_3COCH_2CH_3$

 $\mathsf{C.}\,CH_3COCH_2CH_2CH_3$



Answer: B



11. In the reaction sequence $: C_6H_5COCH_3 \xrightarrow{NH_2OH \, / \, H^+} (X) \xrightarrow{PCI_5 \, , \, \Delta} [Y]$

will be

A. $C_6H_5CONHCH_3$

 $\mathsf{B.}\, CH_3 CONHC_6H$

 $\mathsf{C.}\, C_6H_5CH_2CONH_2$

 $\mathsf{D.}\, C_6H_5CH_2CN$

Answer: A::B

- 12. Which statements is/are correct ?
 - A. The rates of acid catalysed chlorination, bromination of acetone are

same

B. The rate of deuteration in presence of heavy water the rate of acid

catalysed halogenation are same

- C. Base catalysed haloform reaction involves formation of carbanion
- D. Acid catalysed halogenation of CH_3COCH_3 involves enol

formation

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

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13. Which of the following structures represent an acetal











Answer: A::C



14. The product obtained in which of the following reactions is same

A.

$$H_{3}C \xrightarrow{0} CH_{2}CH(CH_{3})_{2} \xrightarrow{2a-H_{4}(HC)}{A}$$
B.

$$H_{3}C \xrightarrow{0} COCH(CH_{3})_{2} \xrightarrow{2a-H_{4}(HC)}{A}$$
C.

$$H_{4}C \xrightarrow{0} CH_{2}CH(CHO)CH_{1} \xrightarrow{2a-H_{4}(HC)}{A}$$
D.

Answer: A::B::C



15. Which of the following reagents is useful to distinguish between proponal and propanone

A. Tollen's reagent

B. Fehling's solution

C. Benedicts solution

D. I_2 & NaOH

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



16. Aldehydes undergo disproportionation reaction in presence of aqueous NaOH. Simultaneous oxidation and reduction of a compound is

scientifically called as disproportionation Aldehydes having no α hydrogen show this reaction called Cannizzaro's reaction. Few exceptions are also there to this generalisation The reaction may be represented as

$$C_6H_5 - CHOC_6H_5 \overset{C}{\underset{C_6H_5COONa+C_6H_5CH_2OH}{C}} HO \xrightarrow{NaOH}{\Delta}$$

intramolecular cannizzaro reacation is also possible



The aldehyde which show Cannizzaro reaction is :

A. HCHO

 $\mathsf{B.}\, C_6H_5CHO$

 $C. (CH_3)_3 CCHO$

D. All of these

Answer: D

17. Aldehydes undergo disproportionation reaction in presence of aqueous NaOH. Simultaneous oxidation and reduction of a compound is scientifically called as disproportionation Aldehydes having no α hydrogen show this reaction called Cannizzaro's reaction. Few exceptions are also there to this generalisation The reaction may be represented as

$$C_6H_5 - CHOC_6H_5 \xrightarrow{C} H_5CH_5CH_2OH HO \xrightarrow{NaOH} \Delta$$

intramolecular cannizzaro reacation is also possible



The aldehyde which show Cannizzaro reaction is :

A. $CH_3 - CH_2 - cHO$

B. $CH_3CH(CH_3)CHO$

 $\mathsf{C.}\,CH_3CH(CI)CHO$

D. $C_2H_5CH_2CHO$

Answer: B



18. Aldehydes undergo disproportionation reaction in presence of aqueous NaOH. Simultaneous oxidation and reduction of a compound is scientifically called as disproportionation Aldehydes having no α -hydrogen show this reaction called Cannizzaro's reaction. Few exceptions are also there to this generalisation The reaction may be represented as $C_{6}H_{5} - CHOC_{6}H_{5} \qquad CHO \qquad \xrightarrow{NaOH}$

intramolecular cannizzaro reacation is also possible



 $C_6H_5COONa + C_6H_5CH_2OH$



product

CH₂OH A. | CH₂OH CH₂OH B. | COONa COONa C. | COONa

D. all of these

Answer: B

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19. Aldehydes and ketones react with NH_2OH under slightly acidic condition, to give oximes. The oximes undergo rearrangement in acid medium togive amides. The migrating group does not lose its configuration as it is intramoleculon migration. The migrating group is always the one which is anti to the leaving group.











Answer: A

20. Aldehydes and ketones react with NH_2OH under slightly acidic condition, to give oximes. The oximes undergo rearrangement in acid medium togive amides. The migrating group does not lose its configuration as it is intramoleculon migration. The migrating group is always the one which is anti to the leaving group.

$$CH_3CHO + NH_2OH \overset{\Delta}{H}^+ o Q \xrightarrow{Br_2/KOH} R(CH_3NH_2)$$
 (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. $OHCNHCH_3$

Answer: A



21. Aldehydes and ketones react with NH_2OH under slightly acidic condition, to give oximes. The oximes undergo rearrangement in acid medium togive amides. The migrating group does not lose its configuration as it is intramoleculon migration. The migrating group is always the one which is anti to the leaving group.



which of the

following statements reagarding 'B' is correct

A. The product is known as caprolactum

B. It is used in the manufacture of nylon -6

C. It is a cyclic amide

D. All the above

Answer: D



24. Butanone & propanone were allowed to react is presence of OH,total

aldol products is

25. Among the following, the compounds which gives iodoform reaction

with

 $I_2\&NaOH$ is

 $CH_3CHO, CH_2CH_2OH, C_6H_5CHO, C_6H_5COCH_3, CICH_2CHO, ICH_2OH, C_6H_5COCH_3, CICH_2CHO, CH_2OH, C_6H_5CHO, C_6H_5COCH_3, CICH_2CHO, CH_2OH, C_6H_5CHO, C_6H_5COCH_3, CICH_2CHO, C_6H_5CHO, C_6H_5COCH_3, CICH_2CHO, C_6H_5CHO, C_6$

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26. The number of aldehydes with formula $C_5 H_{10} O$ is
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27. The number of ketone isomers containing benzene ring with formula

 $C_{9}H_{10}O$



28. The disubstituted aldehyde derivatives with formula C_9H_1O

29. Total aldol products of reaction between $CH_3CHO\&CH_3CH_2CHO$

is



1. $CH_3 - C \equiv CH \xrightarrow[Hg^+]{Dil \cdot H_2SO_4} A, A \xrightarrow[Hg^+]{CHCI_3} BA \xrightarrow[I_2NaOH]{} C$ respectively in

the above sequence is

A. CH_3CH_2CHO , $CH_3CH_2CH_2CHCI_2$, CHI_3

B. CH₃COCH₃, CI₃C. COCH₃, CHI₃

C. CH_3COCH_3 , $CI_3CIC(OH)$. $C(CH_3)_2$. CHI_3

D. CH_3CH_2CHO . CI_3C . $CH(OH)CH_2CH_3$, CHI_3

Answer: C

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2. Acetone reacts with 1, 3-propandiol in presence of H^+ to give





Answer: B





C.
CHO

$$CH_2CH_2NO_2$$

OH
 $CH_2CH_2NO_2$
OH
 $CH_2CH_2NO_2$
OH
 $CH_2CH_2NO_2$

D.

Answer: B

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4. Aceton forms a trimer on heating with conc. H_2SO_4 . The product is

A. 1,3,5 – Trimethyl benzene

B. 1, 2, 4-trimethyl benzene

C. 1, 2, 3 – Trimethyl benzene

D. 1,2,5,6 - tetra methyl benzene

Answer: A



allowed to react in presence strong solution of NaOH. the products are



Answer: A





6.

The

reaction is known as Bayer villiger oxidation. The product is







The

7.

structure of the product is









Answer: C





8.

A and B

respectively are





9. Proponal and benzaldehyde can be distinguished by using

A. 2, 4 - DNP

B. Tollen's agent

C. I_2 & NaOH

D. Fehling'ssolution

Answer: D

10. Acetaldehyde when heated with conc. H_2SO_4 forms a trimer whose

structure is The wrong statement about the above trimer is



- A. Each carbon atom is bonded to two oxygen atoms
- B. Each oxygen atom is bonded to two carbon atom
- C. All carbon atoms are sp^3 -hybridised
- D. On adding water decompose to generate acetaldehyde

Answer: A

11. The major product in the following reaction is











Answer: D





possible products are











D.

Answer: A::B::C
13. In which of the following reation, the product is a hydrocarbon



Answer: B::C



14. In which of the following reactions, the product is racemic mixture

A. $CH_3CHO \xrightarrow{DilNaOH}$

 $\mathsf{B.} CH_3COCH_3 \xrightarrow{\mathrm{dil}NaOH}$





Answer: A::C::D





possible products are







C.



Answer: D



16. Identify the correct reagent(s) to distinguish between pairs of compounds given

A. proponal & propanone can be distinguished by using $I_2\&NaOH$

B. Benzaldehyde and acetophenone $(C_6H_5COCH_3)$ can be

distinguished with Tollen's reagent



D. Formaldehyde and acetaldehyde can be distinguished by using

 $I_2\&NaOH$

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

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17. An alcohol (A) on dehydration gives (B) which on ozonolysis gives two products C & D (D) gives positive iodoform test and on heating with dilute alkali gives α . β -unsaturated carbonyl compound (E) which does

not gives positive iodoform test. (C) on oxidation gives a mono basic acid (F) Ag salt of (F) contains 59.6% Ag. Oxime of (D) contains 16.09% nitrogen.

the structure of (A) is

A. $CH_{3}(CH_{2})_{2}C(CH_{3})(OH)CH_{2}CH_{3}$

B. $CH_3CH_2CH(OH)CH(CH_3)C_2H_5$

 $\mathsf{C.}\,CH_3CH_2C(CH_3)(OH)CH_2CH_3$

 $\mathsf{D}.\,CH_3CH_2CH(OH)(CH_3)_2$

Answer: D



18. An alcohol (A) on dehydration gives (B) which on ozonolysis gives two products C & D (D) gives positive iodoform test and on heating with dilute alkali gives α . β -unsaturated carbonyl compound (E) which does not gives positive iodoform test. (C) on oxidation gives a mono basic acid (F) Ag salt of (F) contains 59.6% Ag. Oxime of (D) contains 16.09% nitrogen.

structure of D is

A. $CH_3CH_2COCH_3$

B. $(CH_3)_2 CO$

 $\mathsf{C.}\,CH_3CH_2CHO$

 $\mathsf{D}.\,(C_2H_5)_2CO$

Answer: B

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19. An alcohol (A) on dehydration gives (B) which on ozonolysis gives two products C & D (D) gives positive iodoform test and on heating with dilute alkali gives α . β -unsaturated carbonyl compound (E) which does not gives positive iodoform test. (C) on oxidation gives a mono basic acid (F) Ag salt of (F) contains 59.6% Ag. Oxime of (D) contains 16.09% nitrogen.

the structure of (E) is given reaction is

A. $(CH_3)_2 \mathbb{C}HCOCH_2CH_3$

B. $CH_3CH_2C(CH_3)CHCOCH_2CH_3$

 $\mathsf{C}. CH_3CH_2CH = CHCOCH_2CH_3$

 $\mathsf{D}.\,CH_3CH_2=C(CH_3)CHO$

Answer: A

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20. Compounds $A(C_9H_8O_3)$ on reduction with Zn-Hg&HCI gave a carboxylic acid $B(C_9H_{10}O_3)$. B on further oxidation gave bezoic acid. A on strong heating gave a ketone $C(C_8H_8O)$. C reacts with I_2 – , NaOH to give yellow solid along with a salt. The salt on treatment with acid gave benzoic acid. Study the paragraph carefully and answer the following questions give below

The structure of 'B' is



21. Compounds $A(C_9H_8O_3)$ on reduction with Zn-Hg&HCI gave a carboxylic acid $B(C_9H_{10}O_3)$. B on further oxidation gave bezoic acid. A on strong heating gave a ketone $C(C_8H_8O)$. C reacts with I_2 – , NaOH to give yellow solid along with a salt. The salt on treatment with acid gave benzoic acid. Study the paragraph carefully and answer the following

questions give below

The structure of 'A' is



Answer: A



22. Compounds $A(C_9H_8O_3)$ on reduction with Zn-Hg&HCI gave a carboxylic acid $B(C_9H_{10}O_3)$. B on further oxidation gave bezoic acid. A on strong heating gave a ketone $C(C_8H_8O)$. C reacts with I_2 – , NaOH to

give yellow solid along with a salt. The salt on treatment with acid gave benzoic acid. Study the paragraph carefully and answer the following questions give below

the structure of 'C' is



Answer: A

23.	Match	the	following	columns
COLUMN - I		COLUMN - II		
A) Carbocation		p) Aldol addition mechanism		
B) Carbonion		q) NaHSO3 mechanism addition to an aldehyde		
C) Tetrahedral		r) Pyrolysis mechanism of an aldehyde		
D) Free radial		s) Protonation on oxygen of aldehyde		



25. The number of a bonds in the product formed in acid catlysed reaction of acetaldehyde ----

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27. How many compounds given below are not reduced by catalytic hydrogenation?

 $CH_{3}COOC_{2}H_{5}, CH_{3}CN, CH_{3}COCI, CH, CH_{3}CONHCH_{3}, (CH_{3})_{2}C_{2}$

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28. Total number of ketones with molecular formula $C_5H_{10}O$ including

stereiosomers is



29. Number of aldehydes isomers of butanone is

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30. Total number of steriosomers possible for 2,3-dichlorobutanal is
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- 1. Which of the following is likely to highest melting point
 - A. Acetone
 - B. Butanone
 - C. 2-pentanone
 - D. 3-pentanone





Answer: A

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3. Hydration of alkynes catalysed by H_2SO_4 in presence of Hg^{+2} give carbonyl compounds. Which of the following is correct.

A. Acetylene gives acetaldehyde

B. Terminal alkynes (R-C \equiv CH) give aldehydes

C. Non-terminal alkynes give ketones

D. All the above

Answer: D



4. Which of the following is the structure of hemiacetal formed from 5-

hydroxypentanal



Answer: A



5. The percent of enol content will be highest in

A. CH_3CHO

B. CH_3COCH_3

$C. CH_3COCH_2COCH_3$



Answer: C



6. The starting compound which gives compound (A) by aldol reaction is



A. 2, 6, hexandione

- B. 2, 7 octandione
- C. 6 ketoheptandial
- D. 7 ketooctandial

Answer: B

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7. The species present in Tollen's reagent is

- A. $\left[Ag(NH_3)_4
 ight]^+$
- $\mathsf{B.}\left[Ag(NH_3)_2\right]^+$
- C. $\left[Ag(NH_3)_3\right]$
- D. $\left[Ag(NH_3)
 ight]^+$

Answer: B



which

reagent preferably used for this reaction ?

A. CH_3MgCI

 $\mathsf{B.}\,(CH_3)_2Cd$

 $C. CH_3CI$

D. None of these

Answer: B



structure of the final product I_2 is



Answer: C

9.

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10. An optically active compound A $(C_6H_{12}O)$ gives positive test with 2,4-

D NP, but negative test with Tollen's reagent. Compound A is



 $\mathsf{B}.\,CH_3-CO-CH(CH_3)_2$



```
D. CH_3CH_2CO(CH(CH_3)_2)
```

Answer: C

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the structure as the product is













D.

Answer: B



12. Which of the following method produce cyclopentanone as the major

product

cooHeating Ca+2 Α.

 $\mathsf{B}. \ HOOC - CH_2CH_2CH_2 - COOH \xrightarrow{MnO, 300^{\circ}}$

-OH <u>н', к₂се207</u> c

D. All the above

Answer: D





the following is not formal here ?

A. Methyl alcohol

B. Ethyl alcohol

C. Acetaldelyde

D. No reaction

Answer: C

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14.

C.

Product the possible products are





Answer: A::B



15. CH_3CH=CH- COCH_3 +CH_3 MgBr underset(2) H_2 O) overset(" ether ")

to the possible products are

A.
$$fCH_{3}CH=CH\overset{OH}{C}\left(CH_{3}
ight)_{2}$$

$$\mathsf{B.}\left(CH_{3}\right)_{2}CHCH_{2}COCH_{3}$$

 $\mathsf{C.}\left(CH_3\right)_2 CH - CH = CH - COCH_3$

D.
$$CH_3CH= egin{array}{c} & & O \ ert & ert \ \\ & ert \ \\ & CH_3 \end{array} = egin{array}{c} & O \ ert \ \\ & ert \ \\ & CH_3 \end{array}$$

Answer: A

16. $C_6H_5CHO+CH_2CH=CHCO \stackrel{_{Oh}-}{\longrightarrow}{}^A$ the product 'A' is

$$\begin{array}{l} \mathsf{A}.\, C_6H_5CH = \mathop{C}\limits_{CH_2-CH_3}^{|} - CHO \\ \\ \mathsf{B}.\, C_6H_5 - CH = CH - CH = CH - CHO \\ \\ \mathsf{C}.\, C_6H_5(CH = CH)_3CHO \\ \\ \\ \mathsf{D}.\, C_6H_5CH = \mathop{C}\limits_{|}_{CH_3}^{|} - CH_2CHO \\ \\ \end{array}$$

Answer: B



17.

possible products is / are



D. 💧

Answer: A::B

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the

18. Which of the following esters on reaction with excess Grigrand reagent give a tertiary alcohol, which on heating give an alkene which exhibits geometrical isomerism

A. $CH_3CH_2COOC_2H_5+CH_3MgBr$

 $\mathsf{B.}\,HCOOC_2H_5+CH_3CH_2MgBr$

 $\mathsf{C.}\,CH_3COOC_2H_5+CH_3CH_2MgBr$

D. $HCOOC_2H_5 + CH_3MgBr$

Answer: B::C

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19. Benzaldelhyde can be converted to styrene by the following reaction.

A. Perkins reaction

B. Benzoin condensation

C. Wittig reaction

D. Reformatsky reaction

Answer: C

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20. Compounds $A(C_{10}H_{10})$ decolourises Br, in CCI_4 Ozonolysis of A gave $B(C_{10}H_{10}, O_2)$. B reacts hydrazine and base followed by heating in ethylene glycol gave a hydrocarbon $C(C_{10}H_{14})$ C on oxidation gave a dicarboxylic acid which form anhydride easily.

the structure of compound 'A' is





D. Any of the above

Answer: A

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21. Compounds $A(C_{10}H_{10})$ decolourises Br, in CCI_4 Ozonolysis of A gave $B(C_{10}H_{10}, O_2)$. B reacts hydrazine and base followed by heating in ethylene glycol gave a hydrocarbon $C(C_{10}H_{14})$ C on oxidation gave a dicarboxylic acid which form anhydride easily.

the structure of compound 'A' is





D. Any of the above

Answer: A

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22. Compounds $A(C_{10}H_{10})$ decolourises Br, in CCI_4 Ozonolysis of A gave $B(C_{10}H_{10}, O_2)$. B reacts hydrazine and base followed by heating in ethylene glycol gave a hydrocarbon $C(C_{10}H_{14})$ C on oxidation gave a dicarboxylic acid which form anhydride easily.

Conversion of B to C is called

A. Wolff-Kishner reduction

B. Clem mensen's reduction

C. Rosenmund's reduction

D. Sabatier-Senderen's reduction

Answer: A

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23. Compounds $A(C_9H_{16})$ decolourises Br, in CCI_4 A reacts alkaline $KMnO_4$ to give a diol. A on ozonolysis gave $B(C_7H_{12}O)$ and acetaldehyde. B reacts in presence of sodium hydroxide to give two products $C(C_7H_{12}O_2)$ and sodium salt which on nentralisation gave D(C2H,20). Con oxidation also gave 'D'. On the basis of the reactions give above answer the following questions.

The structure of 'B' is likely to be





Answer: B

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24. Compounds $A(C_9H_{16})$ decolourises Br, in CCI_4 A reacts alkaline $KMnO_4$ to give a diol. A on ozonolysis gave $B(C_7H_{12}O)$ and acetaldehyde. B reacts in presence of sodium hydroxide to give two products $C(C_7H_{12}O_2)$ and sodium salt which on nentralisation gave D(C2H,20). Con oxidation also gave 'D'. On the basis of the reactions give above answer the following questions.

The structure of 'D' is likely to be





25. Compounds $A(C_{10}H_{10})$ decolourises Br, in CCI_4 Ozonolysis of A gave $B(C_{10}H_{10}, O_2)$. B reacts hydrazine and base followed by heating in ethylene glycol gave a hydrocarbon $C(C_{10}H_{14})$ C on oxidation gave a dicarboxylic acid which form anhydride easily.

Conversion of B to C is called



D.

Answer: D








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28. The number of cyclic ketones (four membered) possible for C_6H_8O

(excluding stereoisomers)



29. The disubstituted aldehyde derivatives with formula C_9H_1O

30. Butanone & propanone were allowed to react is presence of OH,total

aldol products is

31. A mixture $CH_3CH = NOH$ and $CH_3CH_2CH = NOH$ are allowed to undergo rearrangement in presence of acid. The total products possible is

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32. Total number of aldehydes which give iodoform with I_2 , NaOH is



33. The minimum number of carbon atoms to be present in an alkyne to

exhibit chain isomerism is



3. Write the strucuture and common name of 3 - phenylpropenal.



5. Give IUPA names of the possible functional isomers of formula C_3H_6O .



10. Give te equations for the reaction between benzoyl chloride and diethyl cadmium.

Watch Video Solution 11. To get phenylethanal, which compounds should be treated with chromyl chloride ? Give equation.

Watch Video Solution

12. When diphenyl acetylene is treated with dilutesulphuric acid in presence of mercuric sulphate at $60-70^{\circ}C$, which product is formed ? Give equation .



13. Under what circumstances may an aldehyde be prepared by oxidation

of primary, alcohol, with acid dichromate?

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14. Give names of the reagents to bring about the following transformations :

- (i) Pentan 1 ol to pentanal,
- (ii) Allyl alcohol to propenal,
- (iii) But -2- ene to ethanal and
- (iv) But 1 yne to butanone .

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15. Arrange the following in the order of increasing boiling points .

 $CH_3CH_2CH_2CHO(A), CH_3CH_2CH_2CH_2OH(B), CH_3CH_2OCH_2CH_3(A) = 0$

16. Compare the reactivity order of benzaldehyde, p -tolualdehyde and p -

nitrobenzaldehyde.

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17. Compound A, $C_5H_{10}O$, forms a phenyl hyrazone, given negative Tollen's and iodoform tests and is reduced to n - pentane. What is the compound , A ?

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18. An alkene, C_6H_{12} after ozonolysis yielded two products. One of these gave a positive iodoform reaction but a negative Tollen's test. The other iodoform reaction. What is the name and structure of that alkene ?

19. Two organic compounds (A) and (B) with molecular formula, C_3H_6O , react with HCN in different manner to produce (C) and (D) respectively. One subsequent hydrolysis of (C) and (D) give optically active substances (E) and (F). Both (E) and (F) on decarboxylation give I - propanol . What are (A), (B), (C), (D), (E) and (F) ?

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20. An organic compound having molecular formula C_5H_{10} O exists in two chain isomers, (A) and (B).Isomer (A) undergoes Cannizzaro reaction to give 2, 2- dimethyl propanoic acid 2,2- dimethyl propanol - 1. Compound (B) in the presecne of dilute alkali undergeos aldol condensation to form 3 - hydroxy -2- propyl heptanal. Give the structures of (A) and (B).

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21. Although aldehydes are easily oxidisable, propanal can conveniently be prepared by oxidation of propanol by acidified potassium dichromate.

Why?



23. Benzaldehyde is treated with acetaldehyde in presence of dilute alkali.

What happens ?

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24. Can $(CH_3)_3$ CCHO undergo Cannizzaro reaction ?







28. How the following transfrormations can be brought about ? Name

only the reagents .

- a) Cyclohexanol to cyclohexanone
- b) Allyl alcohol to propenal
- c) p Fluorotoluene of pfluorobenzaldehyde



- 29. Name the reagents used for the following conversions :
- i) Hexanol 1 to hexanal
- ii) ethanenitrile to ethanal
- (ii) ethanenitrile to ethanal
- iii) Butene 2 to ethanal .

30. Predict products in the following reactions and write their structures



c) $(C_6H_5CH_2)_2Cd+2CH_3COCl$

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31. An organic compound (X) with molecular formula C_8H_8O forms an orange red precipitate with 2, 4 - DNP regent and resonds iodoform test. It neither decolourises Baeyer's reagent or bromine water and also it neither reduces Tollen's reagent or Fehling's reagent. Compound (X) gives a carboxylic acid (Y) with molecular formula $C_7H_6O_2$ on drastic oxidation with chromic acid. Give the equations.



33. Write the strucuture and common name of 3 - phenylpropenal.

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34. Give the structure and IUPAC name of vanillin.





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36. Give IUPA names of the possible functional isomers of formula C_3H_6O



37. Write the structure formulae and IUPAC names for all the isomeric aldehydes and ketones of molecular formula, $C_5H_{10}O$.



41. Which of the two methods (a) Clemmensen's and (b) Wolff-Kirhner, are

best	suitable	for	conversion	of
$CH_2 = CH -$	CH_2CHO into	$CH_2 = CH - 0$	CH_2CH_3	

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42. To get phenylethanal , which compounds should be treated with chromyl chloride ? Give equation.

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43. What products are obtained dry distillation of a mixture of $(CH_3COO)_2$ and $(C_3CH_2COO)_2Ca$?

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44. What combination of Grignand reagent and alkyl nitirle is useful to

prepare butanone



45. Under what circumstances may an aldehyde be prepared by oxidation of primary , alcohol, with acid dichromate ?

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46. Give names of the reagents to bring about the following transformations:

(i) Pentan-1-ol to pentanal, (ii) Ethannitrile to ethanal, (iii) Allyl alcohol to

propenal, (iv) But -2-ene to ethanal and (v) But-1-yne to butanone

47. Arrange the following in the order of increasing boiling points.

 $CH_3CH_2CHO(A), CH_3CH_2CH_2CH_2OH(B),$

 $CH_3CH_2OCH_2CH_3(C), CH_3CH_2CH_2CH_3(D).$



48. Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions.

Benzaldehyde, p-Toualdehyde, p-Nitrobenzaldehyde, Acetophenone.



49. Compound A, $C_5H_{10}O$, forms a phenyl hyrazone, given negative Tollen's and iodoform tests and is reduced to n - pentane. What is the compound , A ?



50. An organic compound (A) with molecular formula C_8H_8O forms an orange-red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with iodine in the presence of sodium hydroxide. It neither reduces Tollens' or Fehlings' reagent, nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formula $C_7H_6O_2$. Identify the compounds (A) and (B) and explain the reactions involved.



51. An alkene , C_6H_{12} after ozonolysis yielded two products. One of these gave a positive iodoform reaction but a negative Tollen's test. The other iodoform reaction. What is the name and structure of that alkene ?

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52. Two organic compounds (A) and (B) with molecular formula, C_3H_6O , react with HCN in different manner to produce (C) and (D) respectively.

One subsequent hydrolysis of (C) and (D) give optically active substances (E) and (F). Both (E) and (F) on decarboxylation give I - propanol . What are (A), (B) , (C) , (D) , (E) and (F) ?

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53. Although aldehydes are easily oxidisable, propanal can conveniently be prepared by oxidation of propanol by acidified potassium dichromate. Why ?

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54. Aldehydes do not form stable hydrates, yet chloral hydrate is readily

formed , why ?



55. How is acetaldehyde distinguished from acetone?



to give 2, 2- dimethyl propanoic acid 2,2- dimethyl propanol - 1. Compound (B) in the presecne of dilute alkali undergeos aldol condensation to form

3 - hydroxy -2- propyl heptanal. Give the structures of (A) and (B).

59. Benzaldehyde is treated with acetaldehyde in presence of dilute alkali.

What happens?

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60. How do you distingush between benzaldehyde and acetophenone?

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61. Given the structures of the compounds formed when the reaction takes place between benzaldehyde and formaldehyde . What is the name of the reaction ?

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62. $C_6H_6 + C_2H_5Cl \xrightarrow{AlCl_3} X \xrightarrow[(CH_3COO)_2Mn]{} Y \xrightarrow{H_2Cr_2O_7} Z$

Discuss the sequence and name the compounds X, Y and Z









67.
$$C_6H_6 + C_2H_5Cl \xrightarrow{AlCl_3} X \xrightarrow{\text{Oxygen}} (CH_3COO)_2M_n Y \xrightarrow{H_2Cr_2O_7} Z$$

Discuss the sequence and name the compounds X, Y and Z

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Subjective Exercise - 1 (Short answer questions)

1. What are aldehydes and ketones ? Give the structural differences .

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2. Mention the types of isomerism exhibited by carbonyl compound .



5. Write the names of the isomeric ketones possible for 2, 2 - dimethyl propanal.

6. Give the IUPAC names of the following compounds

-

- a) $(CH_3)_2C = CHCHO$
- b) $C_6H_5CH_2CH_2CHO$





Subjective Exercise - 1 (Very short answer questions)

1. Write the IUPAC names for the following

$$\stackrel{Cl}{\stackrel{}_{\mid}}_{CH_2} - CHO, \stackrel{Cl}{CH_2} - \stackrel{O}{C} - CH_3$$

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2. Write IUPAC name of chloral

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- 3. Write the structures of
- a) 4- oxohexanal
- b) Di-sec. butyl ketone
- c) 2 Hydroxycyclopentane carbaldehyde

4. Write the IUPAC names for the following

$$\stackrel{Cl}{\stackrel{}_{\mid}}{\stackrel{}_{\mid}}{CH_2-CHO}, \stackrel{Cl}{CH_2-CH}{\stackrel{}_{\mid}{O}}{\stackrel{}_{\mid}{\cap}}{-CH_3$$

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5. Write IUPAC name of chloral

Watch Video Solution

- 6. Write the structures of
- a) 4- oxohexanal
- b) Di-sec. butyl ketone
- c) 2 Hydroxycyclopentane carbaldehyde

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Subjective Exercise - 2 (Long answer questions)

1. Write any three methods of preparation of acetaldehyde. Give two uses.

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2. How does acetaldehydes react with

(i) HCN,

(ii) $H_2 NHO$

- (iii) $C_2H_5MgBr.~H_2O$ and
- (iv) $H_2 NNHCONH_2$?

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3. Write three preparations , three properties and three uses of acetone.



4. How acetone is obtained from

(i) $CH_3CHOHCH_3$

(ii) $CH_3 - C \equiv CH$ and

(iii) CH_3COOH .

b) How does acetone react with

(i) $NaHSO_3$

(ii) $I_2 + NaOH$ and

(iii) $C_6H_3(NO_2)_2NHNH_2$

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5. Explain the similarity in chemical properties of acetaldehyde and acetone. Write any three tests that are useful to differentiate acetaldehyde from acetone.

6. Discuss in detail the reaction of acetaldehyde and acetone with

- (i) NH_2OH (ii) $H_2\mathrm{NNH}_2$
- (iii) $C_6H_5\mathrm{NHNH}_2$
- (iv) 2, 4, dinitrophenyl hydrazine and
- (v) Semicarbazide .

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Subjective Exercise - 2 (Short answer questions)

1. Give equations for the reation of acetaldehyde with : (i) NH_3 and (ii)

 PCl_5 .



2. Discuss aldol condensation.



3. Write short notes on Clemmensen reduction and Wolff - kishner reduction.

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4. Write any two physical properties of acetaldehyde and two of acetone.

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5. Discuss the action of Tollen's reagent and Fehling's solution on acetaldehyde and acetone.



6. What are (i) Tollen's reagent , (ii) Fehling's solution (iii) Benedict

solution and (iv) Schiff's bases ?



 $\begin{array}{l} \text{11. (a) } CH_3CH_2OH \xrightarrow[300\ ^\circ C]{} A+B\\ CH_3CH_2OH \xrightarrow[air]{} Cu.300\ ^\circ C]{} A+C. \end{array}$

What are A, B and C?



12. How does acetone react with

a) Zn -Hg , conc . HCl and

b) NH_2NH_2 , alc. KOH

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13. Give equations for the reation of acetaldehyde with : (i) NH_3 and (ii)

 PCl_5 .

14. Discuss al	dol condensation.
----------------	-------------------



16. Write any two physical properties of acetaldehyde and two of acetone.

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17. Discuss the action of Tollen's reagent and Fehling's solution on acetaldehyde and acetone.
18. What are (i) Tollen's reagent , (ii) Fehling's solution (iii) Benedict

solution and (iv) Schiff's bases ?



22. Write any two tests to identify acetone by mention any two uses of it.



23. (a)
$$CH_3CH_2OH \xrightarrow[300]{Cu} A + B$$

 $CH_3CH_2OH \xrightarrow[air]{Cu.300}{C} A + C.$

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24. How does acetone react with

- a) Zn -Hg , conc . HCl and
- b) NH_2NH_2 , alc. KOH

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Subjective Exercise - 2 (Very short answer questions)

1. Complete the reactions :

(i) $CH_2 = CH_2 + PdCl_2 + H_2O \xrightarrow[H^+]{CuCl_2}$ (ii) $CH_3 - CH = CH_2 + PdCl_2 + H_2O \xrightarrow[H^+]{CuCl_2}$



2. How ethyne and propyne are converted to acetaldehyde and acetone

respectively?

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3. Give equations for the formation of acetaldehyde and acetone form

ethylidene chloride and isopropylidene chloride.



4. Give equation for the conversion of acetyl chloride to acetaldehyde and

name that reaction .



7. Write the common and IUPAC names of

(i) $CH_3 - CH = CH - CHO$



treated with separately with conc. H_2SO_4 ?

11. Write a not on iodoform reaction.



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13. Mention the products formed when acetaldehyde reacts with hydrogen in presecne of nickel and acetone reacts with sodium in ethyl alcohol.

14. Towards nucelphilic addition reactions, arrange the following compounds in increasing order of their reactivity.

a) Butanone, propanone, propanal, ethanal

b) Benzaldehyde , Acetophenone , p - tolual dehyde, p -

Nitrobenzaldehyde.

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15. Complete the reactions :

(i)
$$CH_2 = CH_2 + PdCl_2 + H_2O \xrightarrow[H^+]{CuCl_2}$$

(ii) $CH_3 - CH = CH_2 + PdCl_2 + H_2O \xrightarrow[H^+]{CuCl_2}$

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16. How ethyne and propyne are converted to acetaldehyde and acetone

respectively?

17. Give equations for the formation of acetaldehyde and acetone form

ethylidene chloride and isopropylidene chloride.

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18. Give equation for the conversion of acetyl chloride to acetaldehyde and name that reaction .

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19. Write the reactions between ammonia with

(i) CH_3CHO and (ii) CH_3COCH_3 .



20. How do acetaldehyde and acetone react with Grignard reagent ?

21. Write the common and IUPAC names of

(i) $CH_3 - CH = CH - CHO$

(ii) $CH_3 - CH(OH) - CH_2 - CHO$

(iii) $(CH_3)_2 C(OH) CH_2 CH_3$.

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22. Write the common and IUPAC names of products obtained when acetone is treated with dry HCI.

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23. Give the structure and IUPAC name of product . Obtained when acetone is treated with $Ba(OH)_2$



hydrogen in presecne of nickel and acetone reacts with sodium in ethyl

alcohol.



28. Towards nucelphilic addition reactions, arrange the following compounds in increasing order of their reactivity.

a) Butanone, propanone, propanal, ethanal

b) Benzaldehyde , Acetophenone , p - tolual dehyde, p -Nitrobenzaldehyde.

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Subjective Exercise - 3 (short answer questions)

- 1. How does cyclohexanecarbaldehyde react with the following reagents ?
- a) Tollen's reagent
- b) C_6H_5MgBr and then H_3O^+
- c) Excess ethanol and acid

2. Among the following compounds, some undergo aldol condensation , some undergo Cannizzaro reaction and the remaining undergo neither aldol condensation nor Cannizzaro reaction . Differentiate them and write the structures of the products of aldol condensation and Cannizzaro reaction.

- i) Benzaldehyde ii) Cyclohexanone
- iii) Methanal iv) Benzophenone
- v) 2- Methylpentanal vi) Butan 1- ol
- vii) 2,2 Dimethylbutanal
- viii) Phenyl acetaldehyde
- iv) 1 Phenylpropanone

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3. Give plausible explanation for each of the following:

(i) Cyclohexanone forms cyanohydrin in good yield but 2,2,6trimethylcyclohexanone does not.

(ii) There are two $-NH_2$ groups in semicarbazide. However, only one is

involved in the formation of semicarbazones.

(iii) During the preparation of esters from a carboxylic acid and an alcohol

in the presence of an acid catalyst, the water or the ester should be removed as soon as it is formed.



4. How the following pairs of compounds can be distinguished by simple

chemical tests ?

- (a) Phenol and benzoic acid
- (b) Ethanal and propanal
- (c) Pentan-2-one and pentan-3-one
- (d) Propanal and propanone
- (e) Acetophenone and benzophenone
- (f) Benzoic acid and ethylbenzoate
- (g) Acetophenone and benzaldehyde.



- 1. How does cyclohexanecarbaldehyde react with the following reagents ?
- a) Tollen's reagent
- b) C_6H_5MgBr and then H_3O^+
- c) Excess ethanol and acid

2. Wxplain Gattermann-Koch reaction for the formation of benzaldehyde

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3. How acetophenone is formed by Friedel-Craft's reaction

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4. Discuss on the Cannizzaro's reaction













12. Strutures of products , Starting materials or reagents



13. Strutures of products , Starting materials or reagents



15. Strutures of products , Starting materials or reagents













36. Ethanal to but-2-enal



37. Acetaldehyde to but-2-enoic acid

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38. Ethanal to butane-1,3-diol



39. Benzoic acid to benzaldehyde

40. Propanone to propene Watch Video Solution 41. Benzaldehyde to benzophenone Watch Video Solution 42. How are the Ethanol to 3-hydroxybutanal conversions carried in not more than two steps ? Watch Video Solution

43. Benzaldehyde to 3-phenylpropan-1-ol



- $\mathsf{C.}\, C_n H_{2n} O$
- D. $C_n H_{2n+2}O$

Answer: C

2. The hybridisation of carbon in the carbonyl group is

A. sp^{3} B. sp^{2} C. sp

D. sp^3d

Answer: B

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3. The IUPAC name of methyl isopropyl ketone

A. 3-methyl-2-pentanone

B. 3-methyl butan-2-one

C. 2-pentanone

D. 2-methyl pentanone

Answer: B



5. Dehydrogenation of isopropyl alcohol gives

A. Methanol

B. Methanal

C. Ethanal

D. Propanone

Answer: D

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6. $C_2H_5OH \xrightarrow[300^\circ C]{Cu} CH_3CHO$ The above process is

A. Reduction

B. Oxidation

C. Dehydrogenation

D. Both 2 and 3

Answer: D

7. Ketones cannot be prepared in one step from

A. Alcohols

B. Alkenes

C. Alkynes

D. Esters

Answer: D

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8. The first oxidation product of isopropyl alcohol is

A. ethanal

B. Propanone

C. ethanoic acid

D. methyl isopropyl ketone

Answer: B



C. 3-methyl pentanal

D. 2-methyl butanal

Answer: C

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10. Ketones cannot be prepared by

A. Rosenmud's reaction

B. The hydrolysis of terminal gen dihalides

C. The oxidation of primary alcohols

D. All of these

Answer: D

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11. Vinyl alcohol and ethanal are

A. Metamers

B. Tautomers

C. Position isomers

D. Chain isomers

Answer: B

12. Explain the reaction between carbonyl compounds with Grignard reagent

A. ROH

B. RCOCI

C. RCN

D. CO

Answer: C

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13. Which of the following test is positive to acetone

A. Tollen's test

B. Benedict's test

C. lodoform test

D. Fehling's test

Answer: C Watch Video Solution 14. Ozonolysis of the following gives only acetaldehyde A. 2 - butene B. 1- Butene C. Isobutylene D. Ethylene Answer: A Watch Video Solution

Objective exercise - 1 (Properties)

1. Aldehydes and ketones give addition reactions with
A. HCN

B. $NaHSO_3$

 $\mathsf{C.}\,CH_3MgX$

D. All of these

Answer: D

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2. The formation of cyanohydrin with acetone is an example for

A. nucleophilic addition

B. nucleophilic Substitution

C. electrophilic addition

D. electrophilic Substitution

Answer: A

3. Acetone adds up the following without the elimination of water molecule

A. $NH_2 - OH$

B. 2,4 - DNP

 $\mathsf{C}.\,H_2N-NH_2$

D. HCN

Answer: D

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4. Molecular formula of acetone semicarbazone

C.
$$CH_3 - C = N - NH - CO - NH_2$$

 $|_H$
D. $CH_3 C = N - NH - C_6H_3(NO_2)_2$ $|_{CH_3}$

Answer: B

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5. Which of the following gives oximes with acetaldehyde?

A. H_2 NNH $_2$

B. 2,4 - DNP

 $\mathsf{C}.\,H_2NOH$

D. H_2 NNH $CONH_2$

Answer: C

6. The following is more reactive towards nucleophilic addition reactions

A. CH_3COCH_3

B. HCHO

 $\mathsf{C}.\,CH_3CHO$

 $\mathsf{D.}\, C_2 H_5 HO$

Answer: B

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7. The following does not undergo aldol condensation in the presence of

alkali

A. CH_3CHO

 $\mathsf{B.}\, CH_3COCH_3$

 $\mathsf{C.}\,CH_3CH_2CHO$

D. CCl_3CHO

Answer: D



8. Fehling's solution is

A. Alkaline $CuSO_4^+$ Rochelle salt (Sod. pot, tartrate)

B. Alkaline $CuSO_4$ complexed with citrate ions

C. Ammoniacal $AgNO_3$ solution

D. Magenta solutions in H_2SO_3

Answer: A



9. Aldehydes can be oxidised by

A. Benedict's solutions

B. Tollen's reagent

C. Fehling's solution

D. All of these

Answer: D

Watch Video Solution

10. An example of hydrocarbon

A. Phorone

B. Mesitylene

C. Metaldehyde

D. Chloretone

Answer: B

11. Acetaldehyde and acetone cannot be distinguished by

A. Tollen's test

B. Benedict's test

C. lodoform test

D. Schiff's test

Answer: C

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12. IUPAC name of Isobutyraldehyde is

A. Butanal

B. Methyl propanal

C. Ethyl ethanal

D. Methyl butanal

Answer: B Watch Video Solution 13. The reagent with which ethanol is oxidised to ethanal is A. Tollen's reagent B. Nitrobenzene C. PCC D. Chromic acid Answer: C Watch Video Solution 14. Which of the following reagents can form a hydrazone with alkanone?

A. NH_2OH

B. $PhNHNH_2$

 $\mathsf{C.}\, NH_2 NHCONH_2$

D. HCN

Answer: B

Watch Video Solution

15. Ethanol and ethanal are separated from their mixture using the reagent

A. HCN

 $\mathsf{B.}\, NaHSO_3$

 $\mathsf{C.}\, C_6H_5NHNH_2$

D. All

Answer: B

16. The reagent used in the Wolff-Kishner reduction is

A. Zu - Hg and conc HCl

B. Anhydrous $ZnCI_2$ and cone HCI

C. Hydrazine , glycerol and alkali

D. Zn and CH_3COOH

Answer: C

17. Isopropyl alcohol
$$\xrightarrow{H^+ / K_2 Cr_2 O_3}$$
 final product
A. Propene
B. Propanol
C. Ethanal
D. Ethanoic acid

Answer: D

Watch Video Solution

18. Which one of the following reagents reacts with both acetaldehyde and acetone?

A. Fehling's solution

B. Grignard reagent

C. Schiff's reagent

D. Tollen's reagent

Answer: B

Watch Video Solution

19. The interaction of acetone with methyl magnesium chloride followed

by hydrolysis

A. Isobutyl alcohol

- B. Tertiary butyl alcohol
- C. n butyl alcohol
- D. Sec-butyl alcohol

Answer: B

Watch Video Solution

20. Acetone and Acetaldehyde can be distinguished using

A. Grignard reagent

B. $NaHSO_3$

- C. Ammoniacal $AgHO_3$
- D. PCI_5

Answer: C

21. Haloform reaction is not given by

A. CH_3COCH_3

B. $CH_3COC_2H_5$

 $\mathsf{C.}\, C_6H_5COC_2H_5$

D. $CH_3CHOHCH_3$

Answer: C

Watch Video Solution

22. Which of the following does not respond to iodoform test

A. Ethanol

B. Methanol

C. Acetaldehyde

D. Acetone

Answer: B



23. Acetaldehyde and acetone can be identified by

A. Schiff's test

B. Tollen's reagent

C. Lucas test

D. 2,4 - DNP

Answer: D



24. Which of the following ions will not undergo disproportionation?

A. HCHO

B. CCl_3CHO

 $C. CH_3 CHO$

 $\mathsf{D.}\, C_6H_5CHO$

Answer: C

Watch Video Solution

25. Acetaldehyde cannot give

A. lodoform test

B. Lucas test

C. Benedict's test

D. Tollen's test

Answer: B

26. C_2H_5CHO and CH_3COCH_3 can be distinguished from one another by testing with

A. Phenyl hydrazine

B. 2,4- Dinitrophenyl hydrazine

C. Fehling solutions

D. Sodium bisulphite

Answer: C

Watch Video Solution

27. An alkaline solution of and citrate ions is called

A. Silver nitrate , Fehling's solution

B. Cupric Sulphate , Schiff's reagents

C. Silver chloride , Tollen's reagent

D. Cupric Sulphate , Benedict's solutions

Answer: D



28. The product obtained when acetaldehyde is treated with dilute NaOH

is

A. CH_3CH_2OH

 $\mathsf{B.}\, CH_3 COOH$

 $\begin{array}{c}\mathsf{C}.\,CH_3-CHCH_2CHO\\|\\OH\end{array}$

D. $CH_3 - CH_3$

Answer: C

29. When acetaldehyde is heated with Fehling solution, a red precipitate

is formed. Which of the following is that ?

A. Cu_2O

B. Cu

C. CuO

D. $CuSO_4$

Answer: A

Watch Video Solution

30. What reagent is used in the Rosenmund reduction ?

A. $H_2 \mid Pd - BaSo_4$

B. $LiAlH_4$

C. NH_2NH_2/KOH / Ethylene Glycol

D. Zn - Hg | HCl

Answer: A

Watch Video Solution

31. An organic compound 'X' on treatment with pyridium dichromate in dichloromethane gives compound 'Y'. Compound 'Y' reacts with I_2 and alkali to form triiodomethane the compound 'X' is

A. C_2H_5OH

B. CH_3CHO

C. CH_3COCH_3

D. CH_3COOH

Answer: A

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32. Which one of the following reactions is called Rosenmund's reaction ?

- A. Aldehydes are reduced to alcohols
- B. Acids are converted to acid chlorides
- C. Alcohols are reduced to hydrocarbons
- D. Acid chlorides are reduced to aldehydes

Answer: D

Watch Video Solution

33. 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

34. In which of the following reactions, the final product is 2-methyl-2-propanol ?

 $\begin{array}{l} \mathsf{A.}\ CH_{3}CHO \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{B.}\ CH_{3}CHO \xrightarrow{(i)\ C_{2}H_{5}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{C.}\ CH_{3}CHO \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{C.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{C.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \end{array}$

Answer: C

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Objective exercise - 1 (Assertion and reason type)

1. (A) : Acetaldehyde participates in aldol condensation reaction .

(R) : Acetaldehyde contains α hydrogen atom.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A

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2. (A) Acetone gets oxidised by strong oxidising agents like Ag^+, Cu^{+2} , etc.

(R) Oxidation of acetone involved carbon carbon bond cleavage.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: D



3. (A) : Acetaldehyde reduces Fehling's solution but benzaldehyde dose not.

(R) : Acetaldehyde is a stronger reducing agent then benzaldehyde .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A



4. (A) : Acetaldehyde undergoes the aldol condensation with dil. NaOH.

(R) : Acetaldehyde does not contain α -hydrogen

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: C

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5. (A) : Ketones have higher boiling point than aldehydes.

(R) : Ketones are more polar than aldehydes.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A



6. (A) : Among the carbonyl compounds , formaldehyde is the most reactive towards addition.

(R) : Smaller the alkyl group bonded to carbonyl group , more is the reactivity .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A

7. (A) : Grignard synthesis is always carried out in ethereal solution.

(R) H_2O is polar solvent .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: B

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8. (A) : Tolene on chlorination, followed by hydrolysis gives benzaldehyde

(R): Benzal chloride is formed by chlorination of benzene.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A



9. (A) : Cannizzaro reaction is a disproportionation reaction.

(R) : Cannizzaro reaction is performed using acid .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: C

10. (A) Fridel-Crafts acylation gives an aromatic ketone from benzene(R) : Acylation reaction is a uncleophilic substitution reaction with respect to benzene .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: D

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11. (A) : CH_3CHO forms aldol in presence of NaOH .

(R) : Allylic hydrogen is involved in the formation of $CH_3CH = CHCHO$

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: B

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12. (A) : Acetaldehyde forms hemiacetal with CH_3OH in the presence of dry HCI.

(R): Hemiacetal contains both alcohol and alkoxy group.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: B



13. (A) : Acetaldehyde reduces Fehling's solution but benzaldehyde dose not.

(R) : Acetaldehyde is a stronger reducing agent then benzaldehyde .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A

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14. (A) : P-Methoxy benzaldehyde is less reactive than benzaldehyde towers cyanohydrin formation .

(R) : +R - effect of the methoxy group increases the electron deficiency of the carbonyl carbon .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: C

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15. (A) : Acetaldehyde reacts with HCN followed by acid catalysed hydrolysis gives optically active compound, lactic acid .

(R) : In lactic acid molecule carbon is surrounded by four different groups and it is chiral molecule.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A

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16. (A) : To prepare aldehydes from primary alcohols , acidified $KMnO_4$ or $K_2Cr_2O_7$ is not used.

(R) : Strong oxidising agents like acidified $KMnO_4$ or $K_2Cr_2O_7$ oxidise aldehydes to carboxylic acids .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A



17. (A) : Acetone gives yellow precipitate with iodine and alkali

(R) : Acetone contains a methyl ketonic group .

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: A

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18. (A) : Acetaldehyde and acetone can be distinguished by using 2,4 DNP.(R) : Acetaldehyde and acetone are both examples of carbonyl compounds.

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: C

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19. (A) : Propionaldehyde undergoes aldol condensation .

(R) : Propionaldehyde contains five α hydrogen atoms

A. Both A & R are true, R is the correct explanation of A

B. Both A & R are true, R is not correct explanation of A

C. A is true, R is false

D. A is false, R is true

Answer: C



- 1. 2-pentanone and 3-pentanone are predominantly
 - A. Positional isomers
 - **B.** Functional isomers
 - C. Metamers
 - D. Ring chain isomers

Answer: C

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2. The IUPAC name of α -methyl valerladehyde is

A. 2-methyl pentanal

B. 3-methyl pentanal

C. 2-methyl butanal

D. 2-methyl butanal

Answer: A

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3. IUPAC name of α, α dichloro diethly ketone is

A. 2,4 - dichloro - 3- pentanone

B. 1,4 - dichloro - 2 - pentanone

C. 1,4 - dichloro - 2- pentanone

D. 2,5 - dichloro - 3- pentanone

Answer: B
4. Which one of the following undergoes aldol condensation and gives iodoform test

A. Acetaldehyde

B. Ethyl alcohol

C. Acetic acid

D. Formaldehyde

Answer: A

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5. 2, 2-dichloro propane treated with aq. KOH gives an unstable product. It

is

A. CH_3COCH_3

 $\mathsf{B.}\, CH_3 CH(OH) CH_3$

 $\mathsf{C.}\,CH_3C(OH)_2CH_3$

$\mathsf{D.}\, CH_3 CH(OH) CH_2 CHO$

Answer: C



7. Consider the following statements A) On reaction with Grignard reagent followed by hydrolysis acetone gives tertiary alcohol B) Mesitylene is a polymer of acetone C) Chloroform gives chloretone on reaction with acetone D) Acetone ammonia is an addition product of acetone with NH_3

A. All are correct

B. A is correct

C. A,B and C are correct

D. A and D are correct

Answer: C

$$egin{aligned} \mathrm{LIST} &-1 & \mathrm{LIST} &-2 \ (I)CH_3CHO & o \mathrm{Aldol} & (A)LiAlH_4 \ (II)CH_3COOH & o CH_3CH_2OH & (B)Zn-Hg \ (III)CH_3COCH_3 & o CH_3CH_2CH_3 & (C)NaOCl \ (IV)CH_3CHO & o CHCl_3 & (D)NaOH \ (E)KMnO_4,H^+ \end{aligned}$$

The correct match is

A.	I	II	III	IV
	E	B	A	C
B.	Ι	II	III	IV
	D	A	B	C
C.	Ι	II	III	IV
	B	E	A	D
D.	Ι	II	III	IV
	D	B	E	D

Answer: B

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9. Which of the following can be detected by silver mirror test

A. CH_3COCH_3

B. CH_3COOH

 $\operatorname{C.} C_2 H_6$

D. CH_3CHO

Answer: D

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10. When Acetaldehyde is treated with $LiAlH_4$ What is the product formed

A. CH_3COOH

 $\mathsf{B}.\,CH_3-CH_2-OH$

 $\mathsf{C.}\,CH_3-OH$

 $\mathsf{D}.\,HCOOH$

Answer: B

11. Match the following

List - I $(A)CH_{3}COCH_{3} \xrightarrow{Zn-Hg} (1)CH_{3}CH_{2}OH$ $(B)CH_{3}CHO \xrightarrow{H_{2}.Ni} (2)CH_{3}CHO$ $(C)CH_{3} - CH = CH_{2} \xrightarrow{H_{2}.Ni} (3)CH_{3}COCH_{3}$ $(4)CH_{3}CH_{2}CH_{3}$ $(5)CH_{3}CH_{3}$

The correct match is

 $\begin{array}{ccccccc} A & A & B & C \\ 5 & 1 & 3 \\ B & A & B & C \\ 4 & 1 & 4 \\ C & A & B & C \\ 5 & 1 & 5 \\ D & A & B & C \\ 5 & 3 & 4 \end{array}$

Answer: B

12. During reduction of aldehyde with $\frac{H_2N - NH_2}{OH/glycol}$ the first interinediate compound formed as

A. RCN

B. $RCONH_2$

 $\mathsf{C}.\,R-CH=NH$

 $\mathsf{D}.\,R-CH=\mathsf{NNH}_2$

Answer: D

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13. Acetaldehyde is reduced with hydrogen in the presence of Nickel.What is the compound formed.

A. Ethanol

B. n-propanol

C. Methanol

D. Isopropanol

Answer: A



14. An organic compound X gives a red precipitate on heating with Fehling's solution. Which one of following reactions yields X as major product ?

$$\begin{array}{l} \mathsf{A.} HCHO \xrightarrow{(i) CH_3Mgl} \\ \hline \\ \mathsf{B.} C_2H_5Br + AgOH \xrightarrow{\Delta} \\ \mathsf{C.} 2C_2H_5Br + Ag_2O \xrightarrow{\Delta} \\ \hline \\ \mathsf{D.} C_2H_2 + H_2O + AgOH \xrightarrow{4\% H_2SO_4} \\ 1\% HgSO_{460}^{\circ}C \end{array}$$

Answer: D

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

A. NH_2OH

B. $PhNHNH_2$

 $\mathsf{C}.\, NH_2 NHCONH_2$

D. HCN

Answer: B

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16. 3-Hydroxy butanal is formed when (X) reacts with (Y) in dilute (Z) solution. What are(X),(Y) and(Z)?

A.
$$\frac{X}{CH_3CHO}$$
 $\frac{Y}{(CH_3)_2CO}$ $\frac{Z}{NaOH}$ B. $\frac{X}{CH_3CHO}$ $\frac{Y}{CH_3CHO}$ $\frac{Z}{NaCl}$ C. $\frac{X}{(CH_3)_2CO}$ $\frac{Y}{(CH_3)_2CO}$ $\frac{Z}{HCl}$ D. $\frac{X}{CH_3CHO}$ $\frac{Y}{CH_3CHO}$ $\frac{Z}{NaOH}$

Answer: D



17. When 1,1-dichloropropane and 2,2-dichloro propane are reacted separately with aqueous potassium hydroxide solution compounds A and B are formed. Both A and B gave the same product C on reduction using amalgamated zinc and HCl. Identify C

A. Propyl alcohol

B. Isopropyl alcohol

C. Propyl choride

D. Propane

Answer: D

18. Which of the following does not react with Fehling's solution

A. Benzaldehyde

B. Glucose

C. Acetaldehyde

D. Formic acid

Answer: A

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19. Which of the following reagents converts both acetaldehyde and acetone to alkanes

A. Ni/H_2

B. $LiAlH_4$

 $\mathsf{C.}\,I_2\,/\,NaOH$

D. $Zn - Hg/\mathrm{Conc}HCl$

Answer: D



CH₃COOC₂H₅

$$(1) DIBAL-H = A$$

 $(2) H_2O$
 $(1) LiAIH_4 = B$
 $(2) H_2O$

20.

Reagent required to convert B to A is

A. $K_2 Cr_2 O_7 \,/\, H^{\,+}$

B. PDC in CH_2Cl_2

C. Cu, $300^{\,\circ}\,C$

D. Both 2 and 3

Answer: D

1. $CH_3CHO + NH_2OH o X \xrightarrow[-H_2O]{} Y$

The number of σ bonds π bonds and lone pairs of electrons in the compound 'Y' are respectively

A. 9,1,4

B. 11,1, 5

C. 9,2,2

D. 8,1,3

Answer: D

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2. Iso propyl alcohol is obtained by the reaction of the following

A. Acetone with Clemmenson's reducing agent

B. Acetone with H_2 in presence of Ni

C. Acetaldehyde with H_2 in presence of Ni

D. Acetone with chloroform

Answer: B

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3. 2,4- DNP gives an oragne - red coloured precipitate with

A. Carbonyl compounds

B. Aldehydes only

C. Ketones only

D. Alcohols and phenols

Answer: A

4. An alkene on ozonolysis gives acetaldehyde and acetone. The alkene in

question is

$$CH_3 \ - CH_3 = C - CH_3$$

A. $CH_3 - CH = C - CH_3$
B. $CH_3 - CH = CH - CH_2 - CH_3$
C. $CH_2 = CH - CH_3$
D. $(CH_3)_2C = C(CH_3)_2$

Answer: A

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5. The first oxidation product of the following alcohol is a ketone with the

same number of carbon atoms

A. $CH_3CH_2CH_2OH$

 $\mathsf{B.}\left(CH_{3}\right)_{2}CHCH_{2}OH$

 $\mathsf{C.}\,CH_3CH(OH)CH_3$

$$\mathsf{D}.\,(CH_3)_3C-OH$$

Answer: C



6. Tollen's reagent can be obtained by mixing aqueous $AgNO_3$ with aqueous NH_3 solution. The reagent mainly contains

A. $\left[Ag(NH_3)_2
ight]^+$

B. AgOH

C. Ag

D. CH_3CHO

Answer: A

7. Anatoldehyde $\xrightarrow[room termerature]{concH_2CO_4}$ (A) 'A' is

- A. Acetaldehyde
- B. Metaldehyde
- C. Mesitylene
- D. Paraldehyde

Answer: D

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8. Which of the following yield yellow precipitate on reacction with I_2 and

NaOH?

- A. CH_3-CHO
- $\mathsf{B.}\, C_6H_5COC_6H_5$

C. HCHO

D. CH_3OH

Answer: A



9. Alkaline sodium nitroprusside is used to confirm the presence of

A. Aldehyde

B. All Ketones

C. Ketone having lpha - hydrogen atom

D. Secondary and tertiary alcohols

Answer: B

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10. The catalyst in Wacker's process is

A. $CuCl_2$

B. $PdCl_2$

 $\mathsf{C.}\,Cu_2Cl_2$

D. Pd

Answer: A

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11. Statement - I : Aldehydes restore the megenta colour of schiff's base

Statement - II : Schiff's reagent is a colourless P - rosaniline hydrochloride

A. I is true II is wrong

B. I is wrong II is true

C. Both statements are correct

D. Both statements are incorrect

Answer: C

12. Acetaldehyde undergoes the aldol condensation with dil. NaOH. This is

because of the presence of

A. -CHO group

B.-CO - group

C. H atom on x - Carbon

D. H atom on r - Carbon

Answer: C

Watch Video Solution

13. Acetylene on reaction with hypochlorous acid gives

A. Acetone

B. Chloro acetone

C. Dichloro acetaldehyde

D. Dichloro methane

Answer: C

Watch Video Solution

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

A. NH_2OH

B. $NaHSO_3$

C. lodine

D. 2,4 - DNP

Answer: D

15. The number of a bonds in the product formed by passing acetylene through dil. H_2SO_4 containing mercuric sulphate is

A. zero

B. one

C. two

D. three

Answer: B

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A. $CH_3 - CH(OH) - CHO$

 $\mathsf{B.}\,CH_3-CO-CH_2CHO$

 $C. CH_3 - CH(OH) - CH_2 - CHO$

 $\mathsf{D}.\,CH_3-CH_2-CH(OH)-CHO$

Answer: C



17. Which of the following converts acetone to acetone oxime

A. $H_2N - NH_2$

B. 2,4 - DNP

 $\mathsf{C.}\, C_6H_5NHNH_2$

D. NH_2OH

Answer: D

Watch Video Solution

18. Para rosaņiline hydrochloride solution is decolourised by SO_2 is called

A. Benedict's solution

B. Fehling's solution

C. Schiff's reagent

D. Tollens' reagent

Answer: C

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19. Acetone on distillation with bleaching powder and water gives chloroform and X. Ethyl alcohol on distillation with bleaching powder and water gives $CHCI_3$, and Y. X and Y together on distillation gives

A. CH_3CHO

- $\mathsf{B.}\, CH_3COCH_3$
- $\mathsf{C}.\,CH_2=CHOH$
- D. $CH_3COC_2H_5$

Answer: A



20. Ethanal is reacted with acidified $K_2Cr_2O_2$ What is the product formed?

A. C_2H_5OH

 $\mathsf{B.}\, CH_3 COOH$

 $\mathsf{C.}\, C_2 H_6$

D. CCl_3CHO

Answer: B

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21. Which one of the following compounds reacts with saturated solution

of sodium bisulphite to give colourless crystalline products?

A. C_2H_5OH

 $\mathsf{B.}\, C_2 H_6$

 $\mathsf{C.}\,CH_3CHO$

D. $CHCl_3$

Answer: C

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22. Identify acetaldoxime

A. $CH_3CH = N - NH_2$

- $\mathsf{B.}\,CH_3CH=N-OH$
- $\mathsf{C}.\,(CH_3)_2C=N-OH$
- $\mathsf{D}.\,CH_2=N-OH$

Answer: B

23. What is the "X" in the following reaction $2CH_3COCH_3 \xrightarrow{Ba(OH)_2} oX$

$$\begin{array}{c} \stackrel{OH}{\vdash} \\ \mathsf{A}.\,CH_3 - \stackrel{|}{\stackrel{C}{C}} - CH_2 - \stackrel{C}{\stackrel{OH}{\underset{CH_3}{OH}} - CH_3 \\ \stackrel{|}{\stackrel{OH}{\underset{OH}{OH}} \\ \mathsf{B}.\,CH_3 - \stackrel{|}{\stackrel{C}{\underset{CH_3}{OH}} - CH_2 - CH_2 - CHO \\ \stackrel{|}{\stackrel{CH_3}{\underset{CH_3}{OH}} \\ \mathsf{C}.\,CH_3 - CH(CH_3) - CH_2 - CO - CH_3 \\ \stackrel{|}{\underset{CH_3}{OH}} \\ \mathsf{D}.\,CH_3 - \stackrel{CH}{\underset{CH_3}{OH}} - \stackrel{CH}{\underset{O}{OH}} - \stackrel{CH}{\underset{O}{CH}} - \stackrel{C}{\underset{OH}{CH}} \\ \end{array}$$

Answer: A

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24.
$$CH_3CH = CHC - CH_3 \xrightarrow{X} CH_3CH = CHCOOH$$
, Here the

reagent 'X' is

A. $K_2 Cr_2 O_7 \,/\, H^{\,+}$

B. $NaOI, H^+$

C. PDC in CH_2Cl_2

D. $LiAlH_4$

Answer: B

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25.

Products A, B are respectively

A. CH_3COCH_3, CH_3CHO

B. $CH_3COCH_2CH_3, CH_3CHO$

 $\mathsf{C.}\,CH_3COCH_3,\,CH_3CH_2OH$

D. $CH_3CH_2COCH_3, CH_3CH_2OH$

Answer: A



26. $CH_3C\equiv N
ightarrow CH_3CHO$ Reagents useful for this conversion is /

are

A. I) $SnCl_2 + Conc. \ HCl, \$ II) H_3O^+

B. I) DIBAL - H, II) H_2O

C. dil. H_2SO_4

D. Both (1) and (2)

Answer: D





	CH_2OH
A.	
	CH_2OH
	CH_2OH
Β.	
	COOH
	COOH
C.	
	COOH
	CHO
D.	
	COOH

Answer: B

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The final product 'Y' is





Answer: A

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29. Aromatic aldehydes react with primary amines to form

A. Amino acids

B. Schiff's base

C. Pyrosole

D. Pyridine

Answer: B



30.

The

reaction

 $C_6H_5CHO+CH_3CHO \xrightarrow{NaOH} C_6H_5-CH=CH-CHO+H_2O$ is

known as

A. Cannizzaro reaction

B. Aldol condensation

C. Claisen - Schmidt condensation

D. Benzoin condensation

Answer: C



	List I	List - II
	(A)Griganard reagent	$(1)H_2/Pd-BaSO_4$
	(B)Clemmensen	$(2)N_2H_4 KOH { m Glycol}$
71	reduction	
51.	(C)Rosenmund	$(3)CH_3MgX$
	reduction	
	(D)Wollff - Kishner	$(4)Zn - Hg \mid conc. HCl$
	reduction	$(5)H_2 { m Ni}$

The correct answer is :



Answer: B



32. Acetone on addition to methyl magnesium bromide form a complex,

which on decomposition with acid gives X and Mg(OH)Br. Which one of

the following is X.

A. CH_3OH

 $\mathsf{B}.\,(CH_3)_3C-OH$

 $C. (CH_3)_2 CHOH$

D. CH_3CH_2OH

Answer: B

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33. Both acetaldehyde and acetone reacts with

A. Tollen's reagent

B. Lucas reagent

C. Felling's solution

D. Grignard reagent

Answer: D



34. Benzaldehyde on mild oxidation gives

A. C_6H_3COOH

 $\mathsf{B.}\, C_6H_5CH_2OH$

 $\mathsf{C.}\, C_6H_5COCH_3$

 $\mathsf{D.}\,CO_2$

Answer: A

D Watch Video Solution

35. Which of the following does not give an yellow precipitate on treating

with iodine and alkali

A. CH_3CHO

 $\mathsf{B.}\, CH_3COCH_3$

C. C_6H_5CHO
D. $C_6H_5COCH_3$
Answer: C
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Solved Problem
1. Give the common and IUPAC names of the compound ,
$CH_2 = CH - CO - CH = CH_2$
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2. Give the structure and IUPAC name of vanillin.
Watch Video Solution
3. Write the strucuture and common name of 3 - phenylpropenal.





10. Give te equations for the reaction between benzoyl chloride and diethyl cadmium.

Watch Video Solution 11. To get phenylethanal, which compounds should be treated with chromyl chloride ? Give equation.

Watch Video Solution

12. When diphenyl acetylene is treated with dilutesulphuric acid in presence of mercuric sulphate at $60 - 70^{\circ}C$, which product is formed ? Give equation .

13. Under what circumstances may an aldehyde be prepared by oxidation

of primary, alcohol, with acid dichromate?

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14. Give names of the reagents to bring about the following transformations :

- (i) Pentan 1 ol to pentanal,
- (ii) Allyl alcohol to propenal,
- (iii) But -2- ene to ethanal and
- (iv) But 1 yne to butanone .

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15. Arrange the following in the order of increasing boiling points.

 $CH_3CH_2CHO(A), CH_3CH_2CH_2CH_2OH(B),$

 $CH_3CH_2OCH_2CH_3(C), CH_3CH_2CH_2CH_3(D).$

16. Compare the reactivity order of benzaldehyde, p -tolualdehyde and p -

nitrobenzaldehyde.

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17. Compound A, $C_5H_{10}O$, forms a phenyl hyrazone, given negative Tollen's and iodoform tests and is reduced to n - pentane. What is the compound , A ?

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18. An alkene , C_6H_{12} after ozonolysis yielded two products. One of these gave a positive iodoform reaction but a negative Tollen's test. The other iodoform reaction. What is the name and structure of that alkene ?

19. Aldehydes do not form stable hydrates, yet chloral hydrate is readily

formed , why ?

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20. An organic compound having molecular formula C_5H_{10} O exists in two chain isomers, (A) and (B).Isomer (A) undergoes Cannizzaro reaction to give 2, 2- dimethyl propanoic acid 2,2- dimethyl propanol - 1. Compound (B) in the presecne of dilute alkali undergeos aldol condensation to form 3 - hydroxy -2- propyl heptanal. Give the structures of (A) and (B).

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21. Although aldehydes are easily oxidisable, propanal can conveniently be prepared by oxidation of propanol by acidified potassium dichromate. Why ?

22. Two organic compounds (A) and (B) with molecular formula, C_3H_6O , react with HCN in different manner to produce (C) and (D) respectively. One subsequent hydrolysis of (C) and (D) give optically active substances (E) and (F). Both (E) and (F) on decarboxylation give I - propanol . What are (A), (B), (C), (D), (E) and (F) ?

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23. Benzaldehyde is treated with acetaldehyde in presence of dilute alkali.

What happens ?

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24. Can $(CH_3)_3$ CCHO undergo Cannizzaro reaction ?





28. How the following transfrormations can be brought about ? Name

only the reagents .

- a) Cyclohexanol to cyclohexanone
- b) Allyl alcohol to propenal
- c) p Fluorotoluene of pfluorobenzaldehyde



- **29.** Name the reagents used for the following conversions :
- i) Hexanol 1 to hexanal
- ii) ethanenitrile to ethanal
- (ii) ethanenitrile to ethanal
- iii) Butene 2 to ethanal .

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30. Predict the products in the following reactions and write their structures.



31. An organic compound (X) with molecular formula C_8H_8O forms an orange red precipitate with 2, 4 - DNP regent and resonds iodoform test. It neither decolourises Baeyer's reagent or bromine water and also it neither reduces Tollen's reagent or Fehling's reagent. Compound (X) gives a carboxylic acid (Y) with molecular formula $C_7H_6O_2$ on drastic oxidation with chromic acid . Give the equations.

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32. An organic compound (A) with molecular formula C_8H_8O forms an orange-red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with iodine in the presence of sodium hydroxide. It neither reduces Tollens' or Fehlings' reagent, nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formula $C_7H_6O_2$. Identify the compounds (A) and (B) and explain the reactions involved.

33. Give names of the reagents to bring about the following transformations:

- (i) Hexan-1-ol to hexanal
- (ii) Cyclohexanol to cyclohexanone
- (iii) p-Fluorotoluene to
- (iv) Ethanenitrile to ethanal p-fluorobenzaldehyde
- (v) Allyl alcohol to propenal
- (vi) But-2-ene to ethanal

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Subjective exercise - 1 (Short answer Questions)

1. What are aldehydes and ketones ? Give the structural differences .



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5. Write the names of the isomeric ketones possible for 2, 2 - dimethyl propanal .

6. Give the IUPAC names of the following compounds

a) $(CH_3)_2C = CHCHO$

b) $C_6H_5CH_2CH_2CHO$



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Subjective exercise - 2 (Long answer questions)

1. Write any three methods of preparation of acetaldehyde. Give two uses.

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2. How does acetaldehydes react with

(i) HCN,

(ii) $H_2 NHO$

- (iii) $C_2H_5MgBr.~H_2O$ and
- (iv) $H_2 NNHCONH_2$?

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3. Write three preparations , three properties and three uses of acetone.



4. How acetone is obtained from

(i) $CH_3CHOHCH_3$

(ii) $CH_3 - C \equiv CH$ and

(iii) CH_3COOH .

b) How does acetone react with

(i) $NaHSO_3$

(ii) $I_2 + NaOH$ and

(iii) $C_6H_3(NO_2)_2NHNH_2$

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5. Explain the similarity in chemical properties of acetaldehyde and acetone. Write any three tests that are useful to differentiate acetaldehyde from acetone.

6. Discuss in detail the reaction of acetaldehyde and acetone with

- (i) NH_2OH (ii) $H_2\mathrm{NNH}_2$
- (iii) $C_6H_5\mathrm{NHNH}_2$
- (iv) 2, 4, dinitrophenyl hydrazine and
- (v) Semicarbazide .

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Subjective Exercise - 3 (short answer questions)

1. How does cyclohexanecarbaldehyde react with the following reagents ?

- a) Tollen's reagent
- b) C_6H_5MgBr and then H_3O^+
- c) Excess ethanol and acid

2. Which of the following compounds would undergo aldol condensation,

which the Cannizzaro reaction and which neither? Write the structures of

the expected products of aldol condensation and Cannizzaro reaction.

- (i) Methanal
- (iv) Benzophenone
- (ii) 2-Methylpentanal (v) Cyclohexanone
- (iii) Benzaldehvde
- (vii) Phenylacetaldehyde
- (vi) 1-Phenylpropan
- (viii) Butan-1-ol

(ix) 2,2-Dimethylbu

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3. Give plausible explanation for each of the following:

Cyclohexanone forms cyanohydrin in good yield (i) but 2,2,6trimethylcyclohexanone does not.

(ii) There are two $-NH_2$ groups in semicarbazide. However, only one is involved in the formation of semicarbazones.

(iii) During the preparation of esters from a carboxylic acid and an alcohol in the presence of an acid catalyst, the water or the ester should be removed as soon as it is formed.

4. How the following pairs of compounds can be distinguished by simple

chemical tests ?

- (a) Phenol and benzoic acid
- (b) Ethanal and propanal
- (c) Pentan-2-one and pentan-3-one
- (d) Propanal and propanone
- (e) Acetophenone and benzophenone
- (f) Benzoic acid and ethylbenzoate
- (g) Acetophenone and benzaldehyde.

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Subjective Exercise - 3 (Very short answer questions)

1. How does cyclohexanecarbaldehyde react with the following reagents ?

- a) Tollen's reagent
- b) C_6H_5MgBr and then H_3O^+
- c) Excess ethanol and acid



6. Write the structures of the products

(i)
$$C_6H_6 + C_2H_{5C}OCl \xrightarrow{AlCl_3}_{CS_2}$$

 $O_2N \longrightarrow CH_3 \xrightarrow{CrO_2Cl_2}_{H_3O^+}$
(ii)
 $CH_3 \xrightarrow{CrO_2Cl_2}_{H_3O^+}$
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7. Predict the products of the following reactions :





objective Exercise -1

1. General molecular formula of carbonyl compounds

A. $C_n H_{2n} O_2$

- B. $C_n H_{2n+2}O_2$
- $\mathsf{C}. C_n H_{2n} O$

D. $C_n H_{2n+2}O$

Answer: C

1. The hybridisation of carbon in the carbonyl group is

A. sp^3 B. sp^2 C. sp

D. sp^3d

Answer: B

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objective Exercise -3

1. The IUPAC name of methyl isopropyl ketone

A. 3-methyl-2-pentanone

- B. 3-methyl butan-2-one
- C. 2-pentanone
- D. 2-methyl pentanone

Answer: B

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objective Exercise -4

1. Controlled oxidation of primary alcohols give

A. aldehydes

B. ketones

C. carboxylic acids

D. ethers

Answer: A

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objective Exercise -5

1. Dehydrogenation of isopropyl alcohol gives

A. Methanol

B. Methanal

C. Ethanal

D. Propanone

Answer: D

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objective Exercise -6

1. $C_2H_5OH \xrightarrow[300\ ^\circ C]{Cu} CH_3CHO$ The above process is

A. Reduction

B. Oxidation

C. Dehydrogenation

D. Both 2 and 3

Answer: D

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objective Exercise -7

1. Ketones cannot be prepared in one step from

A. Alcohols

B. Alkenes

C. Alkynes

D. Esters

Answer: D



objective Exercise -8

1. The first oxidation product of isopropyl alcohol is

A. ethanal

B. propanone

C. ethanoic acid

D. methyl isopropyl ketone

Answer: B

1. The IUPAC name of β -methyl valerladehyde

A. 2-methyl pentanal

B. 2-methyl butanal

C. 3-methyl pentanal

D. 3-methyl butanal

Answer: C

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objective Exercise -10

1. Dry Distillation of $(CH_3COO)_2Ca$ gives

A. CH_3CHO

B. CH_3COOH

C. CH_3COCH_3

D. $C_2H_5 - O - C_2H_5$

Answer: C

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objective Exercise -11

1. Ozonolysis of the following gives only acetaldehyde

A.
$$CH_3 - CH = CH - CH_3$$

$$\mathsf{B}.\,CH_2=CH-CH_2-CH_3$$

- C. $CH_3 C \equiv C CH_3$
- D. $CH \equiv C CH_2 CH_3$

Answer: A



objective Exercise -12

$$0 \\ 1. CH_3 \overset{O}{C} - Cl \xrightarrow{x} CH_3 CHO.$$

$$CH_3 - \overset{O}{C} - Cl \xrightarrow{y} CH_3 - \overset{O}{C} - CHO$$

A. Pd- $BaSO_4$ /Quinoline, $(CH_3)_2Cd$

B. Pd- $BaSO_4$ /Quinoline, DIBAL-H

C. DIBAL - H, $LiAlH_4$

D. DIBAL-H, $(CH_3)_2Cd$

Answer: A

1.
$$CH_3-C\equiv CH \xrightarrow{Hg^{2+}}_{dil\,.\,H_2SO_4} x$$

(Carbonyl compounds). The number of sigma, pibonds and lonepairs of electrons in 'x' are respectively

A. 9,2,2

B. 6,1,2

C. 9,1,2

D. 9,2,3

Answer: C

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objective Exercise -14

1. Etard reaction among the following is



Answer: B





- 1. Ketones cannot be prepared by
 - A. Rosenmund's reaction
 - B. The hydrolysis of terminal gem dihalides
 - C. The oxidation of primary alcohols
 - D. All of these

Answer: D

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objective Exercise -16

1. Vinyl alcohol and ethanal are

A. Metamers

- **B.** Tautomers
- C. Position isomers
- D. Chain isomers

Answer: B

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objective Exercise -17

1. Grignard reagent gives carbonyl compounds with

A. ROH

B. RCOCI

C. RCN

D. CO

Answer: C

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objective Exercise -18

1. Which of the following test is positive to acetone

A. Tollen's test

B. Bendict's test

C. Iodoform

D. Fehling's test

Answer: C

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objective Exercise -19

1. Ozonolysis of the following gives only acetaldehyde

A. 2-butene

B. 1-butene

C. Isobutylene

D. Ethylene

Answer: A

1. Benzaldehyde can be prepared from benzene by passing vapoures ofand in its solution is presence of catalyst mixture of aluminium chloride and cuprous chloride. The reaction is known as

A. HCl, $SnCl_4$, Rosenmund reduction

B. CO, HCl, Gattermann-Kocj reaction

C. CO_2, H_2SO_4 , Clemmensen reduction

D. O_3 , alocohol, Wolff-Kishner reduction.

Answer: B

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objective Exercise -21

1. Anhydroys CrO_3 is a mild oxidant and it can oxidise
- A. 1° alcohol to aldehyde
- B. 1° alcohol to caraboxylic acid
- C. 3° alcohol to aldehyde
- D. 3° alcohol to caraboxylic acid

Answer: A

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objective Exercise -22

1. Study the given reaction and identify the process which is carried out.



A. It is used for purification of aldehydes and ketones

B. It is used to prepare cyclic aldehydes and ketones.

C. it is used to distinguish between acyclic and aromatic aldehydes

D. It is used to study polar nature of aldehydes and ketones.

Answer: A



1. In the following sequence of reaction, the final product (Z) is

$$CH \equiv CH extstyle Hg^{2+} H_{2SO_4} X extstyle H_{3MgX} Y extstyle O extstyle Z$$

A. ethanol

B. propan-2-ol

C. propanone

D. propanol

Answer: C

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objective Exercise -24

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

A. Etard reaction

B. Riemer-Tiemann reaction

C. Wurtz reaction

D. Cannizzaro's reaction

Answer: A

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objective Exercise -25

1. 2, 3-dimethyl-2-butene, on reductive ozonolysis gives

A. Acetone

B. Acetaldehyde

C. Butanone

D. Fomaldehyde

Answer: A

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objective Exercise -26

1. Benzaldehyde can be prepared by oxidation of toluene with

A. Acidic $KMnO_4$

 $\mathsf{B.}\, K_2 Cr_2 O_7$

 $\mathsf{C.}\, CrO_2Cl_2$

D. All

Answer: C



objective Exercise -27

1. Benzaldehyde is obtained from toluene by

A. Rosenmund's reduction

B. Cannizzaro reaction

C. Kolbe's reaction

D. Etard reaction

Answer: D

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1. Aldehydes and ketones give addition reactions with

A. HCN

B. $NaHSO_3$

 $\mathsf{C.}\,CH_3MgX$

D. All of these

Answer: D

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objective Exercise -29

1. Which of the following participate in aldol condensation

A. Formaldehyde

B. benzaldehyde

C. Methanol

D. Acetaldehyde

Answer: D

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objective Exercise -30

1. Acetaldehyde and acetone can be identified by

A. Schiff's reagent

B. 2,4-DNP test

C. Tollen's reagent

D. Lucas test

Answer: B



objective Exercise -31

1. The following does not undergo aldol condensation in the presence of alkali

A. CH_3CHO

 $\mathsf{B.}\, CH_3COCH_3$

C. CH_3CH_2CHO

 $\mathsf{D.}\, CCl_3 CHO$

Answer: D



objective Exercise -32

1. Aldehydes can be oxidised by

A. Benedict's solution

B. Tollen's reagent

C. Fehling's solution

D. All of these

Answer: D

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objective Exercise -33

1. Among the following, boiling point is maximum for

A. Propanal

B. Propanone

C. Methoxyethane

D. 1-propanol

Answer: C

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objective Exercise -34

1. Condensation product of the benzaldehyde and acetophenone in alkaline medium at 293 K is

A.
$$C_6H_5-CH_2-CO-CH_2-C_6H_5$$

B.
$$C_6H_5-CO-CH_2-C_6H_4-CH_3$$

C.
$$C_6H_5-CH=CH-CO-C_6H_5$$

D.
$$C_6H_5 - CH_2 - C_6H_5 - CO - CH_3$$

Answer: C

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1. Solution A + solution B \rightarrow Fehling, s reagent. What are A and B?

A. aq. Copper sulphate, aq. Sodium potassium tartarate

B. aq. $AgNO_3$, aq. NH_4OH

C. aq. $AgNO_3$, alkaline sodium potasium tartarate

D. aq. Copper sulphate, alkaline Sodium potassium tartarate

Answer: D



1. Fehling's solution is

A. Alkaline $CuSO_4$ + Rochelle salt (Sod. Pot tartrate)

- B. Alkaline $CuSO_4$ complexed wth citrate ions
- C. Ammonical $AgNO_3$ solution
- D. Megneta solution in H_2SO_3

Answer: A

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objective Exercise -37

1. An example of hydrocarbon

A. Phorone

B. Mesitylene

C. Metaldehyde

D. Chloretone

Answer: B



objective Exercise -38

1. Acetaldehyde and acetone cannot be distinguished by

A. Tollen's test

B. Benedict's test

C. lodoform test

D. Schiff's test

Answer: C

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objective Exercise -39

1. IUPAC name of Isobutyraldehyde is

A. Butanal

- B. Methyl propanal
- C. Ethyl ethanal
- D. Methyl butanal

Answer: B

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objective Exercise -40

1. The reagent with which ethanol is oxidised to ethanal is

A. Tollen's reagent

B. Nitrobenzene

C. PCC

D. Chromic acid

Answer:	С
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objective Exercise -41

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

A. NH_2OH

B. $PhNHNH_2$

 $\mathsf{C}.\, NH_2 NHCONH_2$

D. HCN

Answer: B

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objective Exercise -42

1. Ethanol and ethanal are separated from their mixture using the reagent

A. HCN

B. $NaHSO_3$

 $\mathsf{C.}\, C_6H_5NHNH_2$

D. All

Answer: B

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objective Exercise -43

1. Isopropyl alcohol $\xrightarrow[]{H^+/K_2Cr_2O_3}{\Delta}$ final product

A. Propene

B. Propanol

C. Ethanal

D. Ethanoic acid

Answer: D

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objective Exercise -44

1. The reagent used in the Wolff-Kishner reduction is

A. Zn-hg and conc HCl

B. Anhydrous $ZnCl_2$ and conc HCl

C. Hydrazine, glycerol and alkali

D. Zn and CH_3COOH

Answer: C

1. Which of the following compounds does not react with $NaHSO_3$?

A. HCHO

 $\mathsf{B.}\, C_6H_5COCH_3$

 $\mathsf{C.}\,CH_3COCH_3$

D. CH_3CHO

Answer: B

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objective Exercise -46

1. Which of the following compounds undergo aldol condensation?

A. CH_3CHO

B. CH_3COCH_2

 $C. C_6H_5CHO$

D. $C_6H_5CH_2CHO$

Answer: C

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objective Exercise -47

1. Identify (X), (Y) and (Z) in the given reaction.

$$X+Y \xrightarrow{Z} CH_3 - \overset{OH}{\overset{}{\underset{3-\text{Hydroxybutanal}}{CH}} - CH_2 - CHO$$

A.
$$X - HCHO, Y - CH_3CHO, Z - KOH$$

B. $X - CH_3CHO, Y - CH_3CHO, Z - NaOH$

C. $X - CH_3CH_2OH, Y - HCHO, Z - H_2SO_4$

D. $X - CH_3CH_2CHO, Y - HCHO, Z - Dry$ ether

Answer: B

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objective Exercise -48

1. Which one of the following reagents reacts with both acetaldehyde and

acetone?

A. Fehling's solution

B. Grignard reagent

C. Schiff's reagent

D. Tollen's reagent

Answer: B

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1. The interaction of acetone with methyl magnesium chloride followed by

hydrolysis

A. Isobutyl alcohol

B. Tertiary butyl alcohol

C. n-butyl alcohol

D. Sec- butyl alcohol

Answer: B

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objective Exercise -50

1. Acetone and Acetaldehyde can be distinguished using

A. Grignard reagent

B. $NaHSO_3$

C. Ammonical $AgNO_3$

D. PCl_5

Answer: C

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objective Exercise -51

1. Haloform reaction is not given by

A. CH_3COCH_3

 $\mathsf{B.}\, CH_3COC_2H_5$

 $\mathsf{C.}\, C_6H_5COC_2H_5$

D. $CH_3CHOHCH_3$

Answer: C

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objective Exercise -52

1. Which of the following does not respond to iodoform test

A. Ethanol

B. Methanol

C. Acetaldehyde

D. Acetone

Answer: B

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objective Exercise -53

1. Acetaldehyde and acetone can be identified by

A. Schiff's test

B. Tollen's reagent

C. Lucas test

D. 2, 4-DNP

Answer: D

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objective Exercise -54

1. Which of the following does not undergo disproportionation with conc.KOH

A. HCHO

 $\mathsf{B.}\left(CH_{3}\right)_{3}CCHO$

 $C. CH_3 CHO$

 $\mathsf{D.}\, C_6H_5CHO$

Answer: C

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objective Exercise -55

1. Acetaldehyde cannot give

A. lodoform test

B. Lucas test

C. Benedict's test

D. Tollen's test

Answer: B

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1. C_2H_5CHO and CH_3COCH_3 can be distinguished from one another

by testing with

A. Phenyl hydrazine

B. 2,4-Dinitrophenyl hydrazine

C. Fehling solution

D. Sodium bisulphite

Answer: C

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objective Exercise -57

1.
$$CH \equiv CH \xrightarrow{50\,\%\,H_2SO_4} A \xrightarrow{K_2Cr_2O_7} dil_{.H_2SO_4} B \xrightarrow{Ca(OH)_2} C \xrightarrow{dry} D$$
. Write the

final prodcut 'D' in the above sequence of reactions?

A. calcium acetate

B. propanone

C. propane

D. ethanol

Answer: B

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objective Exercise -58

1. Which of the following does not undergo aldol condensation ?

A. $ClCH_2CHO$

 $\mathsf{B.} CCl_3 - CHO$

 $\mathsf{C.}\, C_6H_5CH_2CHO$

D. CH_3CHO

Answer: B

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objective Exercise -59

1. A carbonyl compound reacts with HCN to form a cyanohydrin which on hydrolysis forms a racemic mixture of hydroxy acids. The compounds is

A. Formaldehyde

B. Acetaldehyde

C. Acetone

D. Diethyl ketone

Answer: B





objective Exercise -60

1. Most reactive towards nucleophilic addition is

A. p-tolualdehyde

B. 4-nitrobenzaldehyde

C. benzaldehyde

D. acetophenone

Answer: B

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objective Exercise -61

1. The product obtained when acetaldehyde is treated with dilute NaOH is

A. CH_3CH_2OH

B. CH_3COOH

C. $CH_3 - CH - CH_2CHO$ $\downarrow \\ OH$ D. $CH_3 - CH_3$

Answer: C

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objective Exercise -62

1. When acetaldehyde is heated with Fehling solution, a red precipitate is

formed. Which of the following is that ?

A. Cu_2O

B. Cu

C. CuO

D. $CuSO_4$

Answer: A



objective Exercise -63

1. What reagent is used in the Rosenmund reduction ?

A. $H_2 lPd - BaSO_4$

B. $LiAlH_4$

 $\mathsf{C}. NH_2 NH_2 / KOH$

D. Zn - Hg/HCl

Answer: A

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1. An organic compound 'X' on treatment with pyridium dichromate in dichloromethane gives compound 'Y'. Compound 'Y' reacts with I_2 and alkali to form triiodomethane the compound 'X' is

A. C_2H_5OH

 $\mathsf{B.}\, CH_3OH$

C. CH_3COCH_3

 $\mathsf{D.}\, CH_3 COOH$

Answer: A

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objective Exercise -65

1. Which one of the following reactions is called Rosenmund's reaction ?

- A. Aldehydes are reduced to alcohols
- B. Acids are converted to acid chlorides
- C. Alcohols are reduced to hydrocarbons
- D. Acid chlorides are reduced to aldehydes

Answer: D

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objective Exercise -66

1. The synthesis of crotonaldeyde 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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objective Exercise -67

1. Which test is useful to distinguish between 2-pentanone and 3-pentanone?

A. lodoform test

B. Benedict's test

C. Fehling test

D. Aldol condensation test

Answer: A

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1. Match the column II and mark the appropriate choice

Column 1	Column II
A) Clemmensen	i) Conc. KOH
reduction	
B) Rosenmund reduction	ii) Zn/Hg +
	conc.HC/
C) lodoform reaction	iii) H,/Pd-BaSO,
D) Cannizzaro reaction	iv) NaOH + 1,

A. A
ightarrow i, B
ightarrow iii, C
ightarrow ii, D
ightarrow iv

 $\texttt{B.}~A \rightarrow iii, B \rightarrow iv, C \rightarrow i, D \rightarrow ii$

 $\mathsf{C}.\, A \rightarrow ii, B \rightarrow iii, C \rightarrow iv, D \rightarrow i$

D. A
ightarrow iv, B
ightarrow i, C
ightarrow ii, D
ightarrow iii

Answer: C

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1. Identify (X), (Y) and (Z) reagents in the given sequence of reaction. $CH \equiv CH \xrightarrow{x} CH_3CHO \xrightarrow{Y} CH_3CH(OH)CH_3 \xrightarrow{Z} CH_3COCH_3$ A. $X = H_2SO_4, Y = H_2O/OH^-, Z = PCl_5$, heat B. $X = HNO_3, Y = Na_2CO_3, Z = H_2SO_4$, heat C. $X = H_2SO_4/Hg^{2+}, Y = PCl_5/H_2O, Z = K_2Cr_2O_7/OH^-$ D.

$$X=H_{2}SO_{4}\,/\,Hg^{2\,+}\,,Y=CH_{3}MgBr\,/\,H_{2}O,Z=K_{2}Cr_{2}O_{7}\,/\,H^{\,+}$$

Answer: D



objective Exercise -70
1. The increasing order of the rate of HCN addition to compounds I to IV

is

(I) HCHO

(II) CH_3COCH_3

 $(III) phCOCH_3$

(IV)phCOph

A. A < B < C < D

 $\operatorname{B.} D < B < C < A$

 $\mathsf{C}.\, D < C < B < A$

 $\mathsf{D}.\, C < D < B < A$

Answer: C

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objective Exercise -71

1. The formation of cyanohydrin with acetone is an example for

A. Nucleophilic addition

B. nucleophilic substitution

C. Electrophilic addition

D. Electrophilic substitution

Answer: A

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objective Exercise -72

1. Acetone adds up the following without the elimination of water molecule

A. $NH_2 - OH$

B. 2,4-DNP

 $\mathsf{C}.\,H_2N-NH_2$

D. HCN

Answer: D

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objective Exercise -73

1. Molecular formula of acetone semicarbazone

A.
$$CH_3 - CH = N - OH$$

- $B. (CH_3)_2 C = NNHCONH_2$
- $\mathsf{C}. \, CH_3 CH = N NH CO NH_2$
- D. $(CH_3)_2 C = N NH C_6 H_3 (NO_2)_2$

Answer: B

1. Which of the following gives oximes with acetaldehyde?

A. H_2NNH_2

B. 2, 4-DNP

 $\mathsf{C}.\,H_2NOH$

D. $H_2NNHCONH_2$

Answer: C

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objective Exercise -75

1. The following is more reactive towards nucleophilic addition reactions

A. CH_3COCH_3

B. HCHO

 $C. CH_3 CHO$

 $\mathsf{D.}\, C_2 H_5 CHO$

Answer: B

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objective Exercise -76

1. Which one of the following undergoes aldol condensation and gives iodoform test

A. All

B. I, II, III, IV

C. I, IV, V only

D. I, II, IV, V

Answer: C

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objective Exercise -77

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

A. CH_3COCH_3

 $\mathsf{B.}\, C_6H_5CH_2CHO$

 $\mathsf{C.}\, C_6H_5CHO$

D. $CH_3CH_2CH_2CHO$

Answer: C

1. In which of the following reactions, the final product is 2-methyl-2propanol ?

 $\begin{array}{l} \mathsf{A.}\ CH_{3}CHO \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{B.}\ CH_{3}CHO \xrightarrow{(i)\ C_{2}H_{5}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{C.}\ CH_{3}CHO \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{C.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{dry}\operatorname{ether}} \\ \mathsf{D.}\ CH_{3}COCH_{3} \xrightarrow{(i)\ CH_{3}MgBr/\operatorname{wet}\operatorname{ether}} \\ \end{array}$

Answer: C

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objective Exercise -79

1. Benzaldehyde on heating with concentrated NaOH gives

A. Phenol the reduction product and sodium benzoate the oxidation

product

- B. Benzyl alcohol the reduction product and sodium benzoate the oxidation product
- C. Sodiumbenzoate the reduction product and benzylalcohol the

oxidation product

D. Sodiumbenzoate the reduction product and phenolalcohol the

oxidation product

Answer: B

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objective Exercise -80

1. Which of the following reacts with NaOH to produce an acid and

alcohol ?

A. HCHO

B. CH_3COOH

 $\mathsf{C.}\,CH_3CH_2COOH$

 $\mathsf{D.}\, C_6H_5COOH$

Answer: A

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objective Exercise -81

1. Which of the following reagent cannot be used to oxidize primary alcohols to aldehydes ?

A. Pyridinium chloro chromate

B. $KMnO_4$ in acidic medium

C. CrO_3 in anhydrous medium

D. Heating in presence of Cu at 573 K

Answer: B

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objective Exercise -82

1. Reduction of ketones cannot be carried out with which of the following reagents ?

A. Sodium borohydride or Lithium aluminium hydride

B. Zinc amalgam and concentrated HCl

C. Hydrazine and KOH in ethylene glycol

D. Hydrogen in presence of palladium in Barium sulphate and

quinoline

Answer: D

1. A alkene that provides only Butanone -2 on ozonolysis is

A. 3, 4-dimethylhex-3-ene

B. 2,3-dimethylhex-2-ene

C. 3-methylhex-3-ene

D. 2,3-dimethylpent-2-ene

Answer: A

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objective Exercise -84

1. A mixture of benzaldehyde and acetophenone on heating with dilute NaOH solution gives

A. Benzolphenone

- B. Benzalacetophenone
- C. Phenyl benzoate
- D. Benzyl alcohol and sodium benzoate

Answer: B

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objective Exercise -2A

1. 2-pentanone and 3-pentanone are predominantly

A. Positional isomers

B. Functional isomers

C. Metamers

D. Ring chain isomers

Answer: C



D. 3-methyl butanal

Answer: A

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3. $C_6H_6+CO+HCl \xrightarrow{\mathrm{Anhyd}.AlCl_3} X+HCl$ Compound X is

A. $C_6H_5CH_3$

 $\mathsf{B.}\, C_6H_5CH_2Cl$

 $\mathsf{C.}\, C_6H_5CHO$

D. C_6H_5COOH

Answer: C

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4. 2, 2-dichloro propane treated with aq. KOH gives an unstable product. It

is

A. CH_3COCH_3

 $\mathsf{B.}\, CH_3 CH(OH) CH_3$

 $\mathsf{C.}\,CH_3CH(OH)CH_3$

 $\mathsf{D.}\, CH_3 CH(OH) CH_2 CHO$

Answer: B

5. When 1,1-dichloropropane and 2,2-dichloro propane are reacted separately with aqueous potassium hydroxide solution compounds A and B are formed. Both A and B gave the same product C on reduction using amalgamated zinc and HCl. Identify C

A. Propyl alcohol

B. Isopropyl alcohol

C. Propyl chloride

D. Propane

Answer: D

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6. Among the following the one that gives positive iodoform test upon reaction with I_2 and NaOH

A. $PhCHOHCH_3$

 $\mathsf{B.}\, C_6H_5CH_2CH_2OH$

 $\mathsf{C.}\,CH_3CH_2CH(OH)CH_2CH_3$

 $\mathsf{D.}\, CH_3 CH(CH_3) CH_2 OH$

Answer: A



7. A carbonyl compound can be prepared by hydration of acetylene. It reacts with ammonia to form (X) and with hydroxylamine to form (Y). It undergoes Wolff-Kishner reduction to form Z. X, Y and Z are

A. Acetaldehyde ammonia, acetaldoxime and ethane

B. Diacetone amine, acetoxime and propane

C. Acetaldoxime, semicarbazone and propane

D. Aldol, hydrazone and alcohol.

Answer: A



8.
$$X + RMgX o Y \xrightarrow{H_2O \, . \, H^+} Z$$
 .

If Z is n-butyl alcohol, 'X' is

A. HCHO

 $\mathsf{B.}\,CH_3CHO$

C. RCHO

D. RCOR

Answer: A



9. Hydrogenation of benzoyl chloride in the presence of Pd and $BaSO_4$

gives

A. Benzyl Alcohol

- B. Benzaldehyde
- C. Benzoic acid
- D. Phenol

Answer: B

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10. In this reaction

 $C_6H_5CH_3 \xrightarrow[CrO_3]{(CH_3CO)_2O} M \xrightarrow[hydrolysis]{alkaline} C_6H_5CHO \text{ acetic anhydride is used}$

A. As a catalyst

B. As an oxidising agent

C. To form a non-oxidizable derivative of benzaldehyde

D. To help the reaction to proceed smoothly

Answer: C

11. Which ketone will form 3- ethylpentan -3-ol on treatment with ethy1 magnesium bromide ?

A. Acetone

B. Ethylmethyl ketone

C. Acetophenone

D. Diethyl ketone

Answer: D

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12. The number of isomeric ketones with formula $C_6 H_{12} O$ is

A. six

B. two

C. five

D. four

Answer: A

D Watch Video Solution

13. The reagent used to bring about the transfermation of but-2-ene to acetaldehyde

A. Pyridinumchlorochromate

B. O_3, H_2O and Zn dust

C. Chromium trioxide

D. Acidified dichromate

Answer: B

14. In which of the following process acetone is one of the final products ?

A. Ozonolysis of ethyne

B. Oxidation of 2-butene with $KMnO_4\,/\,H^{\,+}$

C. Oxidation followed by hydrolysis of cumene

D. Dehydrogenation of 1-propanol

Answer: C

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15. 2-Pentanone and 3-methylbutan-2-one are

A. optical isomers

B. geometrical isomers

C. chain isomers

D. tautomers

Answer: C



16. Identify X and Y for the following reaction $X+Y \xrightarrow{AlCl_3}$



 $+ CH_3CH_2Cl$ A.



Answer: B



17. In the following reaction



$$\stackrel{CrO_2Cl_2}{\longrightarrow} X \stackrel{H_3\overset{\oplus}{\longrightarrow}}{\longrightarrow} Z$$

the compound Z is

A. Benzoic acid

B. benzaldehyde

C. Acetophenone

D. Benzene

Answer: B



18. The products 'A' and 'B' of the below reaction sequence are

$$H - C \equiv C - CH_2 - CH_2 - \overset{O}{C}_{I_1}^{I_2} - CH_3 \xrightarrow{H_gSO_4}_{dil \cdot H_2SO_4} A \xrightarrow{EtONa}_{EtOH} B$$

$$A \stackrel{A: CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{CH_3}{\longrightarrow} \overset{O}{\longrightarrow} \overset{O}{\longrightarrow$$





Answer: B

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19. Which one of the following undergoes aldol condensation and gives iodoform test

A. Actaldehyde

B. Ethyl alcohol

C. Acetic acid

D. Formaldehyde

Answer: A

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20. Acetaldehyde is reduced with hydrogen in the presence of Nickel.

What is the compound formed.

A. Ethanol

B. n-propanol

C. Methanol

D. Isopropanol

Answer: A

21. Which of the following can be detected by silver mirror test

A. CH_3COCH_3

 $\mathsf{B.}\, CH_3COOH$

 $\mathsf{C.}\, C_2 H_6$

 $\mathsf{D.}\, CH_3 CHO$

Answer: D

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22. 3-Hydroxy butanal is formed when (X) reacts with (Y) in dilute (Z) solution. What are(X),(Y) and(Z)?

A.
$$\frac{X}{CH_{3}CHO} \quad \frac{Y}{(CH_{3})_{2}CO} \quad \frac{Z}{NaOH}$$

B.
$$\frac{X}{CH_{3}CHO} \quad \frac{Y}{CH_{3}CHO} \quad \frac{Z}{CH_{3}CHO} \quad \frac{Z}{NaCl}$$

C.
$$\frac{X}{(CH_{3})_{2}CO} \quad \frac{Y}{(CH_{3})_{2}CO} \quad \frac{Z}{NaCl}$$



Answer: D



23. When acetaldehyde is reacted with $LiAlH_4$, what is the product formed?

A. CH_3COOH

 $\mathsf{B}. \, CH_3 - CH_2 - OH$

 $C. CH_3 - OH$

D. HCOOH

Answer: B

24. Which of the following does not react with Fehling's solution

A. Benzaldehyde

B. Glucose

C. Acetaldehyde

D. Formic acid

Answer: A

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25. Acetaldehyde undergoes reaction in the presence of dil. NaOH to give

A. Ethyl acetate

B. Butanoic acid

C. Acetic acid

D. 3-Hydroxy butanal

Answer: D



26. Which of the following reagents converts both acetaldehyde and acetone to alkanes

A. Ni/H_2

B. $LiAlH_4$

 $\mathsf{C.}\,I_2\,/\,NaOH$

D. Zn - Hg/HCl

Answer: D

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27. The compound that does not respond to haloform reaction is

A. $C_5H_{11}CHOHCH_3$

B. $CH_3CH_2CHOHC_2H_5$

C. CH₃CHOHCH₃

D. CH_3CH_2OH

Answer: B

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CH₃COOC₂H₅

$$(1) DIBAL-H = A$$

 $(2) H_2O$
 $(1) LiAlH_4 = B$
 $(2) H_2O$

28.

Reagent required to convert B to A is

A. $K_2 Cr_2 O_7 \,/\, H^{\,+}$

B. PDC in CH_2Cl_2

C. $Cu, \, 300^{\,\circ} \, C$

D. Both 2 and 3

Answer: D



A. $LiAlH_4$

B. Na/C_2H_5OH

C. Wolff-Kishner reduction

D. Catalytic reduction

Answer: C

30.
$$(CH_3)_2CO \xrightarrow[(HCl)]{NaCN} A \xrightarrow[]{H_3O^+} B.$$

In the above sequence A and B are

A.
$$(CH_3)_2 C(OH)CN$$
, $(CH_3)_2 C(OH)COOH$
B. $(CH_3)_2 C(OH)CN$, $(CH_3)_2 C(OH)_2$
C. $CH_3 CHOHCN$, $(CH_3)_2 CHCOOH$
D. $(CH_3)_2 C(OH)CNm(CH_3)_2 C = O$

Answer: A

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31. Which of the following compounds would undergo the Cannizaro reaction ?

A. Acetaldehyde

B. Benzaldehyde

C. Propionaldehyde

D. Anisole

Answer: B

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32. An organic compound X gives a red precipitate on heating with Fehling's solution. Which one of following reactions yields X as major product ?

A. $HCHO \xrightarrow{(i) CH_3MgI}_{(ii) H_2O}$ B. $C_2H_5Br + AgOH \xrightarrow{\Delta}$ C. $2C_2H_5Br + Ag_2O\Delta$ D. $C_2H_2 + H_2O \xrightarrow{40\% H_2SO_4}_{1\% HgSO_4, 60^\circ C}$

Answer: D



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

A. NH_2OH

B. $PhNHNH_2$

 $\mathsf{C.}\, NH_2 NHCONH_2$

D. HCN

Answer: B

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34. Benzyl alcohol is obtained from benzaldehyde by

A. Fittig reaction

B. Cannizzaro reaction

C. Kolbe's reaction

D. Wurtz reaction

Answer: B



35. A substance A containing three carbon atoms gives white crystalline precipitate with sodium bisulphite solution. But does not guve red precipitate with Fehling solution. A on treatment with $NH_2 - NH_2/KOH$ will yield

A. Propene

B. Propane

C. Cycloproapane

D. Propionic acid

Answer: B
36. A certain compound Y has a formula C_3H_6O . It combines with hydroxylamine to form two compounds which are geometrical isomers of each other. Y is

A. CH_3CHO

B. CH_3CH_2CHO

 $\mathsf{C.}\,CH_3COCH_3$

 $\mathsf{D}.\,CH_2=CHCH_2OH$

Answer: B

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37. CH_3CHO and C_6H_5CHO can be distinguished chemically by

A. Baeyers reagent

B. Tollen's reagent

C. Schiff's reagent

$\mathsf{D}.\,I_2 + NaOH$

Answer: D



38. Cannizzaro reaction involves

A. Oxidation of aldehydes

B. Oxidation as well reduction of aldehyde

C. Reduction of aldehyde molecule

D. Rearrangement in aldehyde molecule

Answer: B



39. Which of the following aldehyde contains lpha-C atom but does not

have any $\alpha - H$ atom ?

A. Propionaldehyde

B. Benzaldehyde

C. Isobutyraldehyde

D. Formaldehyde

Answer: B

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40. A compound X has molecular formula $C_2 Cl_3 OH$. It reduces Fehling

solution and on oxidation ti gives monocarboxylic acid B. X is

A. Chloromethane

B. Chloroform

C. Chloroacetic acid

D. Chloral

Answer: D



41. Which reagent is suitable for one step preparation of n-pentane from

2-pentanone?

A. Zn - Hg/HCl

B. $LiAlH_4$

C. $K_2 Cr_2 O_7 \,/\, H_2 SO_4$

D. one step conversion is not possible

Answer: A

42. Which of the following can provides distinction between two functional isomers of C_3H_6O ?

A. $NaHSO_3$

B. HCN

 $C. AgNO_3$

D. $\left[Ag(NH_3)_2\right]OH$

Answer: D

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43. Acetone
$$\xrightarrow{\text{ethyleneglycol}} X$$

The product X in this reaction is

A. Mesitylene

B. Acetylene

C. Cyclicketol

D. Acetal

Answer: C



44. Treatement of propionaldehyde with dilute NaOH solution gives

A. $CH_3CH_2COOCH_2CH_2CH_3$

B. $CH_3CH_2CH(OH)CH(CH_3)CHO$

 $\mathsf{C.}\,CH_3CH_2CH(OH)CH_2CH_2CHO$

 $\mathsf{D.}\, CH_3 CH_2 COCH_2 CHO$

Answer: B



45. Which of the following conversion can be brought about under Wolff-

Kishner reduction ?

A. Benzaldehyde to benzyl alcohol

- B. Cyclohexanol to cyclohexane
- C. Cyclohexanone to cyclohexanol
- D. Benzophenone to diphenyl methane

Answer: D

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46. $C_6H_5CHO + HCN ightarrow C_6H_5CH(CN)OH.$ The product would be

A. Diastereomer

B. Optically active

C. A meso compound

D. Ethyl formate

Answer: B



47. When acetone undergoes reduction in presence of Zn-HCl/Hg, it is known as

- A. Wolf Kishner's reduction
- B. Rosenmund's reduction
- C. Cleammenson's reaction
- D. Gatterman's reaction

Answer: C



48. $R_1 - COCl + R_2Cd \rightarrow CdCl + X$

The organic compound 'X' is

A. a ketone

B. an aldehyde

C. an alcohol

D. a phenol

Answer: A

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49.
$$C_6H_5CHO + C_6H_5COCH_3 \xrightarrow{OH^-, 293K} X,$$

IUPAC name of cross condensation product X is

A. Benzalacetophenone

B. 1,3-diphenylpropanone-1

C. 1,3-diphenylprop-2-en-1-one

D. 1,3-diphenylprop-1-en-3-one

Answer: C

50. Cyanohydrin of which compound on hydrolysis will give lactic acid?

A. C_6H_5CHO

 $\mathsf{B}.\,HCHO$

 $C. CH_3 CHO$

 $\mathsf{D.}\,CH_3-CH_2-CHO$

Answer: C

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51. Consider the following statements A) On reaction with Grignard reagent followed by hydrolysis acetone gives tertiary alcohol B) Mesitylene is a polymer of acetone C) Chloroform gives chloretone on reaction with acetone D) Acetone ammonia is an addition product of acetone with NH_3

A. All are correct

B. A is correct

C. A, B and C are correct

D. A and are correct

Answer: C

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52.

 $\underset{(I)}{HCHO:CH_{3}CHO:CCI_{3}CHO,CH_{3}COCH_{3}:CCI_{3}COCH_{3},C_{6}H_{5}CHO}{(II)}$

Which of the above compounds undergo aldol condensation

A. Only II, III, IV and VI

B. Only II, IV, and V

C. Only II and III

D. All except I

Answer: B



LIST - 1	LIST - 2
1) $CH_1CHO \rightarrow Aldol$	A) LIAIH,
$H) CH_{3}COOH \rightarrow CH_{3}CH_{4}OH$	B) Zn - Hg;
	Con. HC/
III) $CH_{COCH_{c}} \rightarrow CH_{c}CH_{c}CH_{c}$	C) NaOC/
$IV)CH_{CHO} \rightarrow CHCl_{1}$	D)NaOH
	E) KMnO, H

53.

The correct match is

A. I-E, II-B, III-A, IV-C

B. I-D, II-A, III-B, IV-D

C. I-B, II-E, III-A, IV-D

D. I-D, II-B, III-E, IV-D

Answer: B

54. Identify Z in the followig reaction $2H_3CCOCH_3 \xrightarrow[(i) Ba(OH)_2]{(ii) \Delta} Z$

A. $H_3CCH_2CO_2H$

 $\mathsf{B.}\left(CH_3\right)_2 C = CHCOCH_3$

 $\mathsf{C}.\,H_3CCOCH_2CO_2H$

 $\mathsf{D.}\, 2H_3CCO_2H$

Answer: B

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B. $RCONH_2$

 $\mathsf{C}.\,R-CH=NH$

 $\mathsf{D}.\,R-CH=NNH_2\mathsf{s}$

Answer: D

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56. Schiff's bases are formed when aniline reacts with

A. Aromatic aldehydes

B. Aryl ketones

C. Arylhalides

D. Aryl alcohols

Answer: A

57. Which of the following can undergo neither aldol condensation nor iodoform reaction?

A. CH_3CHO

B. CH_3COCH_3

 $\mathsf{C.}\,CH_3COCH_2CH_2CH_3$

D. CH_3CCl_2CHO

Answer: D

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58. Diacetone alcohol is obtained when

A. 2 molecules of acetone condense in presence of barium hydroxide

B. 3 molecules of acetone condense in presence of barium hydroxide

C. 3 molecules of acetone polymerise in presence of conc H_2SO_4

D. 3 molecules of acetone condese in presence of conc H_2SO_4

Answer: A



59. Which one of the following is one of the cross end products formed when a mixture of acetone and acetaldehyde is heated after treating with aqueous sodium hydroxide?

- A. $(CH_3)_2C = CH CHO$
- $B.(CH_3)C(OH) = CHCOCH_3$
- $\mathsf{C}.\,CH_3-CH=CH-CHO$
- D. $(CH_3)_2CH(OH)CH_2CO CH_3$

Answer: A

60. Number of σ bonds , π bonds and lone pairs of electrons present in

acetone semicarbazone are

A. 16, 2, 5

B. 16, 2, 2

C. 14, 2, 4

D. 16, 2, 4

Answer: A

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61. When acetaldehyde undergoes reaction with Zn-HCl in the presence of

Hg, The product obtained is

A. propane

B. ethane

C. methane

D. butane

Answer: B



62. HCHO with conc. Alkali forms two compounds. The change in oxidation number would be

A. (0 to -2) in both the compounds

B. (0 to +2) in both the compounds

C. (0 to +2) in one compounds and (0 to -2) in the second compound

D. all the above are correct

Answer: C

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

A. Acetaldehyde

B. benzaldehyde

C. Glucose

D. Formic acid

Answer: B

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64. A compound reduces Tollen's reagent but does not reduce Fehling's

or Benedict solution. It is

A. Glucose

B. Benzaldehyde

C. Acetophenone

D. Acetaldehyde

Answer: B



65. 1-Phenylethanol can be prepared by reaction of benzaldehyde with

A. Methyl bromide

B. Ethyl iodide and magnesium

C. Methyl bromide and aluminium bromide

D. Methyl iodide, Mg and hydrolysis

Answer: D

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66. Which of the following compound will give yellow precipitate with I_2 / Na_2CO_3 (aq) but does not respond to Cannizzaro reaction ?

A. $(C_2H_5)_2CO$

B. CH_3CHO

 $C. CH_2O$

 $\mathsf{D.}\, C_2H_5CH_2OH$

Answer: B

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67.
$$C_3H_8O \xrightarrow[K_2Cr_2O_7/H^+]{(O)} C_3H_6O \xrightarrow[I_2/NaOH]{(O)} CHI_3$$
 In this sequence, the

starting compound is

A. 1-propanol

B. Propanal

C. 2-propanol

D. Ethyl methyl ether

Answer: C

68. Which among the following gives positive iodoform test as well as positive Fehling test ?

A. Propanal

B. Ethanal

C. Propanone

D. Acetophenone

Answer: B

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69. Which of the following compound will not undergo Cannizzaro reaction ?

A. Benzaldehyde

B. 2,2-Dimethylpropanal

C. Formaldehyde

D. Phenylethanal

Answer: D

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70. Which of the following will show disproportionation when treated

with 50% aqueous NaOH?

A. Benzyl Alcohol

B. Ethanol

C. Phenyl ethanol

D. m-Nitrobenzaldehyde

Answer: D

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

A. Phenol

B. Benzoic acid

C. Butanal

D. Benzaldehyde

Answer: D

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72. Which of the following does not undergo disproportionation in the

presence of

A. CH_3CHO

B. HCHO

 $C. C_6H_5CHO$

D. Chloral

Answer: A

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73. Benzaldehyde undergoes oxidation and reduction in the presence of

A. $NaHCO_3$

B. Conc. NaOH

 $C. Na_2CO_3$

D. HCl

Answer: B

74. Benzene carbaldehyde is reacted with concentrated NaOH solution to give the products A and B. The product A can be used food preservative and the product B is an aromatic hydroxy compound where OH group is linked to sp^3 hybridised carbon atom next to Benzene ring. The products A and B are respectively.

A. Sodium benzoate and phenol

B. Sodium benzoate and phenyl methanol

C. Sodium benzoate and cresol

D. Sodium benzoate and picric acid

Answer: B

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75. $Z + (H_3CCO)_2O \rightarrow H_3CCH_3CN + 2H_3CCOOH$

Identify Z in the above reaction

A. $H_3CCH = NOH$

 $\mathsf{B}.\,H_3CCH_2CH=NOH$

 $\mathsf{C}.\,H_3CCH_2CH_2CH=NOH$

 $\mathsf{D.}\,H_3CCH_2CH_2N_2Cl$

Answer: B

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76. The reaction
$$Ar \overset{ extsf{w}}{N_2} \overset{ extsf{w}}{Cl} + Cu + HCl o ArCl + Na_2 + CuCl$$
 is

known as

A. Sandmeyer reaction

B. Wurtz-Fitting reaction

C. Kolbe's reaction

D. Gatterman's reaction

Answer: D



77. Identify Y and Z for the following reaction



A. $CHI_3 +$ Benzoic acid

 $\mathsf{B.}\,CHBr_3+HCHO$

C. $CHI_3 +$ Sodium benzoate

D. CHI_3 + Sodium acetate

Answer: C

78. Cannizzaro's reaction is an example of auto oxidation

A. It is a reaction answered by only aldehydes containing lpha - hydrogen

B. It is a reaction answered only by aromatic aldehydes.

C. it is reaction answered by all aldehydes

D. It is a typical reaction of aliphatic aldehyde

Answer: B

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79. Which of the followig reagents are used to distinguish aldehydes from

ketones ?

(I) Fehling's reagent (II) Lucas reagent

(III) Hinsberg's reagent (IV) Tollens reagent

A. I, III, IV

B. II, III

C. I, II

D. I, IV

Answer: D

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80. Which of the following compounds undergoes haloform reaction ?

A. CH_3COCH_3

B. HCHO

 $\mathsf{C.}\,CH_3CH_2Br$

 $\mathsf{D.}\,CH_3-O-CH_3$

Answer: A

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Objective exercise-2B

1. The IUPAC name of the following compound is



- A. 5-bromo-3-hydroxy benzene carbaldehyde
- B. 3-bromo-5 formyl phenol
- C. 3-bromo-5-hydroxy benzene carbaldehyde
- D. 1-bromo-3-formyl-5-hydroxyl benzene

Answer: C

2. The IUPAC name of compound



A. (Z) - 4, 6-Dimethyl oct-4-en-3-one

B. (Z)-4,6,7-Trimerhyl hex-4-ene-3-one

C. (E) - 4,6-Dimethyl oct-4-en-3-one

D. (E) - 4,6-Dimethyl oct-4-en-3-one

Answer: A



3. Which of the following can show optical isomerism



Answer: B



4. (A) C_2H_5OH (B) CH_3CHO (C) CH_3COCH_3 (D) C_6HCHO (E) $C_6H_5CH_2CHO$. Number of compounds which not only give yellow ppt with $NaOH + I_2$

but also give red ppt with Fehling's reagent are _____

A. 4 B. 3 C. 2 D. 1

Answer: D





 $+N.\,B.\,S
ightarrow (A) \xrightarrow{\mathrm{Mg/ether}} (B) \xrightarrow{(1)\,CH_3CN} (C).$ The organic compound 'C'

is

$$\bigvee_{\substack{\mathsf{H} \\ \mathsf{O}}} - \underbrace{\mathsf{C} - \mathsf{CH}_2 - \mathsf{CH}_3}_{\mathsf{O}}$$

Answer: B



6. Among the following compounds, which one is used as a flavouring agent in ice creams, chocolates and candies?



C.

 $\mathsf{D}.\, C_6H_5-CH=CH-CHO$
Answer: A



7. Identify (A) in the given reactions sequence.

$$(A) \stackrel{O_3/H_2O}{\longrightarrow} (B) \stackrel{\Delta}{\longrightarrow} 2CH_3 - \stackrel{O}{\stackrel{||}{C}} - CH_3 - 2CO_2$$



A.



Β.



C.



D.

Answer: C

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8.

(i) Conc . NaOH $(ii) H_2O / H^+ / \Delta$





C.



OH

Answer: B



9. The appropriate reagent for the transformation



A. Zn(Hg), HCl

B. NH_2NH_2, OH^-

 $\mathsf{C.}\,H_2\,/\,Ni$

D. $NaBH_4$

Answer: B

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10. $C_6H_5CHO+HCN
ightarrow C_6H_5CH(CN)OH.$ The product would be

A. Benzion condensation

B. Claisen - Schimdt condensation

C. Perkin's reaction

D. Cannizzaro's reaction

Answer: B

11. Aldol condensation product of the aldehyde Hexan-1,6-dial

A. Cyclo pen 1-ene 1-carbaldehyde

B. Cyclo hexa 1-enal

C. Cyclo But 2-en 1-carbaldehyde

D. Cyclo Hexenal

Answer: A

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12. The relation between the keto contens x, y, z in percentage should be

 $CH_3-CHO \Leftrightarrow CH_2=CH-OH.\ldots.(x~\%)$



A. x > y > z

 $\mathsf{B.}\, z > y > x$

 $\mathsf{C}.\, y > x > z$

 $\mathsf{D}. y > z > x$

Answer: A

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$$13. CH_{3} - \bigcup_{\substack{| \\ H \\ H \\ H \\ OH}}^{CH_{3}} - CH - CHO \xrightarrow[]{NaOH}{\Delta}$$

The product of the above reaction is called

A. Hofmann product

B. Saytzeff product

C. Zaitsev product

D. Cannizzaro product

Answer: A

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Objective exercise -3 (Previous NEET/AIPMT Questions)

1. Chloroethane is treated with alcoholic potassium hydroxide. The product formed is

A.
$$R - CH = N - NH_2$$

 $\mathsf{B}.\,R-C\equiv N$

C.
$$R - \underset{\substack{||}{O}}{C} - NH_2$$

 $\mathsf{D}.\,R-CH=NH$

Answer: A



2.
$$3CH_3COCH_3 \xrightarrow[(A)]{HCl} (CH_3)_2C = CH - CO_{(B)} - CH = C(CH_3)_2$$

This polymer (B) is obtained when acetone is saturated with HCl gas, B

can be

A. phorone

B. formose

C. diacetone alcohol

D. mesityl oxide

Answer: A

3. A carbonyl compound reacts with HCN to form a cyanohydrin which on hydrolysis forms a racemic mixture of hydroxy acids. The compounds is

A. acetaldehyde

B. acetone

C. diethyl ketone

D. Formaldehyde

Answer: A

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4. $(CH_3)_2C = CHCOCH_3$ can be oxidised to $(CH_3)_2C = CHCOOH$

by

A. Chromic acid

B. NaOl

C. Cu at $300^{\,\circ}\,C$

D. $KMnO_4$

Answer: B



5. Benzaldehyde reacts with ethanolic KCN to give

A. $C_6H_5CHOHCN$

 $\mathsf{B.}\, C_6H_5CHOHCOC_6H_5$

 $\mathsf{C.}\, C_6H_5CHOHCOOH$

D. $C_6H_5CHOHCHOHC_6H_5$

Answer: B



6. Acetophenone when reacted with a base, C_2H_5ONa , yields a stable

compound which has the structure



Answer: A



7. The reagents which can be used to distinguish acetophenone from benzophenone is (are)

A. 2,4-Dinitrophenyl hydrazine

B. Aqueous solution of $NaHSO_3$

C. Benedict reagent

D. lodine and Na_2CO_3

Answer: D

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

A. CH_3COOCH_3

 $\mathsf{B.}\, CH_3 CONH_2$

 $\mathsf{C.}\,CH_3COOCOCH_3$

D. CH_3COCl

Answer: D



9.

the

compound describes a condensation polymer which can be obtained in two ways, either treating 3 molecules of acetone (CH_3COCH_3) with conc. H_2SO_4 or passing propyne $(CH_3 - C \equiv CH)$ through a red hot tube, the polymer is

A. phorone

B. mesityl oxide

C. deacetonye alcohol

D. mesitylene









Answer: C

Β.

C.

11. Predict the products in the given reaction.



Answer: C

12. CH_3CHO and C_6H_5CHO can be distinguished chemically by

A. Benedict's test

B. lodoform test

C. Tollen's reagent test

D. Fehling's solution test

Answer: B

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13. Consider the following reaction



 $\xrightarrow{H_2} A$ $Pd - BaSO_{A}$

The product A is

A. C_6H_5CHO

 $\mathsf{B.}\, C_6H_5OH$

 $\mathsf{C.}\, C_6H_5COCH_3$

D. C_6H_5Cl

Answer: A

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14. Consider the reaction :

 $RCHO + NH_2NH_2 \rightarrow RCH = N - NH_2$

What sort of reaction is it ?

A. Electrophilic addition - elimination reaction.

B. Free radical addition - elimination reaction

C. Electrophilic substitution-elimination reaction

D. Nucleophilic addition-elimination reaction

Answer: D



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

A.
$$CH_{3}CH_{2}CH_{2} - \overset{O}{\overset{||}{C}} - CH_{3}$$

B. $CH_{3}CH_{2}CH_{2} - \overset{O}{\overset{||}{C}} - CH_{2}CH_{2}CH_{3}$
C. $\overleftrightarrow{$

D. 📄

Answer: D

16. Reaction by which benzaldehyde cannot be prepared



Answer: B



17. Which one is most reactive towards nucleophilic addition reaction ?



Answer: D

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18. An organic compound 'X' having molecular formula C_5H_{10} yields phenylhydrazone and gives negative response to the iodoform test and Tollen's test. It produces n-pentane on reduction. 'X' could be

A. 3-pentanone

B. n-amyl alcohol

C. pentanal

D. 2-pentanone

Answer: A

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

A. hydrazine in presence of feebly acidic solution

B. hydrocyanic acid

C. sodium hydrogen sulphite

D. a Grignard reagent

Answer: A

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

A. hydrocyanic acid

B. sodium hydrogen sulphite

C. a Grignard reagent

D. hydrazine in presence of feebly acidic solution

Answer: D



21. Which of the following compounds would be hydrolysed most easily?



Answer: C



22. The correct statement regarding a carbonly compound with a

hydrogen atom on its alphacarbon is :

- A. a carbonly compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation
- B. a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism
- C. a carbonly compound with hydrogen atom on its alpha carbon never equilibrates with its corresponding enol
- D. a carbonyl compound with a hydrogen atom on its alpha-carbon
 - rapidly equilibrates with its corresponding enol and this process is

known as aldehyde-ketone equilibration.

Answer: B

23. Which among the given molecules are exhibit tautomerism?



A. III only

B. Both I and III

C. Both I and II

D. Both I and III

Answer: A

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





Answer: B



25. Consider the reaction



Silver mirror observed

Identified A, X, Y and Z

A. A-Ethanol, X-Acetaldehyde, Y - Butanone, Z-Hydrazone

B. A-Methoxymethane, X-Ethanoic acid, Y - Butanone, Z-Hydrazone

C. A-Methoxymethane, X-Ethanol, Y-Ethanoic

D. A-Ethanal, X-Ethanol, Y-But-2-Enal, Z-Semicarbazone

Answer: D

26. Of the following which is the product formed when cyclohexanone undergoes aldol condensation followed heating ?



Answer: C

27. Predict the correct intermediate and product in the following reaction

$$H_3C-C\equiv H \xrightarrow{H_2O,H_2SO_4} ext{Intermediate} ext{(A)} o ext{Product (B)}$$

$$\begin{array}{l} \mathsf{A}.\ A: H_3C - \underset{OH}{C} = CH_2, \ B: H_3C - \underset{OH}{C} - CH_3 \\ & \underset{OH}{\overset{|}{}} \\ \mathsf{B}.\ A: H_3C - \underset{O}{C} = CH_2, \ B: H_3C - \underset{O}{C} = CH_3 \\ & \underset{OH}{\overset{|}{}} \\ \mathsf{C}.\ A: H_3C - \underset{OH}{C} = CH_2, \ B: H_3C - \underset{O}{C} = CH_3 \\ & \underset{OH}{\overset{|}{}} \\ \mathsf{D}.\ A: H_3C - \underset{O}{C} - CH_3, \ B: H_3C - C \equiv CH \\ & \underset{O}{\overset{|}{}} \\ \end{array}$$

Answer: A

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 ${\bf 28.}$ Identify the major products P, Q and R in the following sequence of

reactions







Answer: D



Objective exercise -4 (Assertion (A) & Reason (R) Type Questions :)

- 1. (A) Acetone cannot be oxidised by weak oxidising agents like Ag^+, Cu^{+2} etc.
- (R) Acetone is a weak reducing agent

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

- B. Both (A) and (R) are true and (R) is not the correct explanation of
 - (A)
- C. (A) is true but (R) is false
- D. Both (A) and (R) is false

Answer: A

2. (A) Acetaldehyde reduces Fehling's solution but acetone does not.

(R) Acetaldehyde is stronger reducing agent than acetone.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

- B. Both (A) and (R) are true and (R) is not the correct explanation of
 - (A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A



3. (A) Among the carbonyl compounds, formaldehyde is the most reactive towards addition.

(R) Electrophilicity of carbonyl carbon in formaldehyde is maximum.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

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4. (A) Fridel-Crafts acylation gives an aromatic ketone from benzene(R) : Acylation reaction is a uncleophilic substitution reaction with respect

to benzene .

- A. Both (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

- C. (A) is true but (R) is false
- D. Both (A) and (R) is false

Answer: C



5. (A) : Acetaldehyde forms hemiacetal with CH_3OH in the presence of dry HCI.

(R): Hemiacetal contains both alcohol and alkoxy group.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B
6. (A) : Acetone gives yellow precipitate with iodine and alkali

(R) : Acetone contains a methyl ketonic group .

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A



7. (A) : To prepare aldehydes from primary alcohols , acidified $KMnO_4$ or $K_2Cr_2O_7$ is not used.

(R) : Strong oxidising agents like acidified $KMnO_4$ or $K_2Cr_2O_7$ oxidise aldehydes to carboxylic acids .

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

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8. (A) : Acetaldehyde and acetone can be distinguished by using 2,4 DNP.

(R) : Acetaldehyde and acetone are both examples of carbonyl compounds.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A



9. (A) α -Hydrogen atoms in aldehdes and ketones are acidic.

(R) The anion left after the removal of α -hydrogen from carbonly compounds is stabilized by the electron withdrawing carbonyl group.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: C

10. (A) Benzaldehyde is more reactive than acetaldehyde towards nucleophilic attack.

(R) The combined effect of -I and +R effects of phenyl group decreases the electron density on the carbon atom of C=O group in benzaldehyde.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: D



11. (A) 2,2-Dimethylpropanal undergoes Cannizzaro reaction with conc.

NaOH.

(R) Cannizzaro reaction is a disproportionation reaction.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B

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12. (A) Benedicts reagent can be used to distinguish benzaldehyde from aceldehyde.

(R) The C-H bond of CHO group in benzaldehyde is stronger than C-H bond of CHO group in acetaldehyde.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

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13. (A) Aldol condensation of acetone can be catalysed both by acid (or) base.

(R) β -Hydroxyaldehyde readily undergo acid-catalysed dehydration.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B



14. (A) Aldehydes are reduced to alkanes in the presence of Zn/Hg and Conc. HCl.

(R) In Wolff-Kishner reduction reagent used is NH_2NH_2 and KOH in glycol.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B

15. (A) Aromatic aldehydes are more reactive than aliphatic aldehydes.

(R) Polarity of carbonyl group is more in benzaldehyde.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: D

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16. (A) $R - \overset{O}{C} - Cl$ fails to give ketone when treated with R-Mg-X, but with R_2Cd , ketones is obtained easily.

(R) R-Mg-X reacts with acid chloride to form ketone, but R-Mg-X further reacts with ketone readily and form tertiary alcohol.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

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17. (A) Aldehydes on reaction with hydroyxl amine to form aldoximes.

(R) Aldoximes exhibit geometrical isomerism.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B



18. (A) Aldehydes & ketones on shaking with a saturated solution of $NaHSO_3$ gives solid derivative of sodium bisulphite compounds.

(R) Carbonyl compounds on heating with NaCN gives cyanohydrins.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: B

19. (A) Reaction of benzaldehyde with formaldehyde in presence of base is crossed Cannizzaro's reaction.

(R) Formaldehyde is always oxidized in this reaction because it is better oxidising agent.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: C



20. (A) $CCl_3 - CHO$ on treatment with an alkali to form chloroform and

formate ion but not undergo Cannizzaro's reaction even through no α -

hydrogen.

(R) H^- is not transfer does not take place because CCl_3 , is good leaving group.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

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21. (A) Acetic acid does not give haloform test.

(R) Acetic acid has no α -hydrogen.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: C

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22. Anhydroys CrO_3 is a mild oxidant and it can oxidise

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of

(A)

C. (A) is true but (R) is false

D. Both (A) and (R) is false

Answer: A

Conversions (Structure of products, Starting materials or reagents)



2. Strutures of products , Starting materials or reagents

 $RCH = CHCHO + H_2NCONHNH_2 \stackrel{H^+}{\longrightarrow}$



3.

 $+H_2NCH_2CH_3 \stackrel{H^+}{\longrightarrow}$



 $+HO-NH_{2} \xrightarrow{H^{+}}$







7. Strutures of products , Starting materials or reagents

 $CH_3CH_2CHO \xrightarrow[\text{reagent}]{\text{Tollens}}$





 $CH_{3}COCH_{2}COOC_{2}H_{5} \xrightarrow{(i) NaBH_{4}} (ii) H^{+}$





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14.

 $+ CH_3CH_2CHO \xrightarrow{\text{dil. NaOH}} \rightarrow$









2. Write notes on (i) Rosenmund reduction and (ii) Wolff-Kishner's

reduction





7. Which of the following is an example of aldol condensation reaction ?
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8. Describe the Cross aldol condensation . Watch Video Solution
9. Cannizzaro reaction involves Watch Video Solution

10. Silver mirror test with Tollen's reagent is given by



11. Which of the followig reagents are used to distinguish aldehydes from

ketones ?

(I) Fehling's reagent (II) Lucas reagent

(III) Hinsberg's reagent (IV) Tollens reagent

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12. Benedict's solution is not reduced by

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13. The reagents which don't react with glucose are I) Schiff's reagent II)

Tollen's reagent III) Fehling reagent IV) $NaHSO_3V)NH_3$

14. Sodium	hypochlo	rite is	used in
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15. Explain the Aldol term. Give an example of the reaction .
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16. Which of the following represent an acetal/ ketal
Watch Video Solution
17. Explain the Hemiacetal term. Give an example of the reaction .
Vatch Video Solution

18. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol. Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile.

The leaving group in quartenary ammonium ion has about the same leaving tendency as a protonated amino group but does not have acidic hydrogen. The reaction of a quartenary ammonium ion with hydroxide ion is known as Hoffmann elimination reaction. The leaving group is tertiary amine. Since a tertiary amine is only a moderately good leaving group, the reaction requires heat. The carbon to which the tertiary amine is attached is designated as α carbon.

When the hydroxide ion starts to remove a β H from a quartenary ammonium ion, the leaving group does not immediately start to leave because a tertiary amine is not a good leaving group. As a result, a partial negative charge builds up on the carbon from which the proton is

removed.
Which of the following statements is correct?
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19. Schiff's bases are formed when aniline reacts with
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20. Cyanohydrin formation constant will be highest for ?
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21. Explain the Oxime term. Give an example of the reaction .
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22. Which of the following reagents can form a hydrazone with alkanone?





Water video Solution

5. Write the names of the isomeric ketones possible for 2, 2 - dimethyl propanal .

1. Write any three methods of preparation of acetaldehyde. Give two uses.

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2. How is acetaldehyde prepared s	eparately from
$CH_3CH_2OH, CH_3CHCl_2 { m and} CH_2 = CH_2$	
Watch Video Solution	
3. Write any four properties and two uses of acetaldehy Write any four properties and two uses of acetaldehy Watch Video Solution	/de

4. How does acetaldehyde react with following:

(i) HCN, (ii) H_2NOH , (ii) $C_2H_5MgBr. H_2O$ and (iv) $H_2\mathbb{N}HCONH_2$

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5. Give equations for the reation of acetaldehyde with : (i) $NH_3~{ m and}~$ (ii)
PCl_5 .
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6. Discuss aldol condensation.
Vatch Video Solution

7. Write three preparations , three properties and three uses of acetone.





9. How does acetone react with (i) $NaHSO_3$ (ii) $I_2 + NaOH$ and (iii) $C_6H_3(NO_2)_2NHNH_2.$

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10. Explain the similarity in chemical properties of acetaldehyde and acetone. Write any three tests that are useful to differentiate acetaldehyde from acetone.

11. Explain the similarity in chemical properties of acetaldehyde and acetone. Write any three tests that are useful to differentiate acetaldehyde from acetone.

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12. Explain the formation of hemiacetal and acetal from acetone

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13. Give the structure and IUPAC name of product . Obtained when acetone is treated with $Ba(OH)_2$



14. Write short notes on Clemmensen reduction and Wolff - kishner

reduction.


15. How ethyne and propyne are converted to acetaldehyde and acetone

respectively ?

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16. Give equations for the formation of acetaldehyde and acetone form

ethylidene chloride and isopropylidene chloride.

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17. Write the reactions between ammonia with

(i) CH_3CHO and (ii) CH_3COCH_3 .

18. How do acetaldehyde and acetone react with Grignard reagent ?

Watch Video Solution 19. Write the common and IUPAC names of products obtained when acetone is treated with dry HCl. Watch Video Solution 20. Give the structure and IUPAC name of product . Obtained when acetone is treated with $Ba(OH)_2$ Watch Video Solution

21. What are the products obtained when acetaldehyde and acetone are

treated with separately with conc. H_2SO_4 ?

22. Write a not on iodoform reaction.



24. Mention the products formed when acetaldehyde reacts with hydrogen in presecne of nickel and acetone reacts with sodium in ethyl alcohol.



1. What is Etard reaction ? Give equation.

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2. Wxplain Gattermann-Koch reaction for the formation of benzaldehyde
Watch Video Solution
3. Benzaldehyde is obtained from toluene by
Watch Video Solution
4. How acetophenone is formed by Friedel-Craft's reaction
Watch Video Solution

5. Discuss on the Cannizzaro's reaction



4. Give the preparation of acetone from acetyl chloride using dimethyl

cadmium

Watch Video Solution 5. Why oxidation of a ketone gives carboxylic acid(s) with less number of carbon atoms? Watch Video Solution 6. Why the solubility of carbonyl compounds in water decreases with increase in molecular weight? Watch Video Solution 7. Why do aldehyes differ in some chemical properties with ketones?

8. Explain the reaction between carbonyl compounds with Grignard reagent

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9. What is the importance of the reaction between carbonyl compounds
and DNP?
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10. Dry distillation of calcium salt of a dicarboxylic acid gives cyclic ketone. Explain with suitable examples.
Watch Video Solution

11. Give the order of reactivity of various acid derivatives towards nucleophilic substitution. Solution



14. How cinnamic acid is formed by Perkin reactio? Write the mechanism

15. Write the mechanism of reaction between an aldehyde with any ammonia derivatives. Under what condition, the reaction gives maximum yield?

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16. How Clemmenson's reduction is different from that using lithium aluminium hydride?
Watch Video Solution
17. How lodoform reaction is useful in detecting
$CH_3CO - \text{ or } CH_3CH(OH) - \text{ groups with sodium hypoiodite?}$
Watch Video Solution

18. Explain crossed aldol condensation with suitable examples



19. Explain the condensation reactions of formaldehyde with phenol and

with urea. Draw the structures of the condensation products.



formation is in between



23. Write on the following (a) Stephens reaction and (b) Tischenko reaction

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24. Write notes on (i) Rosenmund reduction and (ii) Wolff-Kishner's reduction

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25. Describe any four methods of preparation of acetophenone?



26. What is the orientation effect of aldehydic and ketonic group when attached to aromatic ring towards electrophilic substitution reactions?





32. $(CH_3)_3CCHO$ does not undergo Cannizzaro's reaction. Why?

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33. Write the products of the reaction in presence of base between propanal and propanone

34.
$$CH_3 - CH = CH_2 + H_2O + PdCl_2 \xrightarrow{CuCl_2} X \xrightarrow{HCl}{-2H_2O} Y.$$
 What is 'Y' ?



35.
$$CH_3CHO \xrightarrow{K_2Cr_2O_7} A \xrightarrow{NaOH} B \xrightarrow{\text{Soda lime}} C \xrightarrow{Cl_2} D \xrightarrow{AgOH} E \xrightarrow{Cu}_{300^\circ C} F.$$

Write the final product 'F' of the given sequence



38. $CH_3CHO \xrightarrow{HCN} X \xrightarrow{H_2O}_{H^+} Y$. What are the functional groups present in

the final product 'Y' in the given sequence of reactions



39.

$$CH_4 \xrightarrow[hv]{Cl_2} A \xrightarrow[hv]{Na} B \xrightarrow[hv]{Cl_2} C \xrightarrow[NaOH]{aqueous} D \xrightarrow[O]{O} E \xrightarrow[K_2O_2O_7/H^+]{O} F \xrightarrow[Ca(OH)_2]{O} G \xrightarrow[Heat]{Heat} D \xrightarrow[Heat]{O} F \xrightarrow[K_2O_2O_7/H^+]{O} F \xrightarrow[Heat]{O} F \xrightarrow[Heat]{$$

. What is the functional isomer of the product 'H'.

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$$\textbf{40.} \ CH \equiv CH \xrightarrow{50\,\%\,H_2SO_4} A \xrightarrow{K_2Cr_2O_7} B \xrightarrow{Ca\,(\,OH\,)_2} C \xrightarrow{\mathrm{dry}} D. \ \text{Write the}$$

final prodcut 'D' in the above sequence of reactions?

41.
$$HCHO \xrightarrow[Ni]{H_2}{Ni} A \xrightarrow{PCl_5} B \xrightarrow[KCN]{Alcoholic} C \xrightarrow[C_2H_5OH]{Na} D \xrightarrow[HCl]{NaNO_2} E \xrightarrow[H_2SO_4]{K_2O_2O_7} F.$$
 Write

the isomer of the product 'F'

