CHEMISTRY

BOOKS - MTG GUIDE

ALDEHYDES, KETONES AND CARBOXYLIC ACIDS

Illustration

1. How do you convert the Ethyne to ethanal

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2. How do you convert the Phenol to benzaldehyde

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3. How do you convert the Phenol to benzaldehyde

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4. Give simple chemical tests to distinguish between the Ethanal and propan

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5. Give simple chemical tests to distinguish between the Benzaldehyde and acetophenone.

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6. Give simple chemical tests to distinguish between the Propanal and butan-2-one

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7. Give reason : Aldehydes and ketones have lower boiling points than corresponding alcohols.

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8. Give reason : Aldehydes are more reactive than ketones towards nucleophilic reagents.

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9. Give reason :pH of reaction should be carefully controlled while preparing ammonia derivatives of carbonyl compounds.

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10. An organic compound (A) which has characteristic odour, on treatment with NaOH forms two compounds (B) and (C). Compound (B) has the molecular formula C_7H_8O which on oxidation with CrO_3 gives back compound (A). Compound (C) is the sodium salt of the acid. Compound (C) when heated with soda lime yields an aromatic hydrocarbon (D), Deduce the structures of (A), (B), (C) and (D). Write chemical equations for all reactions taking place.

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11. A ketone (C_4H_8O) , which undergoes a haloform reaction gives compound B on reduction. B on heating with sulphuric acid gives a compound C which forms monozonide D. Don hydrolysis in presence of zinc dust gives only acetaldehyde E. Identify A, B, C, D and E. Write the reactions involved.

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12. Two moles of organic compound 'A' on treatment with a strong base gives two compound 'B' and 'C'. Compound 'B' on dehydrogenation with Cu gives 'A' while acidification of 'C' yields carboxylic acid 'D' with molecular formula of CH_2O_2 . Identify the compounds A, B, C and D and write all chemical reactions involved.

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13. How will you convert the Acetophenone to benzoic acid in not more than two steps

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14. How will you convert the Ethanoic acid to 2-hydroxyethanoic acid in not more than two steps

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15. How will you convert the Acetylene to acetic acid in not more than two steps

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16. How will you convert the Toluene to m-nitrobenzoic acid in not more than two steps

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17. Account for the following:

Aromatic carboxylic acids do not undergo Friedel-Crafts reaction.

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18. Account for the following:

pK_a value of 4-nitrobenzoic acid is lower than that of benzoic acid.

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19. Write the structures of compounds A, B and C in each of the following reactions :

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20. Write the structures of compounds A, B and C in each of the following reactions :

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21. Identify A to E in the following reactions:

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Neet Cafe Structure And Nomenclature Of Aldehydes And Ketones

1. Correct statement about carbonyl group is

A. it is non-planar

B. carbon atom is sp^2 hybridised

C. oxygen has five non-bonding electrons

D. carbon oxygen bond is non-polar.

Answer: B

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2. The number of σ bonds, `pi bonds and lone pair of electrons present in acetic acid are

A. 7σ-bonds, 2 π-bonds, 2 lone pair of e^-

B. 6σ-bonds, 1π -bond, 4 lone pair of e^-

C. 7 σ-bonds, 1 π-bond, 4 lone pair of e^-

D. none of these

Answer: C

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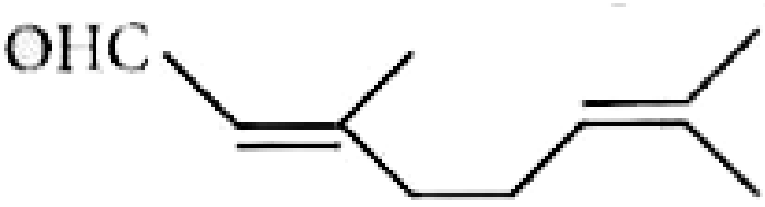
3. IUPAC name of the following compound is



A. 2-methylnona-2,6-dien-1-al

B. 3-methylnona-2,6-dien-1-al

C. 4,6-dimethylhepta-3,5-dien-1-al

D. 3,7-dimethylocta-2,6-dien-I-al

Answer: D

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4. The IUPAC name of ethyl isopropyl ketone is

A. 4-methyl-3-pentanone

B. 1,1-dimethyl-2-butanone

C. 2-methyl-3-pentanone

D. 4,4-dimethyl-3-butanone.

Answer: C

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Neet Cafe Preparation Of Aldehydes And Ketones

1. Two isomeric compounds A and B have the formula $C_3H_6CI_2$. With aq. KOH solution A gives propionaldehyde and B gives acetone. Then A and B respectively are

A. $CH_3 - \mathrm{CCl}_2 - CH_3$ and $CH_3 - CH_2 - CHCl_2$

B. $CH_3 - CHCl - CHCl_2$ and $CH_3 - CH_2 - CHCl_2$

C. $CH_3 - CH_2 - CHCl_2$ and $CH_3 - \mathrm{CCl}_2 - CH_3$

D. $CH_3 - CHCl - CHCl_2$ and $CH_3 - \mathrm{CCl}_2 - CH_3$

Answer: C

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2. Which of the following reactions can produce R-CO-Ar?

A. $ArCOCl + H - Ar \xrightarrow{AlCl_2}$

B. $RCOCl + RMgX \rightarrow$

C. $RH + CrO_3 \rightarrow$

D. $RCOCl + H - Ar \xrightarrow{AlCl_3}$

Answer: D

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3. Ketones $(R_1COR_2), R_1 = R_2$ -alkyl group, can be obtained in one step by

A. hydrolysis of esters

B. oxidation of primary alcohols

C. oxidation of secondary alcohols

D. reaction of acid halides and alcohols

Answer: C

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4. Oxidation of toluene to benzaldehyde by the use of chromyl chloride is called

A. Wurtz reaction

B. Etard's reaction

C. Fittig reaction

D. Rosenmund's reaction.

Answer: B

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5. Ozonolysis of C_7H_{14} gave 2-methyl-3-pentanone. The alkene is

A. 2-ethyl-3-methyl-1-butene

B. 3-ethyl-2-methyl-3-butene

C. 2,5-dimethyl-3,4-dimethylhex-3-ene

D. 3-ethyl-2-methyl-1-butene.

Answer: A

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6. An ester (A) with molecular formula $C_9H_{10}O_2$ was treated with excess of CH_3MgBr and the compound so formed was treated with conc. H_2SO_4 to form olefin (B). Ozonolysis of (B) gave ketone with formula C_8H_8O which shows positive iodoform test. The structure of (A) is

A. $C_6H_5COOC_2H_5$

B. $CH_3OCH_2COC_6H_5$

C. $CH_3CO - C_6H_4 - COCH_3$

D. $C_6H_5COOC_6H_5$

Answer: A

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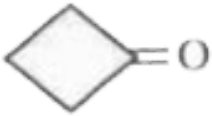
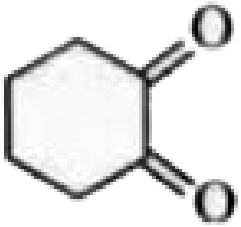
7. Dry distillation of calcium salt of adipic acid gives

A. 

B. 

C. 

D. 

Answer: B

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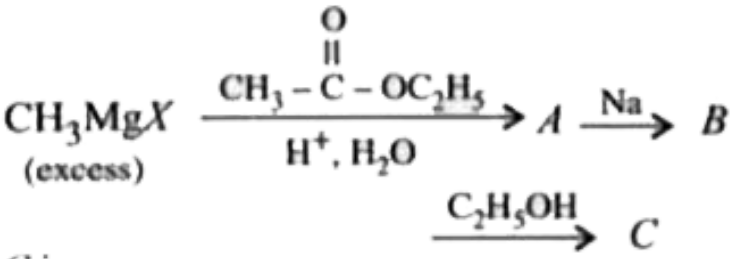

8. C is

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

B. $(CH_3)_3C - O - C_2H_5$

C. $C_2H_5OC_2H_5$

D. $CH_3 - \underset{O}{\overset{||}{C}} - OC_2H_5$

Answer: B

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9. α, β -unsaturated aldehyde is formed in the sequence

A. $HCHO \xrightarrow{KOH\,(aq)}$

B. $CH_3CHO \xrightarrow{dil.\,KOH} A \xrightarrow{\Delta} B$

C. $CCl_3CHO \xrightarrow{KOH\,(aq)}$

D. $CH_3 - \overset{\overset{O}{||}}{C} - OC_2H_5 \xrightarrow{KOH\,(aq)}$

Answer: B

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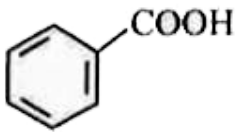
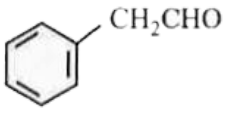
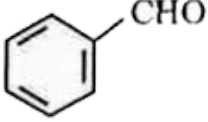
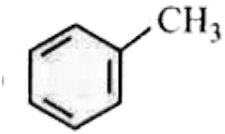
10. If (X) underset((CH_3CO)_2O) overset(CH_3COONa)(to) ` Cinnamic acid, then (X) is

A. 

B. 

C. 

D. 

Answer: C

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11. Consider the following statements : Acetophenone can be prepared by

I. oxidation of l-phenyl ethanol

II. reaction of benzaldehyde with methyl magnesium bromide

III. Friedel-Crafts reaction of benzene with acetyl chloride

IV. distillation of calcium benzoate

A. II and III

B. I and IV

C. I and III

D. III and IV

Answer: C

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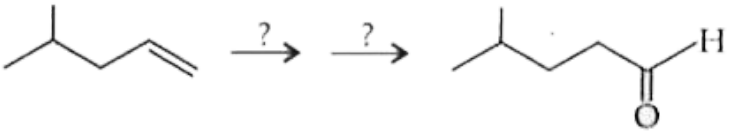
12. The suitable reaction steps to carry out the following transformation are



A. $\xrightarrow[(ii)\,H_2O_2,NaOH]{(i)\,BH_3,THF} \xrightarrow[CH_2Cl_2]{\text{PCC}}$

B. $\xrightarrow[(ii)\,H_2O_2,NaOH]{BH_3,THF} \xrightarrow{HIO_3}$

C. $\xrightarrow{H_2O,H_2SO_4} \xrightarrow[CH_2Cl_2]{\text{PCC}}$

D. $\xrightarrow[(CH_3)_3CCOOH, OH^-]{} \xrightarrow[H_2O]{K_2Cr_2O_7 . H_2SO_4}$

Answer: A

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13. An organic compound A, C_8H_{12} , on reaction with ozone followed by Zn gave one mole each of $(CHO)_2$ and $CH_3COCH_2CH_2COCH_3$. The structure of A is

A. $CH_3 - \underset{\underset{CH_2}{||}}{C} - CH_2CH_2 - \underset{\underset{CH_2}{||}}{C} - CH_3$

B. 

C. 

D. 

Answer: D

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14. Glycerol on heating with $KHSO_4$ forms

A. aldehyde

B. acyl alcohol

C. acetone

D. acrolein

Answer: D

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15. When primary alcohol is oxidised with chlorine, it gives

A. HCHO

B. CH_3CHO

C. CCl_3CHO

D. C_3H_7CHO

Answer: C

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16. Benzaldehyde can be prepared by the hydrolysis of

A. benzyl chloride

B. benzotrichloride

C. benzal chloride

D. benzonitrite

Answer: C

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Neet Cafe Properties Of Aldehydes And Ketones

1. Which of the following cannot be made by reduction of ketone or aldehyde with $NaBH_4$ in methanol?

A. 1-Butanol

B. 2-Butanol

C. 2-Methyl-1-propanol

D. 2-Methyl-2-propanol

Answer: D

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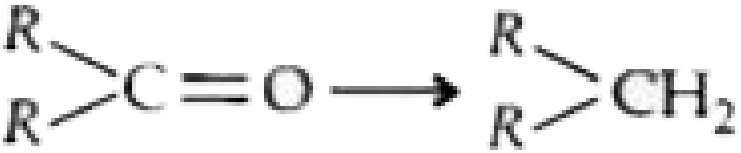
2. Which one of the following reactions cannot be used for the reduction of



A. Clemmensen reduction

B. Wolff-Kishner reduction

C. Wurtz reaction

D. HI and red phosphorus at $200^\circ C$

Answer: C

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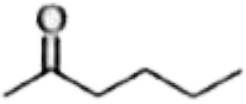
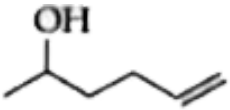
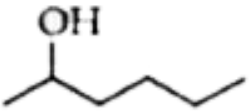
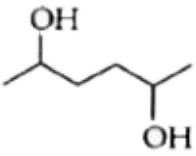
3. What is the product of the following reaction?

A. 

B. 

C. 

D. 

Answer: B

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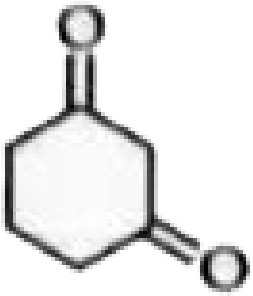
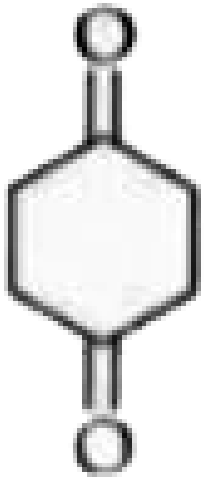
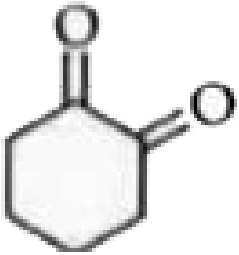
4. Which of the following has the largest value of dissociation constant K_a

A. 

B. 

C. 

D. 

Answer: B

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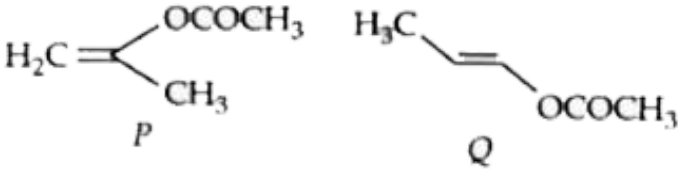
5. The product of acid hydrolysis of P and Q distinguished by



A. Lucas reagent

B. 2,4-DNP

C. Fehling's solution

D. $NaaHSO_3$

Answer: C

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6. The increasing order of the rate of HCN addition to compounds A to D is

$A.\ HCHO B.\ CH_3COCH_3 C.\ PhCOCH_3 D.\ PhCOPh$

A. A lt B lt C lt D

B. D lt B lt C lt A

C. D lt C lt B lt A

D. C lt D lt R lt A

Answer: C

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7. In Cannizzaro reaction given below:

$2PhCHO \xrightarrow{\langle OH^-} PhCH_2OH + PhCOO^-$

the slowest step is

A. the attack of $:OH^-$ at the carbonyl group

B. the transfer of hydride to the carbonyl group

C. the abstraction of proton from the carboxylic group

D. the protonation of $PhCH_2O^-$

Answer: B

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8. The enol form of acetone, after treatment with D_2O

A. $CH_3 - \overset{OD}{\overset{|}{C}} = CH_2$

B. $CD_2 - \overset{O}{\overset{||}{C}} - CD_3$

C. $CH_2 = \overset{OH}{\overset{|}{C}} - CH_2D$

D. $CD_2 = \overset{OD}{\overset{|}{C}} - CD_3$

Answer: B

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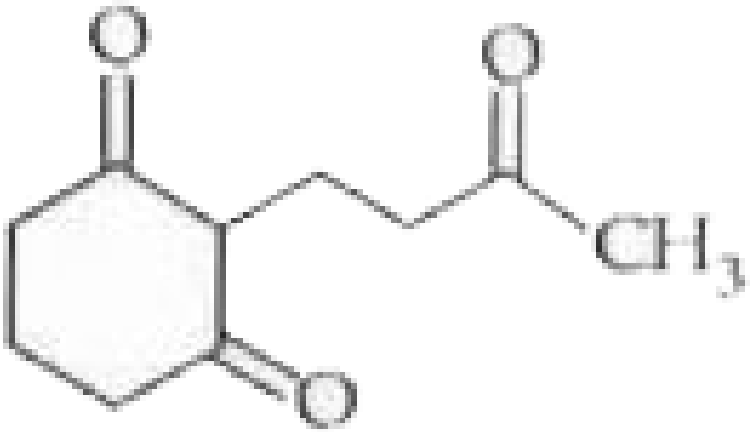
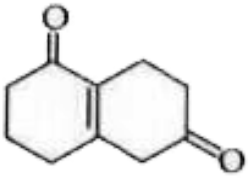
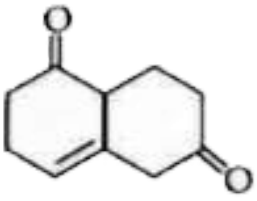
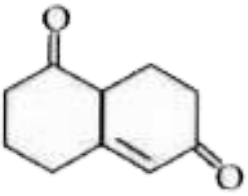
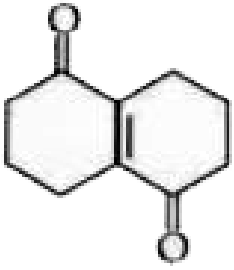
9.  on aldol condensation followed by heating gives

A. 

B. 

C. 

D. 

Answer: C

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

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

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

III. It does not undergo electrophilic substitution like nitration at

meta-position.

IV. It does not undergo iodoform reaction with iodine and alkali.

A. I and II

B. II and IV

C. III and IV

D. II and III

Answer: C

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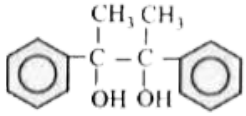
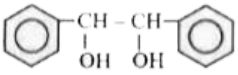
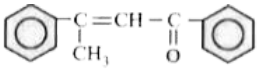
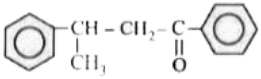
11. Acetophenone when reacted with a base, C_2H_5ONa , yields a stable compound which has the structure

A. 

B. 

C. 

D. 

Answer: C

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12. Benzyl alcohol is obtained from benzaldehyde by

A. Fittig reaction

B. Clemmensen's reduction

C. Kolbe's reaction

D. Reduction with $LiAlH_4$

Answer: D

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13. $CH_3CHO + HCHO \xrightarrow[\text{heat}]{Dil.\,NaOH} A \xrightarrow[H_3O]{HCN} B$

The structure of compound B is

A. $CH_2 = CH - \underset{\underset{OH}{|}}{C}H - COOH$

B. $CH_2 = CH - \underset{\underset{CN}{|}}{C}H - OH$

C. $CH_3CH_2 - \underset{\underset{OH}{|}}{C}H - COOH$

D. $CH_3 - \underset{\underset{OH}{|}}{C}H - COOH$

Answer: A

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14. In nucleophilic addition reactions the reactivity of carbonyl compounds follows order

A.

$$H_2C = O > R_2C = O > Ar_2C = O > RCHO > ArCHO$$

B.

$$H_2C = O > RCHO > ArCHO > R_2C = O > Ar_2C = O$$

C.

$$Ar_2C = O > R_2C = O > ArCHO > RCHO > H_2C = O$$

D.

$$ArCHO > Ar_2C = O > RCHO > R_2C = O > H_2C = O$$

Answer: B

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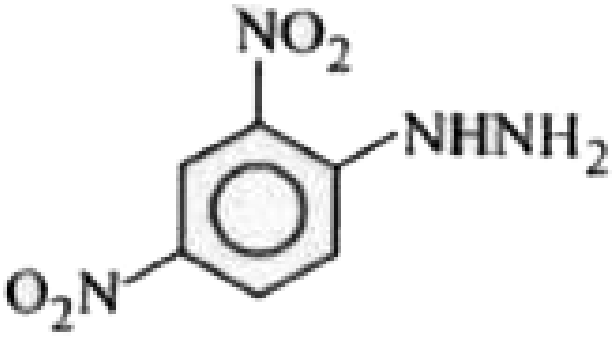
15. Which of the following compounds containing carbonyl group will give coloured crystalline compound with



A. CH_3COCl

B. CH_3COCH_3

C. $CH_3COOC_2H_5$

D. CH_3CONH_2

Answer: B

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16. A substance $C_{44}H_{16}O$ yields on oxidation a compound C_4H_8O which gives an oxime and a positive iodoform test. The original substance on treatment with conc. H_2SO_4 gives C_4H_8 . The structure of the compound is

A. $CH_3CH_2CH_2CH_2OH$

B. $CH_3CH(OH)CH_2CH_3$

C. $(CH_3)_3COH$

D. $CH_3CH_2 - O - CH_2CH_3$

Answer: B

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17. Which of the following gives aldol condensation reaction?

A. C_6H_5OH

B. $C_6H_5 - \overset{\overset{O}{||}}{C} - C_6H_5$

C. $CH_3CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

D. $(CH_3)_3C - \overset{\overset{O}{||}}{C} - H$

Answer: C

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18. 3-Hydroxybutanal is formed when (X) reacts with (Y) in dilute (Z) solution. What are X, Y and Z?

A. $CH_3CHO, (CH_3)_2CO, NaOH$

B. $CH_3CHO, CH_3CHO, NaCl$

C. $(CH_3)_2CO, (CH_3)_2CO, HCl$

D. $CH_3CHO, CH_3CHO, NaOH$

Answer: D

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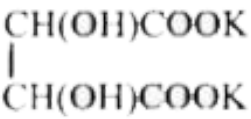
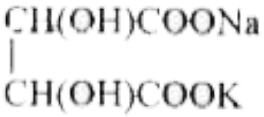
19. Fehling's solution is a mixture of two solutions. While one solution contains $CuSO_4$, the other contains

A. 

B. 

C. 

D. 

Answer: D

View Text Solution

20. Which of the following aldehydes can give Cannizzaro reaction with base?

A. $CH_3 - CH_2 - CH_2 - CHO$

B. $CH_3C - CH_2 - \underset{CH_3}{\underset{|}{C}}\,H - CHO$

C. $H_3C - CH = CH - CHO$

D. $(CH_3)_3C - CHO$

Answer: D

View Text Solution

21. $(CH_3)_2CO \xrightarrow[HCl]{NaCN} A \xrightarrow{H_3O^+} B$

In the above sequence of reactions A and B are

A. $(CH_3)_2C(OH)CN, (CH_3)_2C(OH)COOH$

B. $(CH_3)_2C(OH)CN, (CH_3)_2C(OH)_2$

C. $(CH_3)_2C(OH)CN, (CH_3)_2CHCOOH$

D. $(CH_3)_2C(OH)CN, (CH_3)_2C=O$

Answer: A

View Text Solution

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

A. $>C=O \xrightarrow{\text{Clemmensen's reduction}} >CH_2$

B. $>C=O \xrightarrow{\text{Wolff-Kishner reduction}} >CHOH$

C. $-COCI \xrightarrow{\text{Rosenmund's reduction}} CHO$

D. $-C \equiv N \xrightarrow{\text{Stephen reduction}}$ CHO

Answer: B

View Text Solution

23. In the given reaction X is

$$CH_3CHO + CH_2(COOH)_2 \xrightarrow{\text{pyridine / } \Delta} X$$

A. CH_3COOH

B. C_2H_5COOH

C. $CH_3CH = CH - COOH$

D. $(COOH) - CH = CH - (COOH)$

Answer: C

View Text Solution

24. A compound possessing α -hydrogen atom, in the presence of dilute alkali forms β -hydroxy aldehyde. This product on heating with dilute acid forms an unsaturated crotonaldehyde. The compound is

A. CH_3CHO

B. CH_3CH_2CHO

C. $CH_2 = CH - CHO$

D. $HC \equiv C - CHO$

Answer: A

View Text Solution

25. Benzaldehyde reacts with methyl amine to give

A. $C_6H_5NH_2$

B. $C_6H_5CH_2NH_2$

C. $C_6H_5CH = NCH_3$

D. $C_6H_5CONH_2$

Answer: C

View Text Solution

26. Propanal on treatment with dilute sodium hydroxide forms

A. $CH_3CH_2CH_2CH_2CH_2CHO$

B. $CH_3CH_2CH(OH)CH_2CH_2CHO$

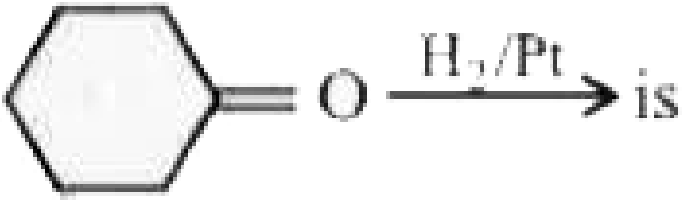
C. $CH_3CH_2CH(OH)CH(CH_3)CHO$

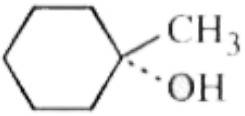
D. CH_3CH_2COONa

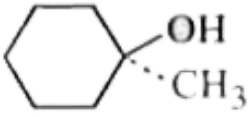
Answer: C

View Text Solution

27. The product of the following reaction



A. 

B. 

C. 

D. 

Answer: C

View Text Solution

28. Which of the following has most acidic proton?

A. CH_3COCH_3

B. $(CH_3)_2C = CH_2$

C. $CH_3COCH_2COCH_3$

D. $(CH_3CH_2)_3CH$

Answer: C

View Text Solution

29. Benzophenone can be converted into benzene using

A. fused alkali

B. anhydrous $AICI_3$

C. Sodium amalgam in water

D. acidified dichromate.

Answer: A

View Text Solution

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

A. chlorobenzene

B. benzyl chloride

C. benzoyl chloride

D. o-chlorobenzaldehyde

Answer: C

View Text Solution

31. The semicarbazone is formed when an aldehyde/ketone reacts with

A. NH_2OH

B. NH_2NH_2

C. $NH_2NHC_6H_5$

D. $NH_2NHCONH_2$

Answer: D

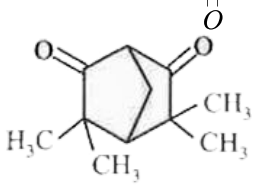
View Text Solution

32. An organic compound P on keeping in slightly acidic aqueous solution gives yellow precipitate with 2,4-dinitrophenylhydrazine. It also decolourises Br_2/CCl_4 solution and gives coloured solution/precipitate with neutral $FeCl_3$ solution. The structure of P can be

A. $OHC - C(CH_3)_2 - CHO$

B. $(CH_3)_3C - \underset{\underset{O}{\|}}{C} - H$

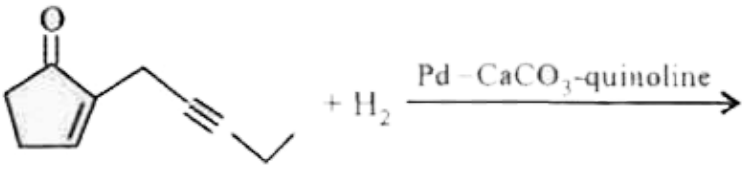
C. $(CH_3)_2C - \underset{\underset{O}{\|}}{C} - \overset{CH_3}{\overset{|}{C}}\ H - CHO$

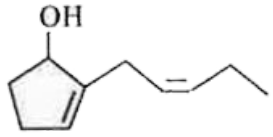
D. 

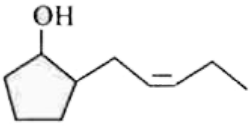
Answer: C

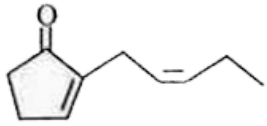
View Text Solution

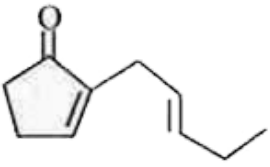
33. The product of the following reaction is



A. 

B. 

C. 

D. 

Answer: C

View Text Solution

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

A. benzyl alcohol and sodium formate

B. sodium benzoate and methyl alcohol

C. sodium benzoate and sodium formate

D. benzyl alcohol and methyl alcohol.

Answer: A

View Text Solution

35. Aldehydes and ketones cannot be distinguished by

A. Molisch's test

B. Tollens' test

C. Benedict's test

D. Schiff's test

Answer: A

View Text Solution

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

A. ketone

B. alkane

C. alkene

D. amine

Answer: A

View Text Solution

37. $OHC - CHO \xrightarrow{OH^-} HOH_2C - COOH$

The reaction given is

A. Cannizzaro reaction

B. Aldol condensation

C. Knoevenagel reaction

D. none of these

Answer: A

View Text Solution

38. When ethanal reacts with CH_3MgBr and C_2H_5OH/dry HCl the product formed respectively are

A. propane and methyl acetate

B. 2-propanol and acetal

C. ethane and hemiacetal

D. ethyl alcohol and 2-propanol.

Answer: B

View Text Solution

39. In the presence of aluminium ethoxide, aldehydes get converted into esters. The reaction is known as

A. Schmidt reaction

B. Aldol condensation

C. Beckmann's rearrangement reaction

D. Tischenko reaction.

Answer: D

View Text Solution

40. Rearrangement of an oxime to an amide in the presence of strong acid is called

A. Curtius rearrangement

B. Fries rearrangement

C. Beckmann rearrangement

D. Aldol condensation

Answer: C

View Text Solution

41. Which of the following compounds is the reactant in Rosenmund's reduction?

A. CH_3CO_2H

B. CH_3CHO

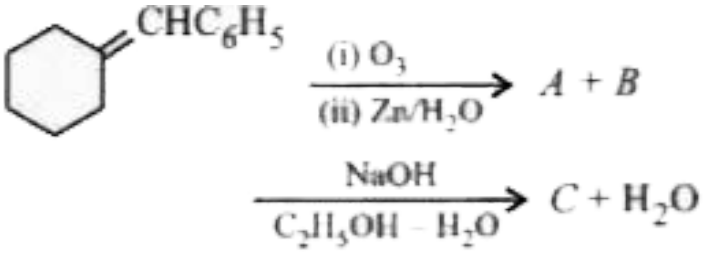
C. CH_3CH_2Cl

D. CH_3COCl

Answer: D

View Text Solution

42. The products A, B and C in the following sequence of reactions respectively are



A. cyclohexanone, benzoic acid, benzyl alcohol

B. cyclohexanone, benzaldehyde, 2-benzylidene cyclohexanone

C. cyclohexanecarboxaldehyde, benzaldehyde, benzyl alcohol

D. cyclohexanone, benzaldehyde, 2-benzylethene cyclohexanone.

Answer: B

View Text Solution

43. Which statement is wrong with regard to acetaldehyde and benzaldehyde?

A. Both react with hydroxylamine to form oximes.

B. Both react with HCN to form cyanohydrin.

C. Both react with NaOH to form polymers.

D. Both react with hydrazine to form hydrazones.

Answer: C

View Text Solution

44. Reaction of cyclohexanone with dimethyl amine in the presence of catalytic amount of an acid forms a compound if

water during the reaction is continuously removed. The compound formed is generally known as

A. Schiff's base

B. an enamine

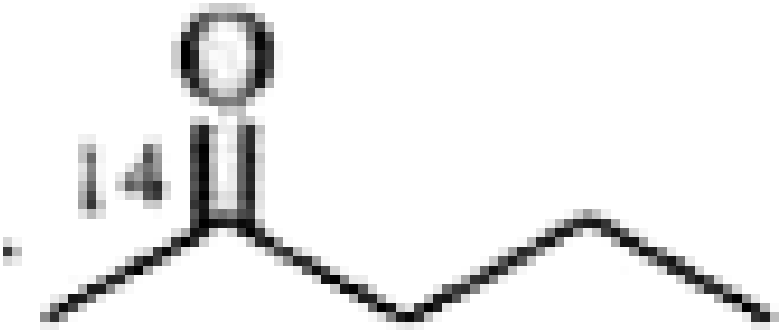
C. an imine

D. an amine.

Answer: B

View Text Solution

45. In the oxidation of



by acidified

$K_2Cr_2O_7$ the product(s) is/are

A. $CH_3 - \overset{O}{\overset{||}{C}} - OH$ and CH_3CH_2COOH

B. $CH_3(CH_2)_2 - \overset{O}{\overset{||}{C}} - OH$ and CH_3CH_2COOH

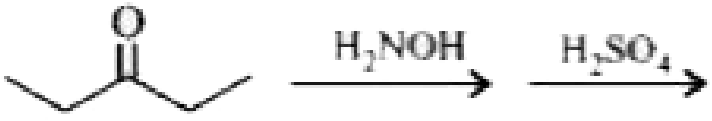
C. $CH_3CH_2CH_2COOH + HCOOH$

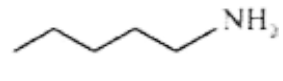
D. none of these

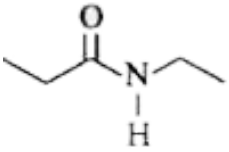
Answer: A

View Text Solution

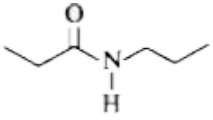
46. Subjecting 3-pentanone to the conditions of the Beckmann rearrangement (sequential treatment with hydroxylamine and aqueous sulphuric acid) produces



A. 

B. 

C. 

D. 

Answer: B

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

A. potassium m-chlorobenzoate and m-hydroxy benzaldehyde

B. m-hydroxybenzaldehyde and m-chlorobenzyl alcohol

C. m-chlorobenzyl alcohol and m-hydroxybenzyl alcohol

D. potassium m-chlorobenzoate and m-chlorobenzyl alcohol.

Answer: D

View Text Solution

48. Formaldehyde + Ammonia $\rightarrow$ Urotropine + $6H_2O$

The formula of urotropine is

A. hexamethylene tetraamine

B. tetramethylene tetraamine

C. hexamethylene hexaamine

D. none of these

Answer: A

View Text Solution

49. Acid catalysed aldol condensation involves

A. carbanion

B. enolate ion

C. enol

D. both (a) and (c)

Answer: C

View Text Solution

50. Tollens' test can be used to distinguish

A. propionaldehyde and acetone

B. propanol and propionic acid

C. propene and isobutene

D. isopropanol and propane.

Answer: A

View Text Solution

51. Cinnamaldehyde $\xrightarrow[CH_3COONa]{(CH_3CO)_2O}$ 'major product' is

A. 3-phenyl-2-propenoic acid

B. 3-phenyl-2,4-dipentenoic acid

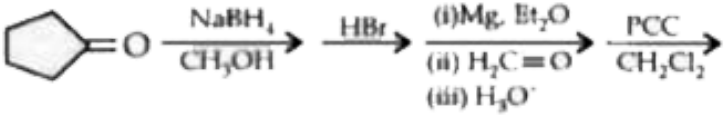
C. 5-phenyl-2,4-dienepentanoic acid

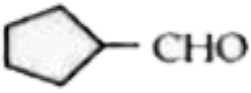
D. none of these

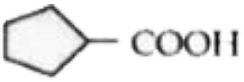
Answer: C

View Text Solution

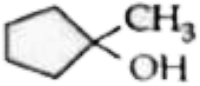
52. What is product of the following sequence of reactions?



A. 

B. 

C. 

D. 

Answer: A

View Text Solution

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

A. benzaldehyde

B. p-nitrobenzaldehyde

C. phenylacetaldehyde

D. p-hydroxybenzaldehyde.

Answer: B

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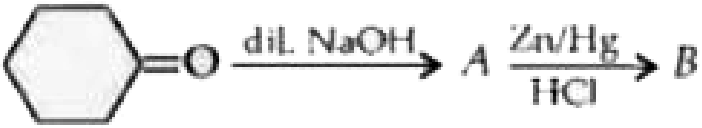
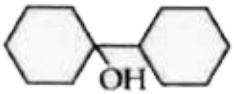
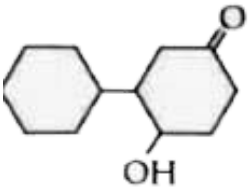
54. B in the following sequence is



A. 

B. 

C. 

D. 

Answer: B

View Text Solution

55. Aldol condensation between the compounds followed by dehydration gives methyl vinyl ketone. Then, the compounds are

A. HCHO and CH_3COCH_3

B. $HCHO$ and CH_3CHO

C. two molecules of CH_3CHO

D. two molecules of CH_3COCH_3 .

Answer: A

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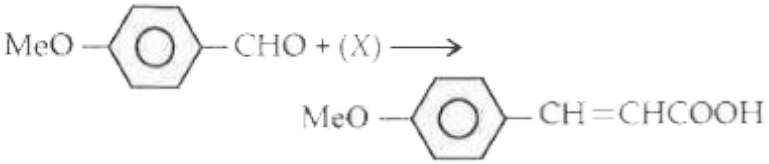


56.

The compound X is

A. CH_3COOH

B. $BrCH_2COOH$

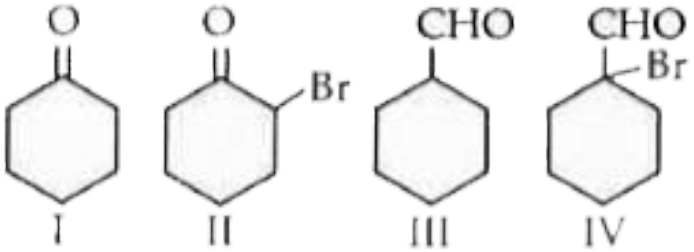
C. $(CH_3CO)_2O$

D. $OHC - COOh$

Answer: C

View Text Solution

57. Arrange the following in increasing extent of hydration



A. I gt II gt III gt IV

B. I gt II gt IV gt III

C. II gt I gt IV gt III

D. IV gt III gt II gt I

Answer: D

View Text Solution

58. A carbonyl compound with molecular weight 86, does not reduce Fehling's solution but forms crystalline bisulphite derivatives and gives iodoform test. The possible compounds can be

A. 2-pentanone and 3-pentanone

B. 2-pentanone and 3-methyl-2-butanone

C. 2-pentanone and pentanal

D. 3-pentanone and 3-methyl-2-butanone.

Answer: B

View Text Solution

59. How many aldols are formed when acetaldehyde and propanaldehyde undergo aldol condensation?

A. 2

B. 4

C. 3

D. 8

Answer: B

View Text Solution

60. A ketone upon reaction with ethyl magnesium bromide (Grignard reagent) followed by hydrolysis gave a product which on dehydration gave an alkene. The alkene on ozonolysis gave diethyl ketone and acetaldehyde. The ketone is

A. dimethyl ketone

B. ethyl methyl ketone

C. diethyl ketone

D. ethyl propyl ketone.

Answer: C

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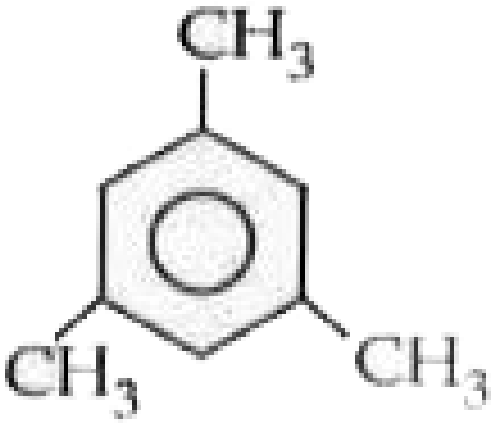


61.

The above 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 $(CH_3C \equiv CH)$ through a red hot tube. The polymer is

A. phorone

B. mesityl oxide

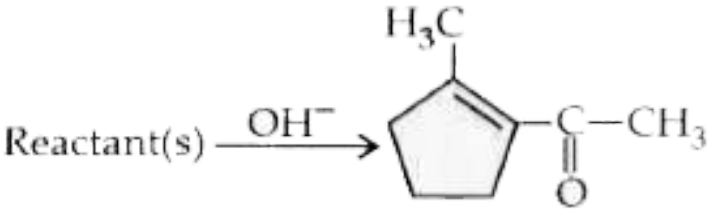
C. diacetonyl alcohol

D. mesitylene

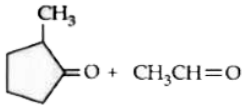
Answer: D

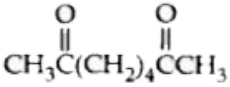
View Text Solution

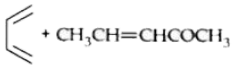
62.



The suitable reactant(s) is/are

A. 

B. 

C. 

D. $CH_3CO(CH_2)_5CHO$

Answer: B

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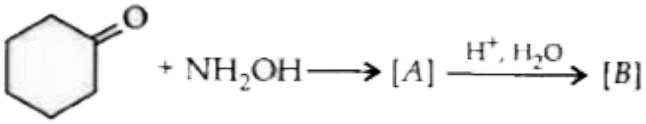
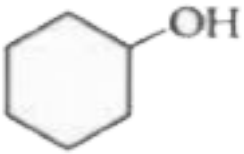
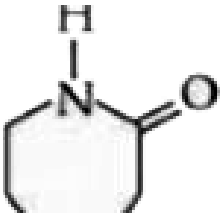
63. In the reaction

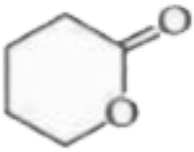


The product B is

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

64. The conversion of phenyl glyoxal (C_6H_5COCHO) to $C_6H_5CHOHCOONa$ is an example of

A. self-oxidation

B. aldol condensation

C. internal crossed Cannizzaro reaction

D. auto-reduction

Answer: C

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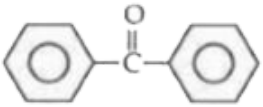
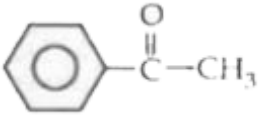
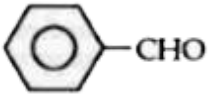
65. Select the least reactive carbonyl compound for nucleophilic addition

A. 

B. 

C. 

D. CH_3CHO

Answer: A

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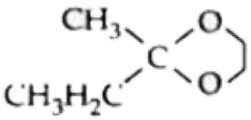
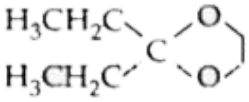
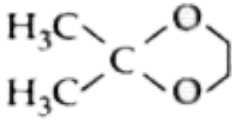
66. What is the product when butanone reacts with ethylene glycol in presence of HCl gas?

A. 

B. 

C. 

D. none of these

Answer: A

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67. When a nucleophile attacks the electrophilic carbon atom then

A. a tetrahedral alkoxide intermediate is formed

B. hybridization of C changes from sp^2 to sp^3

C. an electrically neutral product is formed

D. all of the above

Answer: D

View Text Solution

68. What is formed when formaldehyde reacts with KOH?

A. Ethyl alcohol

B. Methanol

C. Acetylene

D. Methane

Answer: B

View Text Solution

69. Paraldehyde is formed by the polymerisation of

A. CH_3OH

B. CH_3CHO

C. CH_3CH_2OH

D. $HCHO$

Answer: B

View Text Solution

70. Benzaldehyde reacts with ammonia to form

A. hydrobenzamide

B. benzamide

C. aniline

D. phenyl cyanide

Answer: A

View Text Solution

71. If acetyl chloride is reduced in the presence of $BaSO_4$ and Pd, then

A. CH_3COOH is formed

B. CH_3CH_2OH is formed

C. CH_3CHO is formed

D. CH_3COCH_3 is formed

Answer: C

View Text Solution

72. Oxidation of acetaldehyde with selenium dioxide produces

A. glyoxal

B. oxalic acid

C. ethanoic acid

D. methanoic acid

Answer: A

View Text Solution

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

A. aldoxime

B. aminohydroxide

C. semicarbazone

D. hydrazone

Answer: A

View Text Solution

74. Acetone is mixed with bleaching powder to give

A. chloroform

B. acetaldehyde

C. ethanol

D. phosgene

Answer: A

View Text Solution

75. Ketones react with Mg-Hg over water gives

A. pinacolone

B. pinacols

C. alcohols

D. none of these

Answer: B

View Text Solution

76. When ethanal is treated with Fehling's solution, it gives a precipitate of

A. Cu_2O

B. Cu

C. Cu_3O

D. CuO

Answer: A

View Text Solution

77. Which of the following will not undergo aldol condensation?

A. Propionaldehyde

B. Acetone

C. Formaldehyde

D. Acetaldehyde

Answer: C

View Text Solution

78. Which of the following is formed, when benzaldehyde reacts with alcoholic KCN

A. Benzoin

B. Benzyl alcohol

C. Benzoic acid

D. Ethyl benzoate

Answer: A

View Text Solution

79. The intermediate formed in aldol condensation is

A. aldol

B. carbanion

C. alcohol

D. α -hydrogen ester.

Answer: B

View Text Solution

80. The compound that can be formed by aldol condensation of acetaldehyde is

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

B. $CH_3 - \underset{\underset{O}{||}}{C} - CH_2 - COOH$

C. $CH_3 - CH_2 - \underset{\underset{OH}{|}}{C} - \underset{\underset{O}{||}}{C} - H$

D. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - \underset{\underset{O}{||}}{C} - H$

Answer: D

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81. The IUPAC name of the compound is

$$HOOC - CH_2 - \underset{\underset{COOH}{|}}{C}H - CH_2 - CH_2 - COOH$$

A. 2-(carboxymethyl)pentane-1,5-dioic acid

B. 3-carboxyhexane-1,6-dioic acid

C. butane-1,2,4-tricarboxylic acid

D. 4-carboxyhexane-1,6-dioic acid.

Answer: C

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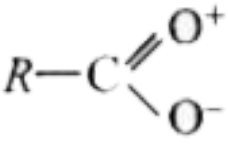
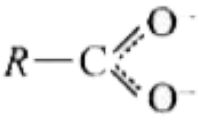
82. The correct structure representation of carboxylate ion is

A. 

B. 

C. 

D. 

Answer: B

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83. Some carboxylic acids and their IUPAC names are given below.

Which of them is not correctly matched?

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84. The acid produced (2) in the sequence given below is

A. succinic acid

B. malonic acid

C. oxalic acid

D. maleic acid.

Answer: A

View Text Solution

85. Acetic acid is obtained when

A. methyl alcohol is oxidised with potassium permanganate

B. calcium acetate is distilled in the presence of calcium formate

C. acetaldehyde is oxidised with potassium dichromate and sulphuric acid

D. glycerol is heated with sulphuric acid.

Answer: C

View Text Solution

86. RCH_2CH_2OH can be converted to RCH_2CH_2COOH by the following sequence of steps

A. PBr_3, KCN, H_3O^+

B. $PBr_3, KCN, H_2/Pt$

C. KCN, H_3O^+

D. HCN, PBr_3, H_3O^+

Answer: A

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87. The best oxidising agent for oxidation of

$CH_3CH = CHCHO$to $CH_3CH = CH - COOH$ is

A. acidified $KMnO_4$

B. alkaline$KMnO_4$

C. acidified $K_2Cr_2O_7$

D. $Ag(NH_3)_2^+$

Answer: D

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88. The conversion of CH_3OH into CH_3COOH can be brought about by the following reagents

A. $K_2Cr_2O_7 / H^+$

B. $CO + Rh$

C. $KMnO_4$

D. H_3PO_4

Answer: B

View Text Solution

89. Cyanohydrin of which of the following forms lactic acid?

A. HCHO

B. CH_3COCH_3

C. CH_3CHO

D. CH_3CH_2CHO

Answer: C

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90. 

In the above reaction, product P is

A. 

B. 

C. 

D. 

Answer: B

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91. The reaction, $CH_3CH=CH_2 \xrightarrow[H^+]{CO+H_2O} CH_3-\underset{COOH}{\overset{|}{C}}H-CH_3$ is known as

A. Wurtz reaction

B. Koch reaction

C. Clemmensen's reduction

D. Kolbe's reaction

Answer: B

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92. Which reaction is suitable for preparing α -chloroacetic acid?

A. Hell-Volhard-Zelinsky reaction

B. Stephen's reaction

C. Perkin's reaction

D. None of these

Answer: A

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93. Toluene can be oxidised to benzoic acid by

A. $KMnO_4$ (alk.)

B. $K_2Cr_2O_7$ (acidic)

C. both a and c

D. none of these

Answer: C

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94. 

Predict X in the above reaction.

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

95. Chlorination of toluene in presence of light and heat followed by treatment with aqueous NaOH gives

A. o-cresol

B. p-cresol

C. 1,3,5-trihydroxytoluene

D. benzoic acid

Answer: D

View Text Solution

96. On subjecting mesityl oxide to the iodoform reaction, one of the products is the sodium salt of an organic acid. Which acid is obtained?

A. $(CH_3)_2C = CH - CH_2COOH$

B. $(CH_3)_2CH - COOH$

C. $(CH_3)_2C = CH - COOH$

D. $(CH_3)_2C = CH - CO - COOH$

Answer: C

View Text Solution

97. Oxidation of butan-2-one to propionic acid can be achieved by

A. Tollens' reagent

B. $NaOH + I_2$

C. Br_2 water

D. atmospheric oxidation.

Answer: B

View Text Solution

98. Identify Z.

$$CH_3COONH_4 \xrightarrow{\Delta} X \xrightarrow{P_2O_2} Y \xrightarrow[H^+]{H_2\ \emptyset} Z$$

A. $CH_3CH_2CONH_2$

B. CH_3CN

C. $(CH_3CO)_2O$

D. CH_3COOH

Answer: D

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99. $CH_2CO_2C_2H_5$ on reaction with sodium ethoxide in ethanol gives X, which on heating in the presence of acid gives Y. Compound Y is

A. CH_3COCH_2COOH

B. CH_3COCH_3

C. 

D. 

Answer: A

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100. The refluxing of $(CH_3)_2NCOCH_3$ with acid gives

A. $2CH_3NH_2 + CH_3COOH$

B. $2CH_3OH + CH_3CONH_2$

C. $(CH_3)_2NH + CH_3COOH$

D. $(CH_3)_2NCOOH + CH_4$

Answer: C

View Text Solution

101. 4-Methylbenzenesulphonic acid reacts with sodium acetate to give

A. 

B. 

C. 

D. 

Answer: A

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102. Identify the product C in the series :

$$CH_3CN \xrightarrow{Na/C_2H_5OH} A \xrightarrow{HNO_2} B \xrightarrow{Cr_2O_7^{2-}/H^+} C$$

A. CH_3COOH

B. CH_3CH_2NHOH

C. CH_3CONH_2

D. CH_3CHO

Answer: A

View Text Solution

103. An organic compound is boiled with alcoholic potash. The product is cooled and acidified with HCl. A white solid separates out. The starting compound may be

A. ethyl benzoate

B. ethyl formate

C. ethyl acetate

D. methyl acetate.

Answer: A

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104. 

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

105. What is the product in the reaction?

$$CH_3MgBr \xrightarrow[(ii)\ H_2OH\ /\ H^+]{(i)\ CO_2} X$$

A. Acetaldehyde

B. Acetic acid

C. Formic acid

D. Formaldehyde

Answer: B

View Text Solution

106. Anhydrous formic acid is prepared by

A. heating NaOH with CO at $210^{\circ} C$ under pressure

B. heating glycerol with oxalic acid at high temperature

C. catalytic oxidation of ethane in presence of a catalyst

D. heating lead formate in a current of hydrogen sulphide.

Answer: D

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107. Identify the method by which Me_3CCO_2H can be prepared.

A. Treating 1 mol of MeCOMe with 2 moles of MeMgI

B. Treating 1 mol of $MeCO_2Me$ with 3 moles of MeMgI

C. Treating 1 mol of MeCHO with 3 moles of MeMgI.

D. Treating 1 mol of dry ice with 1 mol of Me_3CMgI

Answer: D

View Text Solution

108. When sodium formate is heated at $360^\circ C$, main product is

A. sodium oxalate and H_2

B. oxalic acid and H_2

C. sodium oxalate

D. CO_2 and caustic soda.

Answer: A

View Text Solution

109. Products of the following reaction,

A. $CH_3COOH + CO_2$

B. $CH_3COOH + HOOCCH_2CH_3$

C. $CH_3CHO + CH_3CH_2COOH$

D. $CH_3COOH + CH_3COCH_3$

Answer: B

View Text Solution

110. Pyruvic acid is obtained by

A. oxidation of formaldehyde cyanohydrin

B. oxidation of acetaldehyde cyanohydrin

C. oxidation of benzaldehyde cyanohydrin

D. oxidation of acetone cyanohydrin.

Answer: B

View Text Solution

111. Which of the following compounds gives formic acid on hydrolysis ?

A. CH_3Cl

B. CH_2Cl_2

C. $CHCl_3$

D. CH_3CH_2Cl

Answer: C

View Text Solution

112. X on oxidation with alkaline $KMnO_4$ gives benzoic acid. The X may be

A. 

B. 

C. 

D. all of the above

Answer: D

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Neet Cafe Properties Of Carboxylic Acids And Their Derivatives

1. The correct order of increasing acid strength of the compounds

A. B lt D lt A lt C

B. D lt A lt C lt B

C. D lt A lt B lt C

D. A lt D lt C lt B

Answer: A

View Text Solution

2. The compounds P, Q and S

were separately subjected to nitration using HNO_3 / H_2SO_4 mixture. The major product formed in each case respectively is

A. 

B. 

C. 

D. 

Answer: C

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3. The relative reactivities of acyl compounds towards nucleophilic substitution are in the order of

A. acid anhydride gt amide gt ester gt acyl chloride

B. acyl chloride gt ester gt acid anhydride gt amide

C. acyl chloride gt acid anhydride gt ester gt amide

D. ester gt acyl chloride gt amide gt acid anhydride

Answer: C

View Text Solution

4. $HCOONa \xrightarrow{\text{heat}} X + H_2$ is

A. Na_2CO_3

B. CO_2

C. $(COONa)_2$

D. CO

Answer: C

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5. 

The main product is

A. 

B. 

C. 

D. 

Answer: B

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6. The product (D) of the following reaction is

$$CH_3Cl \xrightarrow{KCN} (A) \xrightarrow[H^+]{H_2\ \emptyset} (B) \xrightarrow{NH_3} (C) \xrightarrow{\Delta} (D)$$

A. $CH_3CH_2NH_2$

B. CH_3CN

C. $HCONH_2$

D. CH_3CONH_2

Answer: D

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7. The correct product of the following sequence of reactions is

$$(CH_3)_2COOH \xrightarrow[(ii)\ H_2O]{(i)\ LiAlH_4} \xrightarrow{PBr_3} \xrightarrow[DMSO]{KCN} \xrightarrow[\Delta]{H_2O,\ H^+}$$

A. $(CH_3)_2CHCHBrCOOH$

B. $(CH_3)_2CHCH_2COOH$

C. $(CH_3)_2CHCH_2CH_2NH_2$

D. $(CH_3)_2C=CHCOOH$

Answer: B

View Text Solution

8. On mixing ethyl acetate with aqueous sodium chloride, the composition of the resultant solution is

A. $CH_3COCl + C_2H_5OH + NaOH$

B. $CH_3COONa + C_2H_5OH$

C. $CH_3COOC_2H_5 + NaCl$

D. $CH_3Cl + C_2H_5COONa$

Answer: C

View Text Solution

9. Reaction of methyl formate with excess of CH_3MgI followed by hydrolysis gives

A. n-propyl alcohol

B. ethanal

C. propanal

D. iso-propyl alcohol

Answer: D

View Text Solution

10. The product III of the following reaction sequence is

A. 

B. 

C. 

D. 

Answer: B

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11. Benzamide may be prepared by the action of concentrated ammonia upon benzoyl chloride :

$C_6H_5COCl + 2NH_3 \rightarrow C_6H_5CONH_2 + NH_4Cl$

In one such reaction $65cm^3$ of concentrated ammonia (an

excess) was reacted with 15.0 g of benzoyl chloride to give 11.1 g of pure benzamide. The percentage yield of benzamide is

A. $\frac{11.1}{15.0} \times 100$

B. $\frac{(15.0 - 11.1)}{15.0} \times 100$

C. $\frac{11.1}{65} \times 100$

D. $\frac{11.1 \times 141}{121 \times 15.0} \times 100$

Answer: D

View Text Solution

12. The rate of esterification of CH_3COOH is fastest with

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

13. Give the structure of the compound X formed in the following reaction.

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

14. In the given reaction the end product Y is

A. $CH_3 - \underset{\underset{OH}{|}}{CH} - COOH$

B. $CH_2 = CH - COOEt$

C. $CH_3 - \underset{\underset{OH}{|}}{CH} - COOEt$

D. $\underset{\underset{O}{||}}{CH}CH_2CH_2\underset{\underset{O}{||}}{C} - Oet$

Answer: B

View Text Solution

15. A is a higher phenol and B is an aromatic carboxylic acid. Separation of a mixture of A and B can be carried out easily by having a solution

A. NaOH

B. Na_2CO_3

C. lime

D. $NaHCO_3$

Answer: D

View Text Solution

16. The acid showing salt like character in aqueous solutions is

A. acetic acid

B. benzoic acid

C. formic acid

D. α -aminoacetic acid.

Answer: D

View Text Solution

17. The reaction,

$$RCH_2CH_2COOH \xrightarrow[Br_2]{RedP} R-CH_2-\underset{\underset{Br}{|}}{CH}-COOH$$ is

called

A. Reimer-Tiemann reaction

B. Hell-Volhard-Zelinsky reaction

C. Cannizzaro reaction

D. Sandmeyer reaction.

Answer: B

View Text Solution

18. In a set of reactions, acetic acid yielded a product S. The structure of S would be

A. 

B. 

C. 

D. 

Answer: A

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19. Benzoic acid gives benzene on being heated with X and phenol gives benzene on being heated with Y. Therefore X and Y are respectively

A. sodalime and copper

B. zinc dust and sodium hydroxide

C. zinc dust and sodalime

D. sodalime and zinc dust.

Answer: D

View Text Solution

20. Electrolysis of aqueous solution of CH_3COOK gives

A. CH_4

B. C_2H_4

C. C_2H_6

D. C_2H_2

Answer: C

View Text Solution

21. HCOOH reacts with conc. H_2SO_4 to produce

A. CO

B. CO_2

C. NO

D. NO_2

Answer: A

View Text Solution

22. Formic acid and acetic acid differ in which of the following respect?

A. Replacement of hydrogen by sodium

B. Formation of ester with alcohol

C. Reduction of Fehling's solution

D. Blue litmus reaction

Answer: C

View Text Solution

23. Which of the following decreasing order of acid strength is correct?

I. Methanoic acid II. Ethanoic acid III. Propanoic acid IV. Butanoic acid

A. I gt II gt III gt IV

B. IV gt III gt I gt I

C. I gt IV gt III gt II

D. IV gt I gt II gt III

Answer: A

View Text Solution

24. In a reaction involving ring substitution of C_6H_5Y, the major product is meta isomer. The group Y can be

A. $-NH_2$

B. $-COOH$

C. CH_3

D. Cl

Answer: B

View Text Solution

25. End product of this conversion,

$$CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - CH_2 - CO_2H \xrightarrow[(ii)\, H_2O, H^+]{(i)\, NaBH_4}$$ is

A. 

B. 

C. 

D. 

Answer: A

View Text Solution

26. Which of the following does not undergo Hell-Volhard Zelinsky reaction?

A. $HCOOH$

B. CCl_3COOH

C. C_6H_5COOH

D. all of these

Answer: D

View Text Solution

27. Two moles of acetic acid are heated with P_2O_5 . The product formed is

A. 2 moles of ethyl alcohol

B. formic anhydride

C. acetic anhydride

D. 2 moles of methyl cyanide.

Answer: C

View Text Solution

28. Weakest acid among the following is

A. acetic acid

B. phenol

C. water

D. acetylene

Answer: D

View Text Solution

29. Which of the following reactions is expected to give readily a hydrocarbon product in good yields?

A. $RCOOK \xrightarrow{\text{electrolysis}}$

B. $RCOOAg \xrightarrow{I_2}$

C. $CH_3CH_3 \xrightarrow[h\nu]{Cl_2}$

D. $(CH_3)_2CCl_2 \xrightarrow{C_2H_5OH}$

Answer: A

View Text Solution

30. Lactic acid on oxidation by alkaline potassium permanganate gives

A. tartaric acid

B. pyruvic acid

C. cinnamic acid

D. propionic acid

Answer: B

View Text Solution

31. The molecular weight of benzoic acid in benzene is determined by depression in freezing point method corresponds to

A. ionization of benzoic acid

B. dimerization of benzoic acid

C. trimerization of benzoic acid

D. solution of benzoic acid.

Answer: B

View Text Solution

32. Which of the following compounds is amphoteric in nature?

A. CH_3COCl

B. CH_3CONH_2

C. $CH_3COOC_2H_5$

D. $(CH_3CO)_2O$

Answer: B

View Text Solution

33. When an acyl chloride is heated with Na salt of a carboxylic acid, the product is

A. an aldehyde

B. an alkene

C. an anhydride

D. an ester

Answer: C

View Text Solution

34. The order of decreasing ease of reaction with ammonia is

A. anhydrides, esters, ethers

B. anhydrides, ethers, esters

C. ethers, anhydrides, esters

D. esters, ethers, anhydrides.

Answer: A

View Text Solution

35. What will happen if $LiAlH_4$ is added to an ester?

A. Two units of alcohol are obtained.

B. One unit of alcohol and one unit of acid is obtained.

C. Two units of acid are obtained.

D. None the these.

Answer: A

View Text Solution

36. Hydrolysis of an ester gives a carboxylic acid which on Kolbe's electrolysis yields ethane. The ester is

A. ethyl methanoate

B. methyl ethanoate

C. propyl amine

D. ethyl amine.

Answer: B

View Text Solution

37. Which of the following compounds is resistant to nucleophilic attack by hydroxyl ion?

A. Methyl acetate

B. Acetonitrile

C. Acetamide

D. Diethyl ether

Answer: D

View Text Solution

38. Saponification of ethyl benzoate with caustic soda as alkali, gives

A. benzyl alcohol, ethanoic acid

B. sodium benzoate, ethanol

C. benzoic acid, sodium ethoxide

D. phenol, ethanoic acid.

Answer: B

View Text Solution

39. The group present in waxes is

A. acid group

B. ester group

C. alcohol group

D. ether group

Answer: B

View Text Solution

40. Propionic acid with Br_2/P yields a dibromo product. Its structure would be

A. 

B. $CH_2(Br) - CH_2 - COBr$

C. 

D. $CH_2(Br) - CH(Br) - COOH$

Answer: C

View Text Solution

41. The end product (C) in the following reaction sequence is

$$CH_3CH_2COOH \xrightarrow[\Delta]{Br_2 . Red} A \overset{OH^-(aq)}{/} (\rightarrow) B \xrightarrow{\Delta} C$$

A. $CH_2 = CH - COOH$

B. 

C. 

D. 

Answer: C

View Text Solution

42. Which of the following is correct order of acidity?

A.

$$HCOOH > CH_2COOH > ClCH_2COOH > C_2H_5COOH$$

B.

$ClCH_2COOH > HCOOH > CH_3COOH > C_2H_5COOH$

C.

$CH_3COOH > HCOOH > ClCH_2COOH > C_2H_5COOH$

D.

$C_2H_5COOH > CH_3COOH > HCOOH > ClCH_2COOH$

Answer: B

View Text Solution

43. Consider the acid strength of the carboxylic acids :

(i) PhCOOH

(ii) $o - NO_2C_6H_4COOH$

(iii) $p - NO_2CH_4COOH$

(iv) $m - NO_2C_6H_4COOH$

A. i gt ii gt iii gt iv

B. iv gt iii gt ii gt i

C. ii gt iii gt iv gt i

D. ii gt iv gt iii gt i

Answer: C

View Text Solution

44. Arrange the following compounds in the order of increasing acidity.

I. Benzyl alcohol II. Benzoic acid III. o-Cresol IV. Formic acid

A. I gt III gt IV gt II

B. I lt III lt II lt IV

C. I lt IV lt II lt III

D. III lt I lt IV lt II

Answer: B

View Text Solution

45. Identify Z in the following reaction sequence.

A. CH_3COCH_2COON

B. $(CH_3CO)_2O$

C. $CH_3CO-O-COCH_2Cl$

D. $CH_3CO-O-COCHCl_2$

Answer: B

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46. Carboxylic acids dimerise due to

A. high molecular weight

B. coordinate bonding

C. intermolecular hydrogen bonding

D. covalent bonding.

Answer: C

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47. Reaction of excess of Grignard reagent with $EtO\overset{O}{\overset{||}{C}}-OEt$ (diethyl carbonate) gives

A. ketone

B. tertiary alcohol

C. ester

D. secondary alcohol

Answer: B

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48. Which of the following is the least reactive compound towards nucleophilic acyl substitution?

A. CH_3COCl

B. $CH_3CONHCH_3$

C. $CH_3CONHC_6H_5$

D. 

Answer: B

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49. Which of the following will not undergo Hell-Volhard Zelinsky reaction?

A. CH_3COOH

B. CH_3CH_2COOH

C. 2,2-Dimethylpropionic acid

D. 2-Methylpropionic acid

Answer: C

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50. Ammonium succinate on strong heating gives

A. succinic acid

B. succinic anhydride

C. succinimide

D. tartaric acid

Answer: C

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51. X is heated with soda lime and gives ethane. X is

A. ethanoic acid

B. methanoic acid

C. propanoic acid

D. either (a) or (c)

Answer: C

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52. CO_2 is liberated on adding sodium carbonate to a carboxylic acid. The carbon of CO_2 comes from

A. carboxylic group

B. carbonate

C. alkyl group

D. methyl

Answer: B

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53. Among the following the strongest acid is

A. CH_3COOH

B. C_6H_5COOH

C. $m - CH_3OC_6H_4COOH$

D. $p - CH_3OC_6H_4COOH$

Answer: C

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54. At higher temperature, iodoform reaction is given by

A. $CH_3CO_2CH_3$

B. $CH_3CO_2C_2H_5$

C. $C_6H_5CO_2CH_3$

D. $CH_3CO_2C_6H_5$

Answer: B

View Text Solution

55. o-Toluic acid on reaction with $Br_2 + Fe$ gives

A. 

B. 

C. 

D. 

Answer: C

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56. $CH_3CO_2CH_5$ on reaction with sodium ethoxide in ethanol gives A, which on heating in the presence of acid gives B. Compound B is

A. CH_3COCH_2COOH

B. CH_3COCH_3

C. 

D. 

Answer: C

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57. The following sequence of reactions on A gives

A. 

B. 

C. 

D. 

Answer: C

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58. Which reagent is effective in direct conversion of a carboxylic group to a 1° -alcoholic group?

$(-COOH \rightarrow -CH_2OH)$

A. Na-Ethanol

B. $NaBH_4$

C. Catalytic hydrogenation

D. $LiAlH_4$

Answer: D

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59. If an amide is treated with P_2O_5 the likely product is an

A. acid

B. alkyl cyanide

C. amine

D. acid anhydride.

Answer: B

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Neet Cafe Uses Of Aldehydes Ketones And Carboxylic Acids

1. Which of the following is hypnotic?

A. Acetaldehyde

B. Metaldehyde

C. Paraldehyde

D. None of these

Answer: C

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2. Trichloroacetaldehyde, CCl_3CHO reacts with chloro benzene in presence of sulphuric acid and produces

A. 

B. 

C. 

D. 

Answer: C

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3. Vinegar contains how much percentage of acetic acid?

A. 90-100%

B. 10-12%

C. 90-98%

D. 7-8%

Answer: D

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4. Vinegar obtained from sugarcane has

A. CH_3COOH

B. $HCOOH$

C. C_6H_5COOH

D. CH_3CH_2COOH

Answer: A

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Check Your Neet Vitals

1. The IUPAC name of $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - CH_2 - CHO$ is

A. 2-oxopentanal

B. 4-oxopentanal

C. 4-formylbutan-2-one

D. 5-formylbutan-2-one.

Answer: B

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2. What product will be formed in the given reaction?

$$(CH_3)_2CHMgI \xrightarrow[(ii)\,H^+/H_2O]{(i)\,CO_2/\text{dry ether}}$$

A. $(CH_3)_2C=O$

B. $(CH_3)_2\underset{OH}{\underset{|}{C}}-\underset{OH}{\underset{|}{C}}(CH_3)_2$

C. $(CH_3)_2CHCOOH$

D. $(CH_3)_2CHCHO$

Answer: C

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3. Which of the following steps will be required for the conversion of ethanal into butane-1,3-diol?

A. Acylation, reduction

B. Cross aldol condensation, dehydration

C. Aldol condensation, oxidation

D. Aldol condensation, reduction

Answer: D

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4. Which reagent is used to convert 2-butanone into propanoic acid?

A. $NaOH, I_2 / H^+$

B. Tollens' reagent

C. Fehling's solution

D. $NaOH, NaI / H^+$

Answer: A

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5. 2-Butanol is converted into 2-methylbutanoic acid by

A. (i) Cu, (ii) HCN, (iii) H_3O^+

B. (i) HCN, (ii) H_3O^+

C. $(i)PCl_5, (ii)KCN, (iii)H_3O^+$

D. $(i)KCN, (ii)H_3O^+$

Answer: C

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6. H.V.Z reaction involves the use of P and Cl_2

$$CH_3CH_2COOH \xrightarrow{RedP, Cl_2} CH_3CHClCOOH$$

The function of phosphorus is

A. to catalyze the reaction

B. in the formation of PCI_3 which carries out halogenation at the u-carbon atom.

C. in the formation PCl_3 which converts -COOH into -COCI.

D. none of these.

Answer: C

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7. In the following reaction, the final product is

$$CH_3 - overest{O}{||}(C) - CH_2CH_2CH_2CH_2CH_2 - CHO \xrightarrow[\Delta]{OH^-}$$

A. 

B. 

C. 

D. 

Answer: C

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8. The correct order of increasing acidic strength is

A. Phenol lt Ethanol lt Chloroacetic acid lt Acetic acid

B. Ethanol lt Phenol lt Chloroacetic acid lt Acetic acid

C. Ethanol lt Phenol lt Acetic acid lt Chloroacetic acid

D. Chloroacetic acid lt Acetic acid lt Phenol lt Ethanol

Answer: C

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9. Which of the following compounds will give butanone on oxidation with alkaline $KMnO_4$ solution?

A. Butan-1-ol

B. Butan-2-ol

C. Both (a) and (b)

D. None of these

Answer: B

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10. A compound (A) when treated with CH_3MgI followed by hydrolysis gives alcohol (B) of formula $C_5H_{11}OH$ which on oxidation gives 2-pentanone. What is (A)?

A. $CH_3CH(OH)CH_2CH_2CH_3$

B. $CH_3CH_2CH_2CHO$

C. $CH_3CH_2COCH_3$

D. CH_3CH_2CHO

Answer: B

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11. Aldehydes and ketones

A. are insoluble in organic solvents like benzene, ether, methanal, chloroform etc.

B. solubility increases rapidly on increasing the length of the alkyl chain

C. are used in the blending of perfumes and flavouring agents

D. all of the above.

Answer: C

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12. Friedel-Crafts acylation of benzene with benzoyl chloride gives

A. $C_6H_5COCH_3$

B. CH_3COCH_3

C. $C_6H_5COC_6H_5$

D. none of these

Answer: C

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13. Arrange the following compounds in decreasing order of reactivity towards nucleophilic addition reaction.

Diethylketone (I) Benzaldehyde (II) Propanal (III) Acetaldehyde (IV)

A. I gt II gt III gt IV

B. IV gt III gt II gt I

C. II gt III gt I gt IV

D. IV gt III gt I gt II

Answer: D

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14. Aldol condensation between which of the following compounds followed by dehydration gives methyl vinyl ketone?

A. Methanal and ethanal

B. Two moles of formaldehyde

C. Metsanal and propanone

D. Two moles of ethanal

Answer: C

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15. The first step in the formation of ester from an alcohol and a carboxylic acid in the presence of conc. H_2SO_4 , is

A. protonation of O-atom of O-H group

B. 

C. formation of resonance structure of acid

D. removal of α-H from alcohol.

Answer: B

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16. Identify B in the given sequence of reactions :

$$CH_3CH_2COOH \xrightarrow[RedP]{Cl_2} (A) \xrightarrow{Alc.KOH} (B)$$

A. CH_3CH_2COCl

B. CH_3CH_2CHO

C. $CH_2 = CHCOOH$

D. $ClCH_2CH_2COOH$

Answer: C

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

1. Cannizzaro reaction 2. Friedel-Crafts reaction 3. Clemmensen reduction 4. Reimer-Tiemann reaction

A. 2,4

B. 1, 2

C. 2, 3

D. 1, 2,4

Answer: A

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18. The carboxyl functional group is present in

A. picric acid

B. barbituric acid

C. ascorbic acid

D. aspirin

Answer: D

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19. The correct sequence of steps involved in the mechanism of Cannizzaro reaction is

A. nucleophilic attack, transfer of H^- and transfer of H^+

B. transfer of H^-, transfer of H^+ and nucleophilic attack

C. transfer of H^+, nucleophilic attack and transfer of H^-

D. electrophilic attack by OH^-, transfer of H^+ and transfer of H^-

Answer: A

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20. Which of the following is expected to be highly ionized in water?

A. $ClCH_2CH_2CH_2COOH$

B. $CH_3CHClCH_2COOH$

C. $CH_3CH_2CCl_2COOH$

D. $CH_3CH_2CHClCOOH$

Answer: C

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21. Which of the following acids has the smallest dissociation constant?

A. $CH_3CHFCOOH$

B. FCH_2CH_2COOH

C. $BrCH_2CH_2COOH$

D. $CH_3CHBrCOOH$

Answer: C

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Aipmt Neet

1. Which of the following reactions will not result in the formation of carbon-carbon bonds?

A. Reimer-Tiemann reaction

B. Cannizzaro reaction

C. Wurtz reaction

D. Friedel-Crafts acylation

Answer: B

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2. Acetamide is treated with the following reagents separately. Which one of these would yield methyl amine?

A. $NaOH - Br_2$

B. sodalime

C. hot conc. H_2SO_4

D. PCl_5

Answer: A

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

A. CH_3COOCH_3

B. CH_3CONH_2

C. $CH_3COOCOCH_3$

D. CH_3COCl

Answer: D

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4. Which one of the following compounds will be most readily dehydrated?

A. 

B. 

C. 

D. 

Answer: C

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

A. Glycol with KOH

B. Zn-Hg with HCI

C. $LiAlH_4$

D. H_2 and Pt as catalyst

Answer: B

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6. In a set of reactions m bromobenzoic acid gave a product D. Identify the product D.

A. 

B. 

C. 

D. 

Answer: C

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7. The order of reactivity of phenyl magnesium bromide (PhMgBr) with the following compounds :

A. III gt II gt I

B. II gt I gt III

C. I gt III gt I

D. I gt II gt III

Answer: D

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8. An organic compound A on treatment with NH_3 gives B, which on heating gives C. C when treated with Br_2 in the presence of KOH produces ethyl amine. Compound A is

A. CH_3COOH

B. $CH_3CH_2CH_2COOH$

C. $CH_3 - \underset{CH_3}{\overset{|}{C}}HCOOH$

D. CH_3CH_2COOH

Answer: D

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

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

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

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

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

Answer: D

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10. Predict the products in the given reaction.

A. 

B. 

C. 

D. 

Answer: C

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

A. 

B. 

C. 

D. 

Answer: D

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12. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid (B), acetic acid (C) and formic acid (D) is

A. B gt A gt D gt C

B. B gt D gt C gt A

C. A gt B gt C gt D

D. A gt C gt B gt D

Answer: D

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

A. Benedict's test

B. Iodoform test

C. Tollens' reagent test

D. Fehling's solution test

Answer: B

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14. Consider the following reaction :

The product A is

A. C_6H_5CHO

B. C_6H_5OH

C. $C_6H_5COCH_3$

D. C_6H_5Cl

Answer: A

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15. 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

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16. Which of the following compounds will give a yellow precipitate with iodine and alkali?

A. Acetophenone

B. Methyl acetate

C. Acetamide

D. 2-Hydroxypropane

Answer: A::D

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17. The order of stability of the following tautomeric compounds is

A. II gt I gt III

B. II gt III gt I

C. I gt II gt III

D. III gt II gt I

Answer: D

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18. Reaction by which benzaldehyde cannot be prepared is

A. 

B. 

C. 

D. 

Answer: B

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19. Which one is most reactive towards nucleophilic addition reaction?

A. 

B. 

C. 

D. 

Answer: D

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20. An organic compound 'X' having molecular formula $C_5H_{10}O$ yields phenylhydrazone and gives negative response to the iodoform test and Tollens' 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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21. The oxidation of benzene by V_2O_5 in the presence of air produces

A. maleic anhydride

B. benzoic acid

C. benzaldehyde

D. benzoic anhydride.

Answer: A

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22. 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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23. Which one of the following esters gets hydrolysed most easily under alkaline conditions?

A. 

B. 

C. 

D. 

Answer: D

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24. Which of the following reagents would distinguish cis-cyclopenta-1, 2-diol from the trans-isomer?

A. MnO_2

B. Aluminium isopropoxide

C. Acetone

D. Ozone

Answer: C

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25. The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha-carbon, is

A. a carbonyl 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 carbonyl compound with a 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

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26. The correct structure of the product A' formed in the reaction

A. 

B. 

C. 

D. 

Answer: B

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27. The correct order of strengths of the carboxylic acids

A. I gt II gt III

B. II gt III gt I

C. III gt II gt I

D. II gt I gt III

Answer: B

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28. . Consider the reactions,

Identify A, X, Y and Z.

A. A-Methoxymethane, X-Ethanol, Y-Ethanoic acid, Z-Semicarbazide.

B. A-Ethanal, X-Ethanol, Y-But-2-enal, Z-Semicarbazone.

C. A-Ethanol, X-Acetaldehyde, Y-Butanone, Z-Hydrazone.

D. A-Methoxymethane, X-Ethanoic acid, Y-Acetate ion, Z-Hydrazine.

Answer: B

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29. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?

A. 

B. 

C. 

D. 

Answer: A

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30. Carboxylic acids have higher boiling points than aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their

A. formation of intramolecular H-bonding

B. formation of carboxylate ion

C. more extensive association of carboxylic acid via van der Waals' forces of attraction

D. formation of intermolecular H-bonding.

Answer:

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31. The major product of the following reaction is

A. 

B. 

C. 

D. 

Answer:

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