CHEMISTRY

FOR IIT JEE ASPIRANTS OF CLASS 12 FOR CHEMISTRY

ALDEHYDES, KETONES & CARBOXYLIC ACIDS

Example

1. Which of the following givens an aldehyde on dry distillation ?

A. Calcium formate + calcium acetate

B. Calcium acetate + calcium benzoate

C. Calcium acetate

D. Calcium benzoate

Answer:

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2. Pentan -3-one is not obtained from

A. 2,2-dichloro pentane

B. 3,3-dichloro pentane

C. pentan-3-ol

D. pent-2-yne

Answer:

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3. The IUPAC names of Crotonaldehyde, Cinnamaldehyde and Acrolein are respectively

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4. The carbonyl group (C=O) in aldehydes and ketones behaves as a nucleophile or electrophile ?

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5. Are aldehydes isomeric with another functional group? Which out of them is more reactive?

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

A. Phenol and acetic acid

B. Benzene and acetone

C. Benzene and acetyl chloride

D. Phenol and acetone

Answer:

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

A. Methanoic acid

B. Ethanal

C. Methanol

D. Methanal

Answer:

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8. Propyne on hydrolysisi in presence of HCl and $HgSO_4$ gives

A. Acetaldehyde

B. Acetone

C. Formaldehyde

D. None of these

Answer:

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9. Benzaldeyde can be prepared by oxidation of toluene by

A. Acidi $KMnO_4$

B. $CrO_3 / (CH_3CO)_2O, 573K$

C. CrO_2Cl_2

D. All of these

Answer:

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10. Dry distillation of calcium acetate gives

A. Acetaldehyde

B. Ethane

C. Acetic acid

D. Acetone

Answer:

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11. Benzaldehyde reacts with ammonia to form

A. benzaldehyde ammonia

B. urotropine

C. hydrobenzamide

D. ammonium chloride

Answer:

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12. Aldol condensation would not occur in

A. CH_3COCH_3

B. CH_3CH_2CHO

C. HCHO

D. CH_3CHO

Answer:

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13. Aldol condensation will not be observed in

A. Chloral

B. Phenyl acetaldehyde

C. Hexanal

D. Ethanal

Answer:

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14. To distinguish between formaldehyde and acetaldehyde, we require

A. Tollen's reagent

B. Fehling's solution

C. Schiff's reagent

D. Caustic soda solution

Answer:

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

A. $CH_3COCH_3 > CH_3COCH_3 > CH_3COC_2H_5$

B. $C_2H_5COCH_3 > CH_3COCH_3 > CH_3CHO$

C. $CH_3COCH_3 > CH_3CHO > C_2H_5COCH_3$

D. $CH_3COCH_3 > C_2H_5COCH_3 > CH_3CHO$

Answer:

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16. In the $HCOO^-$ the two carbon-oxygen bonds are found to be of equal length. What is the reason for it ?

A. The anion is obtained by the removal of a proton from the acid molecule

B. Electronic orbitals of carbon atoms are hybridised

C. The C=O bond is weaker than C-O bond

D. The anion $HCOO^-$ has two resonating structures

Answer:

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17. Which of the following compound is most acidic?

A. $BrCH_2COOH$

B. $ClCH_2COOH$

C. FCH_2COOH

D. ICH_2 COOH

Answer:

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18. Acetic acid is manufactured by the fermentation of :

A. Ethanol

B. Methanol

C. Ethanal

D. Methanal

Answer:

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19. Which reaction is used for the preparation of α-Bromoacetic acid from acetic acid ?

A. Kolbe's Reaction

B. Reimer-Tiemann Reaction

C. Hell volhard Zelinsky Reaction

D. Perkin's Reation

Answer:

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20. When Acetic acid reacts with $CH_3 - Mg\text{-}Cl$ which of the following is/are formed?

A. CH_3 COCl (Acetyl chloride) is formed

B. Methane is formed

C. Acetone is formed

D. methanol is formed

Answer:

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21. Which of the acids given below is the strongest acid?

A. CH_2FCOOH

B. CH_2 ClCOOH

C. $\mathrm{CHCl_2}$ COOH

D. CHF_2 COOH

Answer:

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22. What is the main reason for the fact that carboxylic acids can undergo ionization

A. Absence of α-hydrogen

B. Resonance stabilisation of the carboxylate ion

C. High reactivity of hydrogen

D. Hydrogen bonding

Answer:

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23. The order of decreasting rate of reaction with ammonia is

A. Anhydrides, esters, ethers

B. Anhydrides, ethers, esters

C. Ethers, anhydrides, esters

D. Esters, ethers, anhydrides

Answer:

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24. Carboxylic acids readily dissolve in aqueous sodium bicarbonate, liberating carbon dioxide. Which one of the following is correct?

A. The free carboxylic acid and its conjugate base are of comparable stability

B. The free carboxylic acid is more stable than its conjugate base

C. The conjugate base of the carboxylic acid is more stable than the free carboxylic acid

D. The conjugate acid of the carboxylic acid is more stable than the free carboxylic acid

Answer:

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25. When $CH_2 = CH - COOH$ is reduced with $LiAlH_4$ the compound obtained will be

A. $CH_3 - CH_2$ - COOH

B. CH_2 = CH -CH_2 OH

C. $CH_3 - CH_2 - CH_2$OH

D. $CH_3 - CH_2$ - CHO

Answer:

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26. Write the product ?

$$C_6H_5COOH \xrightarrow{SOCl_2} (A) \xrightarrow{Pd/BaSO_4} (B) \xrightarrow[(ii)\,H_3O^{\oplus}]{(i)\,HCN} C$$

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27. An organic compound having molecular formula C_3H_7 NO on hydrolysis gives carboxylic acid . Compound (A) on reaction with

$POCl_3$ gives cyanide. The structure of compound "A" is

A. C_2H_5 C = NOH

B. C_2H_5 CN

C. $CH_3 - CH_3 - \overset{\overset{O}{||}}{C} - NH_2$

D. CH_3CH_2 - NC

Answer:

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Evaluate Yourself 1

1. Ethyl methyl ketone is obtained by heating calcium salts of

A. fromic acid + propionic acid

B. acetic acid + propionic acid

C. acetic acid only

D. acetic acid + methanoic acid

Answer: B

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2. $CH_3COOH + CH_3CH_2COOH \xrightarrow[300^\circ C]{MnO/ThO_2} X + CO_2 + H_2O$

. Find out X.

A. CH_3COCH_3

B. $C_2H_5COCH_3$

C. $CH_3COCH_2CH_3$

D. All of these

Answer: D

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3. $CH_3C \equiv N \xrightarrow[HCl]{SnCl_2} CH_3CH = NH \xrightarrow{H_2O}$ X. Find out X.

A. C_2H_5OH

B. C_2H_5 CHO

C. CH_3CHO

D. C_6H_5CHO

Answer: C

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4. Hydration of acetylene in the presence of dilute sulphuric acid and Hg^{2+} ions at 80° C gives :

A. Ethanol

B. Ethanal

C. Vinyl alcohol

D. All of these

Answer: B

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5. Ketone cannot by prepared by :

A. Ozonolysis of alkenes

B. Heating of calcium salts of acids

C. Epoxidation of alkenes with peracids

D. Oxidation of a glycol with periodic acid

Answer: C

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6. Oxidation of 2-methyl propane-1,2-diol with periodic acid gives:-

A. Propionic acid and formaldehyde

B. Acetone and formaldehyde

C. Acetone and acetic acid

D. Acetone and propionic acid

Answer: B

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7. A carbonyl compound gives a positive iodoform test but does not refuce tollen's reagent or Fehling's solution. If forms a cyanohydrin with HCN, which on hydrolysis gives a hydroxy acld with a methyl side chain. Compound is :

A. Acetaldehyde

B. Propionaldehyde

C. Acetone

D. Crotonaldehyde

Answer: C

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8. A $\xrightarrow[H_2]{Pd/BaSO_4} \phi - CHO \xleftarrow[(ii)\,H_2O]{SnCl_2/HCL}$ B

A and B respectively are -

A. Benzoyl chloride, benzonitrile

B. Benzyl chloride, pheny carbylamine

C. Benzal dichloride, benzonitrile

D. Benzotrichloride, benzonitrile

Answer: A

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Evaluate Yourself 2

1. Acetone does not form :

A. A phenylhydrazone with phenlhydrazine

B. A sodium bisulphite adduct with sodium bisulphite

C. A silver mirror with Tollen's reagent

D. An oxime with hydroxylamine

Answer: C

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2. I $\xleftarrow{O_2}$ Benzaldehyde $\xrightarrow{NH_3}$ II, I, II are -

A. Benzoic acid, Benzaldehyde ammonia

B. Benzoic acid, Hydrobenzamide

C. Phenyl acetic , Benzaldehyde ammoina

D. Benozic acid, Aniline

Answer: B

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3. $-CHO$ group on benzene nucleus -

A. Activates the ring

B. Deactivates the ring

C. Does not effect the ring

D. None of these

Answer: B

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4. A $\xrightarrow{\text{HCN}} B \xrightarrow{H_3O^+}$ 2-Hydroxy propanoic acid, the compound B is :

A. CH_3CHO

B. Acetaldehyde cyanohydrin

C. Formaldehyde cyanohydrin

D. Acetone

Answer: B

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5. A $\xrightarrow{Pci_5} B \xrightarrow{\mathrm{Pd/BaSO_4}} c \xrightarrow[0^\circ C]{\mathrm{Conc.}H_2SO_4}$ D in the above reaction A, B, C & D are :

A. CH_3COOH, CH_3COCl, CH_3CHO, Metaldehyde

B. CH_3COOH, CH_3COCl, CH_3CHO, Paraldehyde

C. CH_3COOH, CH_3COCl, $CH_3 - CH_2$OH, Paraldehyde

D. None of these

Answer: A

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6. Pentan -2- one differs from pentane-3 one in that :

A. Pentane-2-one does not give iodoform test

B. Pentane-2-one gives iodoform test

C. Pentane-3-one gives iodoform test

D. Pentane-2-one does not react with $NaHSO_3$

Answer: B

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7. When propyne is treated with aqueous H_2SO_4 in the presence of $HgSO_4$, the major product is-

A. Propanal

B. Propyl hydrogen sulphate

C. propanol

D. Acetone

Answer: D

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8. Paraldehyde is :

A. A timer of formaldehyde

B. A timer of acetaldehyde

C. A hexamer of formaldehyde

D. A hexamer of acetaldehyde

Answer: B

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Evaluate Yourself 3

1. Which one is the best method for reducing 3-bromopropanal to 1 bromopropane ?

$\mathrm{BrCH_2}CH_2\mathrm{CHO} \rightarrow \mathrm{BrCH_2}CH_2CH_3$

A. Wolf-Kishner reduction

B. Clemmensen reduction

C. Both (1) and (2)

D. None of these

Answer: C

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2. Which compounds do not undergo Cannizzaro Reaction ?

A. methanal

B. Tricholoroacetaldyde

C. Benzaldehyde

D. Ethanal

Answer: D

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3. Nucleophilic addition reaction will be most favoured in

A. CH_3CH_2 CHO

B. CH_3 CHO

C. $CH_2CH_2CH_2 - \overset{O}{\overset{||}{C}} - CH_3$

D. $(CH_3)_2$ C = O

Answer: B

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4. In connection with benzaldehyde which of the following statement is incorrect –

A. — CHO group of benzaldehyde is meta directing

B. Benzaldehyde shows Claisen - schmidt condensation with CH_3CHO

C. Benzaldehyde on oxidation gives phenyl acetic acid

D. Benzaldehyde on reduction gives benzyl alcohol

Answer: C

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5. Compound 'A' $C_5H_{10}O$ forms a phenyl hydrazone and gives a negative Tollen's reagent test and iodoform test. On reduction with Zn-Hg/HCl, compound A gives n-Pentane. The compound 'A' is

A. A primary alcohol

B. An aldehyde

C. A ketone

D. secondary alcohol

Answer: C

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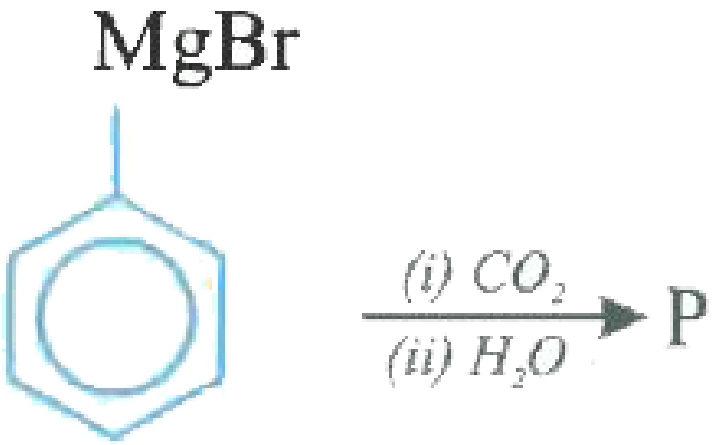
Evaluate Yourself 4



1.

In the reaction, product P is

A.

B.

C. 

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

Answer: B

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2. Which of the following on hydrolysis forms acetic acid

A. CH_3CN

B. CH_3OH

C. C_2H_5OH

D. $C_2H_5NH_2$

Answer: A

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3. Formic acid is obtained when :

A. Calcium acetate is heated with conc. H_2SO_4

B. Calcium formate is heated with calcium acetate

C. Glycerol is heated with oxalic acid at 110° C

D. Acetaldehyde is oxidised with $K_2Cr_2O_7$ and H_2SO_4

Answer: C

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4. The acid formed when n-propyl magnesium bromide is treated with carbon dioxide is

A. C_3H_7 COOH

B. C_2H_5 COOH

C. Both (1) and (2)

D. None of the above

Answer: A

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5. $(CH_3)_2CO \xrightarrow[(HCl)]{\text{NaCN}} A \xrightarrow[\Delta]{H_3O^+} B$ In the above sequence of reactions A and B are

A. $(CH_3)_2$ C (OH)CN, $(CH_3)_2$ C(OH)COOH

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

C. $(CH_3)_2$C(OH)CN, $(CH_3)_2$ CHCOOH

D. $(CH_3)_2$ C(OH)CN, $(CH_3)_2$ C = O

Answer: A

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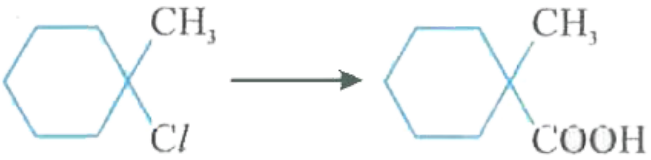
6.



Above reaction can be achieved satisfactorily by which set of reagent.

A. NaCN, H^+ / H_2O

B. Mg + Ether, CO_2, H_3O^+

C. Both (1) and (2)

D. None of the above

Answer: C

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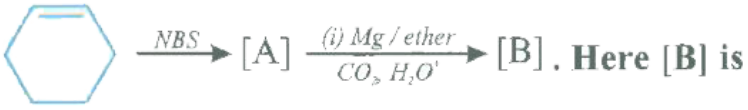
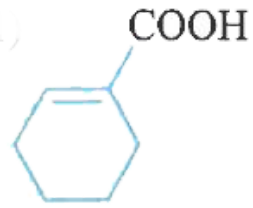
7. Complete the following reaction



. **Here [B] is**

A.



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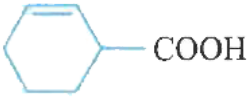

C. 

D. 

Answer: B

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8. The product formed as a result of reaction of CH_3 MgBr and CO_2 on further hydrolysis gives

A. CH_3 COOH

B. HCOOH

C. oxalic acid

D. acetic acid

Answer: A

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Evaluate Yourself 5

1. Formaldehyde and formic acid can be distinguished from each other by treating with :

A. Tollen's reagent

B. Fehling's solution

C. Ferric chloride

D. Sodium bicarbonate

Answer: D

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2. $CH_3COOH \xrightarrow[P_2O_5]{\Delta} X$. Identify X

A. CH_3COCH_3

B. CH_3 CHO

C. $(CH_3CO)_2$ O

D. CH_4

Answer: C

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3. What is the main reason for the fact that carboxylic acids can undergo ionization

A. A bsence of α-hydrogen

B. Resonance stabilisation of the carboxylate ion

C. High reactivity of hydrogen

D. Hydrogen bonding

Answer: B

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4. Name the end product in the following series of reaction

$$CH_3COOH \xrightarrow{NH_3} A \xrightarrow[P_2O_5]{\Delta} B$$

A. CH_4

B. CH_3OH

C. Acetonitrile

D. Ammonium acetate

Answer: C

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5. The reagent that can be used to distinguish between methanoic acid and ethanoic acid is

A. Ammonical silver nitrate solution

B. Neutral ferric Chloride solution

C. Sodium carbonate solution

D. Phenolphthalein

Answer: A

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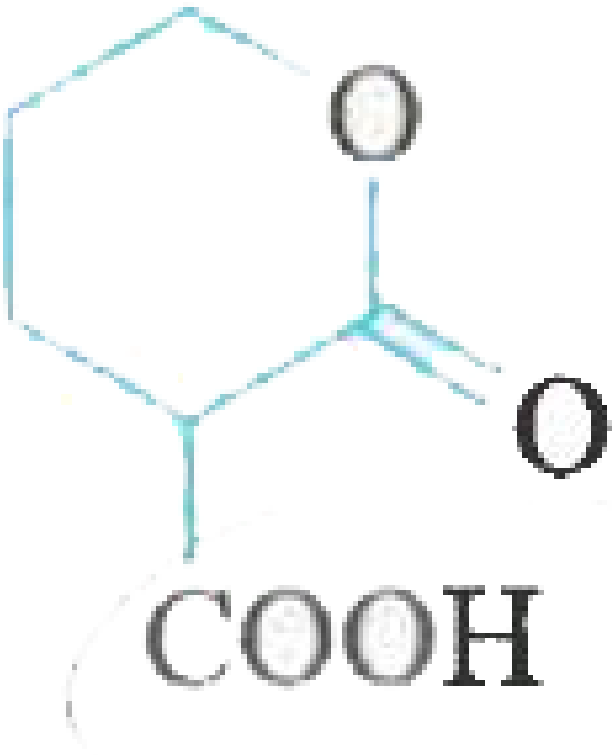
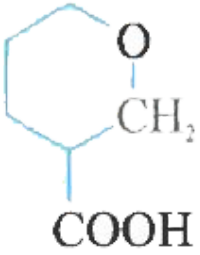
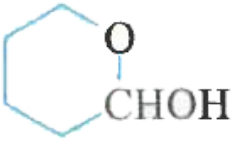


6.

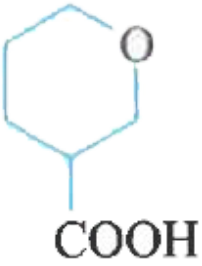
$\xrightarrow[(ii)\,H_2O]{(i)\,NaBH_4}$ [P]. Here predict P is



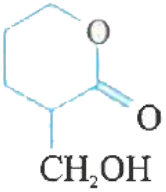
A.



B.



C.



D.

Answer: D

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7. $CH_3CH_2COOH \xrightarrow{\text{Red P/HI}}$ is $\xrightarrow{\text{alc. KOH}}$Product . Product

A. CH_3CH_2COCl

B. CH_3CH_2CHO

C. $ClCH_2CH_2COOH$

D. CH_2 = CHCOOH

Answer: D

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8. Which acid is present in vinegar ?

A. CH_3COOH

B. H_2SO_4

C. HCl

D. HNO_3

Answer: A

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CUQ

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

A. sp^3 hybridised

B. sp^2 hybridised

C. sp hybridised

D. Unhybridised

Answer: B

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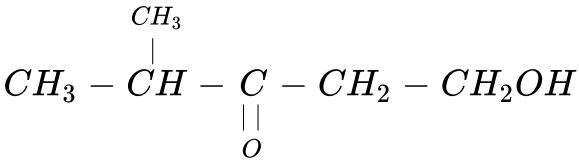
2. The IUPAC name of following structure is



A. 1-hydroxy 4-methyl 3-pentanone

B. 2-methyl 5-hydroxy 3-pentanone

C. 4-methyl 3 - oxo 1 -pentanol

D. Hexanol-1, one-3

Answer: C

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3. Aldehydes are isomeric with

A. ketones

B. Ethers

C. Alcohols

D. Fatty acids

Answer: A

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

A. Phenol

B. Carboxylic acid

C. Aldehydes

D. Alcohols

Answer: C

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5. IUPAC name of CH_3COCH_3 is

A. Acetone

B. 2-propanone

C. Dimethyl ketone

D. Propanal

Answer: B

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6. $CH_3 - \overset{\overset{OH}{|}}{\underset{\underset{H}{|}}{C}} - CN$ is

A. Acetaldehyde cyanohydrin

B. Acetone cyanohydrin

C. Cyanoethanol

D. Ethanol nitrile

Answer: A

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7. Ethanedial has which functional group(s)

A. One ketonic

B. Two aldehydic

C. one double bond

D. Two double bond

Answer: B

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

A. Chain isomerism

B. Position isomerism

C. Fuctional isomerism

D. All of these

Answer: D

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

A. Chloral

B. Tricholoro acetaldyde

C. 1,1,1-triclorocthanal

D. 2,2,2-trichloroethanal

Answer: D

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10. Which of the following is a mixed ketone

A. 3-Pentanone

B. Acetone

C. Benzophenone

D. 2-Butanone

Answer: D

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11. 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 alcohol

C. Oxidation of secondary alcohol

D. Reaction of acid halide with alcohols

Answer: C

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12. $CH_3COCl \xrightarrow[Pd/BaSO_4]{2H} CH_3CHO + HCl$

The above reaction is called :

A. Reimer-Tiemann reaction

B. Cannizzaro reaction

C. Rosenmund reaction

D. Reformatsky reaction

Answer: C

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13. From which of the following tertiary butyl alcohol is obtained by the action of methyl magnesium iodide

A. HCHO

B. CH_3CHO

C. CH_3COCH_3

D. CO_2

Answer: C

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14. Dry heating of calcium acetate gives

A. Acetaldehyde

B. Ethane

C. Acetic acid

D. Acetone

Answer: D

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15. Identify the product C in the series

$$CH_3CN \xrightarrow{\text{Na}/C_2H_5OH} A \xrightarrow{HNO_2} B \xrightarrow{\text{HolCu}/573\text{K}} \text{C}$$

A. CH_3COOH

B. CH_3CH_2NHOH

C. CH_3CONH_2

D. CH_3CHO

Answer: D

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16. Isopropyl alcohol on oxidation forms :

A. Acetone

B. Acetaldehyde

C. Ether

D. Ethylene

Answer: A

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

A. CH_3COCH_3

B. CH_3COOH

C. $\mathrm{HCHO}+CaCO_3$

D. CH_3CHO+$CaCO_3$

Answer: D

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

A. formaldehyde

B. Ethyl alcohol

C. Methyl cyanide

D. methyl iodide

Answer: C

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19. The Clemmensen reduction of acetone yields

A. Ethanol

B. Ethanal

C. Propane

D. Propanol

Answer: C

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20. $C_6H_6 + CO + HCl \xrightarrow{\text{Anhy. } AlCl_3} X + HCl$ compound X is

A. $C_6H_5CH_3$

B. $C_6H_5CH_2Cl$

C. C_6H_5CHO

D. C_6H_5COOH

Answer: C

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21. For C_6H_5CHO which of the following is incorrect

A. On oxidation it yields benzoic acid

B. it is used in perfumery

C. It is an aromatic aldehyde

D. On reduction yields phenol

Answer: D

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22. 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. $(CH_3)_2C - \overset{\overset{O}{||}}{C} - CH_3$

Answer: C

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23. Which of the following products is formed when benzaldehyde is treated with CH_3MgBr and the addition product so obtained is subjected to acid hydrolysis?

A. Secondary alcohol

B. A primary alcohol

C. Phenol

D. Tert-Butyl alcohol

Answer: A

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24. Aldol condensation will not be observed in

A. Chloral

B. Phenyl acetaldehyde

C. Hexanal

D. Ethanal

Answer: A

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

A. Methanal

B. Ethanol

C. propanone

D. Ethanal

Answer: D

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26. Which of the following compounds will undergo self aldol condensation in the presence of cold dilute alkali ?

A. C_6H_5CHO

B. CH_3CH_2CHO

C. CH $\equiv$ C - CHO

D. $CH_2 = CH -$ CHO

Answer: B

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27. Acetaldehyde when treated with dilute NaOH gives

A. CH_3CH_2OH

B. CH_3 COOH

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

D. $CH_3 - CH_3$

Answer: C

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28. C_2H_5CHO and $(CH_3)_2$ can be distinguished by testing with

A. Phenyl hdrazine

B. Hydrozylamine

C. Fehling solution

D. Sodium bicarbonate

Answer: C

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29. Dimethyl ketones are usually characterised through

A. Tollen's reagent

B. Iodoform test

C. Schiff's test

D. Benedict's reagent

Answer: B

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30. Acetaldehyde reacts with C_2H_5MgBr the final product is

A. An aldehyde

B. A ketone

C. A primary alcohol

D. A secondary Alcohol

Answer: D

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31. Which of the following is optically active

A. Ethylene glycol

B. Oxalic acid

C. Glycerol

D. Tartaric acid

Answer: D

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32. Palmitic acid is

A. $C_{16}H_{31}COOH$

B. $C_{17}H_{35}$ COOH

C. $C_{15}H_{31}COOH$

D. $C_{17}H_{31}COOH$

Answer: C

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33. The name of the compound having the structure

$ClCH_2CH_2COOH$ is

A. 3-chloropropanoic acid

B. 2-chloropropanoic acid

C. 2-chloroethanoic acid

D. Chlorosuccinic acid

Answer: A

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34. Fats and oils are mixture of

A. Glycerides and saturated fatty acids

B. Glycerides and unsaturated fatty acids

C. Glycerides of saturated and unsaturated fatty acids

D. Only saturated and unsaturated fatty acids

Answer: C

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35. Vinegar obtained from cane sugar contains

A. Citric acid

B. lactic acid

C. Acetic acid

D. Palmitic acid

Answer: C

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36. The general formula for monocarboxylic acid is

A. C_nH_nCOOH

B. C_nH_{2n+1}COOH

C. C_nH_{2n-1} COOH

D. $C_nH_{2n}O_2$

Answer: B

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37. Which of these do not contain -COOH group

A. Aspirin

B. Benzoic acid

C. Pircric acid

D. Salicylic acid

Answer: C

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38. Carbolic acid is

A. C_6H_5CHO

B. C_6H_6

C. C_6H_5COOH

D. C_6H_5OH

Answer: D

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39. The most acidic of the following is

A. $ClCH_2COOH$

B. C_6H_5COOH

C. CD_3 COOH

D. CH_3CH_2 COOH

Answer: A

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40. Which is most reactive towards nucleophilic addition reactions?

A. Ethyl acetate

B. Acetic anhydride

C. Acetamide

D. Acetyl chloride

Answer: D

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41. 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

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42. Product (P) obtained in the reaction given below CO + NaOH $\rightarrow$ (P)

A. HCOONa

B. $C_2H_2O_4$

C. HCOOH

D. CH_3COOH

Answer: A

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43. Carboxylic acids react with diazomethane to yield :

A. Amine

B. Alcohol

C. Ester

D. Amide

Answer: C

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44. The product D of the reaction $CH_3Cl \xrightarrow{KCN} (A) \xrightarrow{H_2O} (B) \xrightarrow{NH_3} (C) \xrightarrow{\Delta} (D)$ is

A. $CH_3CH_2NH_2$

B. CH_3 CN

C. $HCONH_2$

D. CH_3CONH_2

Answer: D

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45. Which of the following on hydrolysis forms acetic acid

A. CH_3 CN

B. CH_3OH

C. C_2H_5OH

D. $C_2H_5NH_2$

Answer: A

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46. When benzyl alcohol is oxidised with hot acidic $KMnO_4$, the product obtained is :

A. Benzaldehyde

B. Benzoic acid

C. CO_2 and H_2O

D. None of these

Answer: B

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47. 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

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48. o-xylene when oxidised in presence of air and $(CH_3COO)_2$ Mn eatalyst gives which of the following product ?

A. Benzoic acid

B. Phenyl acetic acid

C. Phthalic acid

D. Acetic acid

Answer: C

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49. In esterification, OH^- Ion for making comes from

A. acid

B. alcohol

C. ketone

D. carbohydrate

Answer: A

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50. Heating mxiture of ethyl alcohol and acetic acid in presence of conc. H_2SO_4 produces a fruity smelling compound. This reaction is called :

A. Neutralisation

B. Ester hydrolysis

C. Esterification

D. Williamson's synthesis

Answer: C

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51. The vapure of a carboxylic acid HA when passed over MnO at 573 K$yields Propano \neq . The acid$HA` is

A. Methanoic acid

B. Ethanoic acid

C. Propanoci acid

D. Butanoic acid

Answer: B

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52. The acid which reduces Fehling solution is

A. Methanoic acid

B. Ethanoic acid

C. Butanoic acid

D. Propanoic acid

Answer: A

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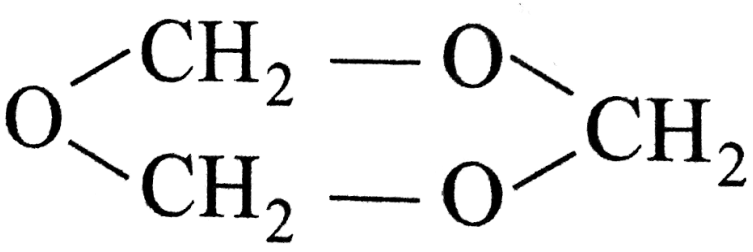
53.



The above shown polymer is obtained when a carbonic compound is allowed to stand. It is a white solid. The polmer is

A. Trioxane

B. Formose

C. Paraformaldehyde

D. Metaldehyde

Answer: A

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54. Which CH_3COOH reacts with $CH_3 - MgX$, then

A. CH_3COX is formed

B. Hydrocarbon is formed

C. Acetone is formed

D. Alcohol is formed

Answer: B

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55. Base hydrolysis of an ester with NaOH gives a carboxylic acid whose sodium salt on Kolbe's electrolysis yields ethane. The ester is

A. ethyl methanoate

B. methyl ethanoate

C. phenyl benzoate

D. ethyl propanoate

Answer: B

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56. Acetic anhydride reacts with excess of ammonia to from

A. $2CH_3COONH_4$

B. $2CH_3CONH_2$

C. $CH_3CONH_2 + CH_3COONH_4$

D. $2CH_3COOH$

Answer: C

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57. In the reaction

$CH_3COOH \xrightarrow{LiAlH_4} (A) \xrightarrow{I_2+NaOH} (B) \xrightarrow{Ag\,(\text{Dust})} (C)$, the final product C is:-

A. C_2H_5 I

B. C_2H_5OH

C. C_2H_2

D. CH_3COCH_3

Answer: C

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58. In the presence of iodine catalyst, chlorine reacts with acetic acid to form

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

B. $C/CH_2 - \overset{\overset{O}{||}}{C} - OH$

C. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - OH$

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

Answer: B

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59. Given below are some statement concerning formic acid, which of them is/are true?

A. It is a weaker acid than acetic acid

B. It is a reducing agent

C. When its calcium salt is heated, it forms a ketone

D. All of these

Answer: D

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60. Benzoic acid has higher molecular weight in benzene and lesser molecular weight in water because

A. Water has lower freezing point and higher boiling point than benzene

B. It dissociates to a greater extent in benzene than in water

C. It associated in water and dissociates in benzene

D. It dissociates in water and associates in benzene

Answer: D

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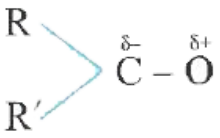
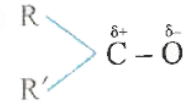
Exercise I C W

1. Which of the following is correct for carbonyl compounds ?

A. 

B. 

C. $\overset{\delta+}{R}-\underset{\underset{R'}{|}}{\overset{\delta-}{C}}=O$

D. $R-\underset{\underset{R'}{|}}{\overset{\delta+}{C}}=\overset{\delta-}{O}$

Answer: D

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2. Aldol condensation is given by :

A. Aldehydes only having α-hydrogen atom

B. Aldehydes and ketones having α-hydrogen atom

C. Ketones only having α-hydrogen atom

D. Aldehydes having no α-hydrogen atom

Answer: B

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3. Formaldehyde can be distiguished from acetaldehyde by the use of:

A. Fehling's solution

B. Schiff's reagent

C. Iodofrom test

D. Ammoniacal $\mathrm{AgNO_3}$

Answer: C

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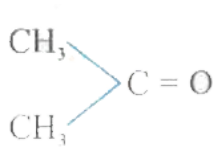
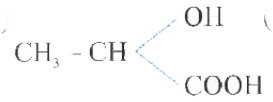
4. Acetaldehyde on treatment with HCN forms a cyanohydrin. What will be the product if this cyanohydrin is further hydrolysed ?

A. CH_3COOH

B. 

C. 

D. CH_3CH_2OH

Answer: C

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5. Benaldehyde and acetaldehyde can be distinguished by

A. Iodoform test

B. 2,4 DNP test

C. NH_3 reaction

D. Wolff kishner's reduction

Answer: A

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6. Which of the following types of carbonyl groups will produce an oxime on reaction with hydroxylamine?

A. $R-\underset{\underset{O}{||}}{C}-OH$

B. $R-\underset{\underset{O}{||}}{C}-H$

C. $R-\underset{\underset{O}{||}}{C}-OCH_3$

D. $R - \underset{\underset{O}{||}}{C} - NH - CH_3$

Answer: B

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7. Which is used as a preservative for biological specimens ?

A. Formalin

B. Formic acid

C. Liquid NH_3

D. `Acetic acid

Answer: A

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8. The reaction ,

$CH_3CHO + H_2N - NH_2 \rightarrow CH_3 = N.NH_2$ is :

A. Elimination

B. Addition

C. Addition-elimination

D. None of the above

Answer: C

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9. Which reagent can convert $>$ Co group to $>$ C(C_6H_5) OH?

A. C_6H_5OH

B. $C_6H_5CH_2OH$

C. C_6H_5MgBr

D. C_6H_5Cl

Answer: C

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10. Benzene on ozonolysis followed by hydrolysis with water in presence of zinc powder gives ,

A. Glyoxal

B. Difomyl

C. Ethanedial

D. All

Answer: D

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11. The reaction

$$C_6H_5CHO + CH_3CHO \xrightarrow{\text{dil.NaOH}}$$

C_6H_5CH = CHCHO is called

A. Benzoin condensation

B. Claisen condensation

C. Perkin reaction

D. Cannizzaro's reaction

Answer: B

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12. What of the following is expected to be most highly ionised in water ?

A. $CH_2ClCH_2CH_2COOH$

B. $CH_3CHClCH_2COOH$

C. $CH_3CH_2CHClCOOH$

D. $CH_3CH_2CCl_2COOH$

Answer: D

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13. Reactivity of acids in esterification follows the order:

A. $HCOOH > CH_3COOH > RCH_2COOH > R_2CHCOOH > R_3CCOOH$

B. $CH_3COOH > HCOOH > R_3CCOOH > R_2CHCOOH > RCH_2COOH$

C. R_3CCOOH $>$ R_2CHCOOH $>$ RCH_2COOH $>$ CH_3 COOH $>$ HCOOH

D. None of the above

Answer: A

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14. An organic halide was treated with KCN and the product was boiled with dil. HCl to give a compoud B, B can be :

A. An alkane

B. An alkyl halide

C. A carboxylic acid

D. ketone

Answer: C

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15. The correct order of decreasing boiling points of $CH_3CONH_2(A)$, CH_3COCl (B), CH_3COOH (C) and $(CH_3CO)_2$O (D) is

A. $A > D > C > B$

B. $A > B > C > D$

C. $D > C > B > A$

D. None of these

Answer: A

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Exercise I H W

1. Halogenation of silver salt of carboxylic acid using CCl_4 as solvent to form alkyl halide is an example of :

A. Free radical halogenation

B. Nuclear halogenation

C. Hunsdiecker reaction

D. HVZ reaction

Answer: C

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2. Identify the product Y in the sequence

$$CH_3CHO + CH_3MgI \xrightarrow{Ether} X \xrightarrow{H_3O^+} Y$$

A. CH_3OH

B. CH_3CH_2OH

C. $(CH_3)_2CHOH$

D. $(CH_3)_2COH$

Answer: A

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3. When propanamide is reacted with Br_2 and NaOH, the product formed is :

A. Ethyl alcohol

B. Propyl alcohol

C. Propyl amine

D. Ethylamine

Answer: D

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4. The reaction of $HCOOH$ with $conc.\ H_2SO_4$ gives :

A. CO_2

B. CO

C. Oxalic acid

D. Acetic acid

Answer: B

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

A. Chlorobenzene

B. Benzyl chloride

C. m-Chlorobenzaldehyde

D. o-Chlorobenzaldehyde

Answer: C

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

$$HC \equiv CH \xrightarrow[20\,\% H_2SO_4]{1\,\% HgSO_4} A \xrightarrow{CH_3MgX} B \xrightarrow{|0|}$$

A. Acetic acid

B. Isopropyl alcohol

C. Acetone

D. Ethanol

Answer: C

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7. Compound which gives acetone on ozonolysis

A. CH_3 - CH = CH - CH_3

B. $(CH_3)_2C = C(CH_3)_2$

C. $C_6H_5CH = CH_2$

D. $CH_3CH = CH_2$

Answer: B

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8. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - COOC_2H_5 \xrightarrow[(H_2O)]{NaOH} (A)$

The product (A) in above reaction is :

A. CH_3COOH

B. C_2H_5 OH

C. CH_3COCH_3

D. C_2H_5CHO

Answer: C

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

A. Glyoxal

B. Cyclohexane

C. Acetophenone

D. Hexachlorocyclochexane

Answer: C

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

A. Ethylene only

B. Acetaldehyde and Formaldehyde

C. Propionaldehyde and Formaldehyde

D. Acetaldehyde only

Answer: C

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

A. Methanoic acid

B. Ethanal

C. methanol

D. Methanal

Answer: D

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12. The oxidation of benzyl chloride with lead nitrate gives

A. Benzyl alcohol

B. Benzoic acid

C. Benzaldehyde

D. p-chlorobenzaldehyde

Answer: C

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13. An alkene of molecular formula C_9H_{18} on ozonolysis gives 2.2 dimethyl propanal and 2- butanone, then the alkene is

A. 2,2,4-trimethyl - 3-hexene

B. 2,2,6-trimethyl-3-hexene

C. 2,3,4-trimethyl - 2-hexene

D. 2,2,4-trimethyl - 2-hexene

Answer: A

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14. Benzyl alcohol and sodium benzoate is obtained by the action of sodium hydroxide on benzaldehyde. This reaction is known as

A. Perkin's reaction

B. Cannizzaro's reaction

C. Sandmeryer's reaction

D. Claisen condensation

Answer: B

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15. Enol content is highest in

A. Acetone

B. Acetophenone

C. Acetic acid

D. Acetyl acetone

Answer: D

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Exercise Ii C W

1. In the given reaction :

$$CH_3 - \overset{OH}{\overset{|}{C}}H - \overset{OH}{\overset{|}{\underset{CH_3}{\underset{|}{O}}}} - CH_3 \xrightarrow{HIO_4} (A) + (B)$$

(A) 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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2. In the reaction sequence :

$$C_6H_5CHO \xrightarrow{HCN} [X] \xrightarrow{H_2O/H^{\oplus}} \text{product}$$

Product will be :

A. Optically inactive acid

B. Optically active α - hydroxy acid

C. Racemic mixture of two optically in active primary alcohols

D. Racemic mixture of two optically active primary alcohols

Answer: B

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3. In the given reaction : Carbonyl compound,

$C_8H_{16}O[X] \xrightarrow{KMnO_4 / H^{\oplus} / \Delta}$ 2 moles of butanoic acid [X] will be :

A. 2-octanone

B. 3-octanone

C. 4-octanone

D. 2-methyl-3-heptanone

Answer: C

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4. In the reaction

$$X + Y \xrightarrow[5^\circ C]{NaOH} CH_3 - \overset{OH}{\overset{|}{C}}H - \underset{CH_3}{\underset{|}{C}}H - CHO$$

(X) and (Y) Will respectively be :

A. $CH_3 - CH_2$-CHO and $CH_3 - CH_2$ -CHO

B. CH_3-CHO and $CH_3 - CH_2$-CHO

C. CH_3-CHO and $CH_3 -$ CHO

D. $CH_3 - CHO$ and $CH_3 - \underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}} -$ CHO

Answer: B

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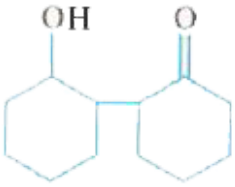
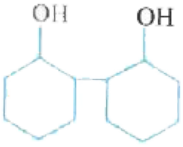
5. In the reaction : [X] will be :

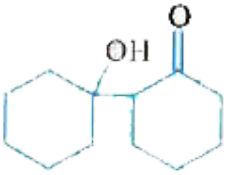
A.

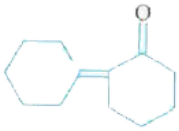


B.



C.





D.

Answer: D

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6. In the given reaction $CH_3 - CH_2 - COOH \xrightarrow[(ii)\ .\quad Br_2/\Delta]{(i)\ .\quad AgNO_3} [X]$

[X] will be

A. Ethyl bromide

B. Propyl bromide

C. Propyl propenoate

D. All of these

Answer: A

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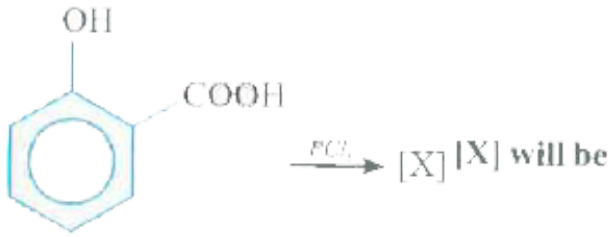
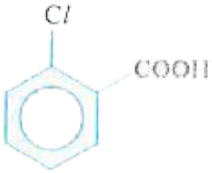
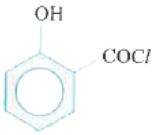
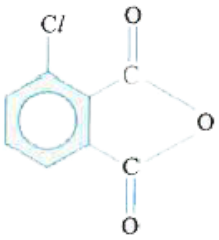
7. In the given reaction :

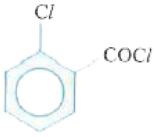


[X] will be

A. 

B. 

C. 

D. 

Answer: B

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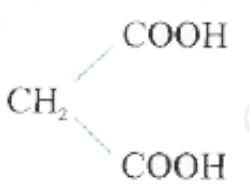
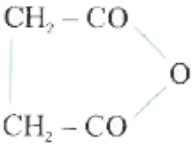
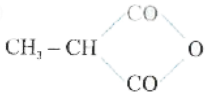
8. In the given reaction $CH_3 - COOH \xrightarrow[\text{(iii) } H_2O/H^{\oplus}]{\text{(i) Red } -P+Br_2 \text{ (ii) } NaCN} (X)$

'X' will be

A. 

B. HOOC -$CH_2 - CH_2$- COOH

C. 

D. 

Answer: A

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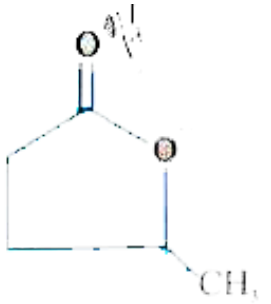
9. In the given reactions :



$\xrightarrow{HOH/H}$ [X]

[X] will be :

A. HOOC -$CH_2 - CH_2 - \overset{OH}{\overset{|}{C}}H - CH_3$

B. $CH_3 - CH_2 - CH_2 - CH_2 -$ COOH

C. $HO - CH_2 - CH_2 - CH_2 -$ COOH

D. $CH_3 - CH_2 - \underset{\underset{OH}{|}}{CH} - CH_2 - \text{COOH}$

Answer: A

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10. The reduction of benzoyl chloride with $H_2 / Pd - BaSO_4$ produces

A. $C_6H_5\text{CHO}$

B. $C_6H_5CH_2$ OH

C. $C_6H_5\text{COOH}$

D. $C_6H_5CH_2\text{CN}$

Answer: A

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11. Which reaction can produce R - CO-Ar species :

A. $ArCOCl + H\text{-}Ar \xrightarrow{AlCl_3}$

B. $ArCOCl + RMgX \rightarrow$

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

D. $RCOCl + ArMgX \rightarrow$

Answer: C

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12. Which one is a mixed ketone :

A. Benzophenone

B. acetone

C. Acetophenone

D. Dibenzyl ketone

Answer: C

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13. 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. Methyl methanoate

D. Methyl propanoate

Answer: B

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14. Reaction of aniline with acety1 chloride in the presence of $NaOH$ gives .

A. Acetanilide

B. Aniline hydrochloride

C. p-chlroaniline

D. Acetophenone

Answer: A

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15. m-chlorobenzaldehyde on reaction with conc. KOH at room temperature gives

A. Potassium m-chorobenzoate and m-hydroxy benzaldehyde

B. hydroxy benzaldehyde&m-chloro-benzylalcohol

C. m-chlorobenzylalcohol and m-hydroxy benzylalcohol

D. Potassium m-chlorobenzonatc and m-chlorobenzyl alcohol

Answer: D

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16. In Etard's reaction toluene is oxidised to benzaldehyde using

A. H_2O_2

B. Cl_2

C. Chromium trioxide or CrO_2Cl_2

D. $\mathrm{KMnO_4}$

Answer: C

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

A. Acetaldehyde

B. Formalin

C. D-glucose

D. Acetone

Answer: D

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18. The organic product formed in the reaction

$$C_6H_5COOCH_3 \xrightarrow[(ii)\ H_2O]{(i)\ LiAlH_4}$$

A. $C_6H_5CH_2OH$ and CH_3OH

B. C_6H_5COOH and CH_4

C. $C_6H_5CH_3$ and CH_3 OH

D. $C_6H_5CH_3$ and CH_4

Answer: A

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19. The class of compounds that are reduced to primary alcohols and also respond to Fehling's solution are known as

A. Aliphatic aldehydes

B. Aliphatic ketones

C. Aromatic amines

D. Aromatic ketones

Answer: A

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20. Benzoic acid with $SOCl_2$ to give

A. Chlorobenzene

B. Dichlorobenzene

C. Benzoyl chloride

D. Benzyl chloride

Answer: C

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21. Identify X in the sequence,

$$X \xrightarrow[2H_2O\,/\,H^+]{1.\,CH_3MgCl} C_5H_{12}O \xrightarrow[575K]{Cu} C_5H_{10}$$

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

B. $CH_3CH_2CH_2$CHO

C. $(CH_3)_2$CHCHO

D. $CH_3CH_2CH_2CH_2$OH

Answer: A

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22. Identify X,

$$H_3C - \overset{\overset{CH_3}{|}}{C} = O \xrightarrow[\text{dry ether}]{CH_3MgI} A \xrightarrow{H_2O} X,$$

A. CH_3OH

B. CH_3CH_2OH

C. $CH_3CHOHCH_3$

D. $CH_3C(OH)(CH_3)_2$

Answer: D

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23. Pick out the reaction in which formic and acetic acids differs from each other

A. Sodium replaces hydrogen from the compound

B. Forms esters with alcohols

C. Reduces solution of ammoniacal silver nitrate or Fehling's solution or dil. Acid $KMnO_4$.

D. Turns red litmus blue

Answer: C

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24. The most acidic among the following is

A. CH_3CH_2OH

B. C_6H_5OH

C. CH_3COOH

D. $CH_3CH_2CH_2OH$

Answer: C

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25. Select the strongest acid :

A. CF_3COOH

B. CCl_3COOH

C. CH_3COOH

D. CBr_3COOH

Answer: A

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Exercise Ii H W

1. Which of the following will give readily a hydrocarbon ?

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

B. $RCOOAg \xrightarrow{I_2}$

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

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

Answer: A

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2. identify Z in sequence

$$CH_3COONH_4 \xrightarrow[(ii)\,P_2O_5]{(i)\,Heat} Y \xrightarrow{H_2O^{H^+}} Z$$

A. $CH_3 - CH - \underset{\underset{O}{||}}{C} - NH_2$

B. CH_3 CN

C. CH_3COOH

D. $(CH_3CO)_2$ O

Answer: C

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3. Formaldehyde and formic acid can be distinguished by :

A. Tollen's reagent

B. Fehling's solution

C. Ferric chloride

D. $\mathrm{NaHCO_3}$

Answer: D

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4. Which ohn oxidation will not give a carboxylic acid with the same number of carbon atoms :

A. CH_3COCH_3

B. $\mathrm{CCl_3}CH_2\mathrm{CHO}$

C. $CH_3CH_2CH_2OH$

D. CH_2CH_2CHO

Answer: A

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5. Alkaline hydrolysis of an ester is called

A. Neutralisation

B. Esterification

C. Polymerisation

D. Saponification

Answer: D

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6. The principle behind the acidity order Cl_3 CCOOH $>$ Cl_2 CHCOOH $>$ $\mathrm{ClCH_2}$ COOH $>$ CH_3 COOH is the withdrawal of electron and liberation of protons, it is due to

A. Inductive effect

B. Resonance effect

C. Electromeric effect

D. mesomeric effect

Answer: A

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7. An or ganic acid was converted into its calcium salt and it was dry distilled. The product formed is formaldehyde the organic acid is

A. Oxalic acid

B. Formic acid

C. Acetic acid

D. Benzoic acid

Answer: B

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8. A sequential reaction may be performed as represented below :

$$\mathrm{RCH_2}CO_2H \xrightarrow[(i)]{} \mathrm{RCH_2COCl} \xrightarrow[(2)]{NH_3}$$

$$\mathrm{RCH_2CONH_2} \xrightarrow{(3)}$$

$$\mathrm{RCO_2}H \xleftarrow{(5)} \mathrm{RCH_2}OH \xleftarrow{(4)} \mathrm{RCH_2}NH_2$$

the appropriate reagent for step (3) is :

A. Bromine alone

B. Bromine and alkali

C. HBr

D. P_2O_5

Answer: B

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9. Reaction of benzamide, KOH and bromine yields :

A. Benzene

B. Bromobezene

C. Aniline

D. Acetanilide

Answer: C

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10. Which of the following has the maximum acidic strength?

A. o-nitrobenzoic acid

B. m-nitrobenzoic acid

C. p-nitrobenzoic acid

D. p-nitrophenol

Answer: A

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11. Action of benzoic acid with hydroazoic acid in presence of conc. H_2SO_4 followed by hydrolysis:

A. Aniline

B. Benzamide

C. Phenyl cyanide

D. All

Answer: A

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12. Sulphonation of benzoic acid produces mainly

A. o-sulphobenzoic acid

B. m-sulphobenzoic acid

C. p-sulphobenzoic acid

D. o, p-disulphobenzoic acid

Answer: B

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13. The general formula of both aldehyde & ketone is

A. $C_nH_{2n+2}O$

B. C_nH_{2n} O

C. $C_nH_{2n-2}O$

D. $C_nH_{2n+4}O$

Answer: B

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14. When acetylene is passed through dil.H_2SO_4 in the presence of $HgSO_4$. The compound formed is:

A. C_2H_5OH

B. acetone

C. CH_3CHO

D. Carbide of Hg

Answer: C

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15. Aldehydes are first oxidation product of :

A. Primary alcohals

B. secondry alcohals

C. tertiary alcohals

D. monohydric alcohals

Answer: A

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16. Formalin is the commercial name of :

A. formic acid

B. Fluoroform

C. 40% aqueous solution of methanal

D. formaldehyde

Answer: C

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17. The compound that will not give indoform on treatment with alkali and iodine is

A. acetone

B. ethanol

C. diethyl ketone

D. isopropyl alcohol

Answer: C

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18. Tollen's reagent is :

A. alkaline mercuric chloride

B. alkaline potassium permagnate

C. ammoniacal silver nitrate

D. ammonium citrate

Answer: C

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19. Urotropine is formed by the action of ammonia on:

A. acetaldehyde

B. formaldehyde

C. acetone

D. Phenol

Answer: B

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20. When acetaldehyde is treated with ammoniacal silver nitrate solution , we get :

A. silver mirror

B. a brown precipitate

C. red colouration

D. no precipitate

Answer: A

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21. The reverse of esterification process is called:

A. Neutralisation

B. hydrolysis

C. acidolysis

D. alcohalysis

Answer: B

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22. $2CH_3CHO \xrightarrow{Al(OC_2H_5)_3} CH_3COOCH_2CH_3$

this reactions is called :

A. Cannizzaro's reaction

B. Aldol condensation

C. Claisen's reaction

D. Tischenko reaction

Answer: D

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23. Explain the reactivity of acyl compounds in the order:

A. acid chloride $>$ amide $>$ anhydride $>$ ester

B. acid chloride $>$ anhydride $>$ ester $>$ amide

C. ester $>$ acid chloride $>$ anhydride $>$ amide

D. ester $>$ anhydride $>$ acid chloride $>$ amide

Answer: B

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24. Acetic anhydride on readuction with $LiAlH_4$ in ether gives :

A. acetaldehde

B. Ethyl alcohol

C. acetone

D. ethane

Answer: B

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25. In presence of red phosphorus catalyst, chlorine reacts with acetic acid to form

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

B. $CH_2Cl - \overset{\overset{O}{||}}{C} - OH$

C. $CH_3 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - OH$

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

Answer: B

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Exercise Iii

1. Predict the product 'B' in the sequence of reaction

$$HC \equiv CH \xrightarrow[HgSO_4]{30\%\, H_2SO_4} A \xrightarrow{NaOH} B$$

A. CH_3COONa

B. CH_3 COOH

C. CH_3CHO

D. $CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2$CHO

Answer: D

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

A. Friedel-Craft's reaction

B. perkin reaction

C. wurtz reaction

D. Reformatsky reaction

Answer: B

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3. Which of the following is incorrect

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

B. Fehling solution used in the detection of glucose

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

D. $\mathrm{NaHCO_3}$ is used in the detection of carbonyl compounds

Answer: C

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

A. Cannizzaro reaction

B. Wurtz reaction

C. Etard reaction

D. Reimer-Tiemann

Answer: C

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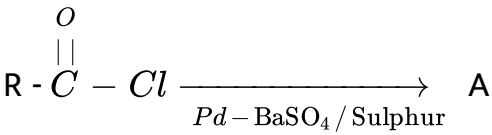
5. In the following reaction, product P is



A. RCH_2OH

B. RCOOH

C. RCHO

D. RCH_3

Answer: C

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

A. Aminohydroxide

B. Hydrazone

C. Semicarbazone

D. Oxime

Answer: D

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7. Identify the wrong statement from the following

A. Salicylic acid's a monobasic acid

B. methyl salicylate is an ester

C. Salicylic acid gives violet colour with neutral ferric chloride as well as brisk effervescence with sodium bicarbonate

D. Methly salicylate does not occur in natural oils

Answer: D

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8. The reaction

$$CH_3CH=CH_2 \xrightarrow[H^+]{CO+H_2O} CH_3-\underset{\underset{\text{COOH}}{|}}{CH}-CH_3$$ is known as

A. Wurtz reactions

B. Koch reaction

C. Clemmensen's reduction

D. Kolbe's reaction

Answer: B

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9. By oxidation with V_2O_5, which one of the following gives phthalic acid ?

A. naphthalene

B. Benzene

C. Mesitylene

D. Toluene

Answer: A

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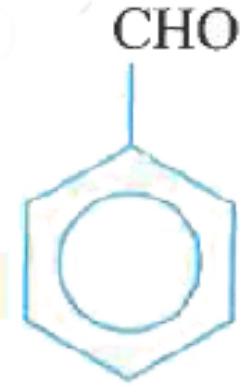
10. $\xrightarrow[(ii)\,H_2O]{(i)\,CO_2}$ In the reaction, product P is

A. 

B. 

C. 

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

Answer: B

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11. Which of the following acids has the smallest dissociation constant

A. CH_3CHFCOOH

B. FCH_2CH_2COOH

C. $\mathrm{BrCH_2}CH_2$ COOH

D. CH_3 CHBrCOOH

Answer: C

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12. $CH_3CH_2COOH \xrightarrow{\text{Red P/HI}}$ is $\xrightarrow{\text{alc. KOH}}\text{Product}$. Product

A. CH_3CH_2OH

B. CH_3CH_2CN

C. CH_2 = CHCOOH

D. $CH_3CHClCOOH$

Answer: C

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13. Acetophenone is prepared from :

A. Rosenmund reaction

B. Sandmeyer reaction

C. wurtz reaction

D. Friedel craft reaction

Answer: D

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14. Glycerol reacts with potassium bisulphate to produce

A. Allyl iodide

B. Allyl sulphate

C. Acraldehyde

D. Glycerol trisulphate

Answer: C

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15. Identify the reactant X and the product Y

$$CH_3 - CO - CH_3 + X \rightarrow (CH_3)_3C - OMg - Cl \rightarrow Hydrolysis$$

$$Y + Mg(OH)CI$$

A. $X = \mathrm{MgCl_2}, Y = CH_3CH = CH_2$

B. $X = CH_3\mathrm{MgCl}, Y = C_2H_5\mathrm{COCH_3}$

C. $X = CH_3\mathrm{MgCl}, Y = (CH_3)_3C - OH$

D. $X = C_2H_5\mathrm{MgCl_2}, Y = (CH_3)_3C - OH$

Answer: C

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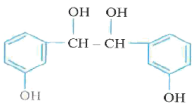
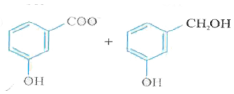
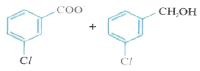
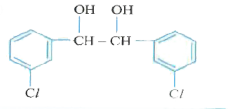
16. When m-chlorobenzaldehyde is treated with $50\,\%\,KOH$ solution, the product (s) obtained is (are)

A. 

B. 

C. 

D. 

Answer: C

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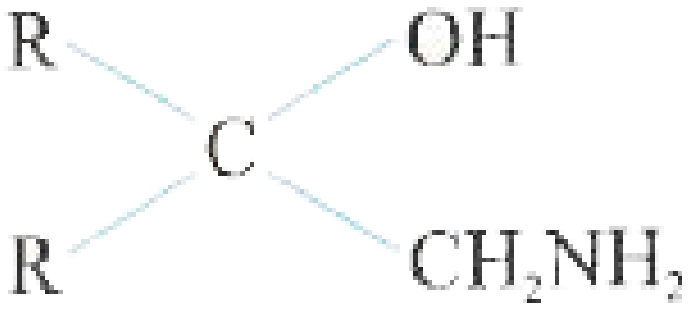
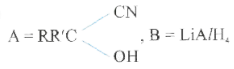
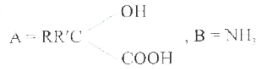
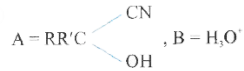
17. A and B in the following reaction are

R - C - R' $\xrightarrow{HCN/KCN}$ $\xrightarrow{B}$



A. 

B. 

C. 

D. $A = \mathbb{R}'CH(CN)_2, B = NaOH$

Answer: A

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18. Which gives lactic acid on hydrolysis after reacting with HCN in KCN ?

A. HCHO

B. CH_3CHO

C. C_6H_5CHO

D. CH_3COCH_3

Answer: B

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

A. CH_3CH_2 CHO

B. CH_3CHO

C. $CH_3 - \underset{\underset{O}{||}}{C} - CH_3$

D. C_2H_5OH

Answer: B

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20. Laboratory method for the preparation of acetyl chloride is :

A. $CH_3COOH + SOCl_2 \rightarrow CH_3$ COCl

B. $CH_3COOH + PCl_3 \rightarrow CH_3$ COCl

C. $CH_3COONa + PCl_3 \rightarrow CH_3$ COCl

D. All of these

Answer: D

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21. $2CH_3COOH \xrightarrow[300^\circ C]{MnO} A$, product 'A ' in the reaction is

A. CH_3CH_2 CHO

B. $CH_3 - CH_2$- OH

C. CH_3COCH_3

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

Answer: C

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22. Which of the aldehyde is most reactive ?

A. $C_6H_5 -$ CHO

B. CH_3 CHO

C. HCHO

D. All of these are equally reactive

Answer: C

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23. $CH_3 - CH_2 - C \equiv CH \xrightarrow[H_2SO_4]{HgSO_4}$ A, the compound A is

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

B. $CH_3 - CH_2 - CH_2 -$ CHO

C. $CH_3 - CH_2 - CH_2 -$ COOH

D. $CH_3CH_2CH_2CH_2$OH

Answer: A

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24. $R-CH=CH_2+CO+H_2 \xrightarrow[\text{High pressure}]{\text{High temp}} RCH_2CH_2$CHO.

the above reaction is

A. Mendius reaction

B. Oxo process

C. Sandorn's reaction

D. Stephen's reaction

Answer: B

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25. The regent used in Gattermann -Koch aldehyde synthesis is

A. Pb / $BaSO_4$

B. alkaline $KMnO_4$

C. acidic $KMnO_4$

D. CO + HCl

Answer: D

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26. What is the main reason for the fact that carboxylic acids can undergo ionization

A. Absence of hydrogen

B. Resonance stabilisation of the carboxylate ion

C. High reactivity of hydrogen

D. Hydrogen bonding

Answer: B

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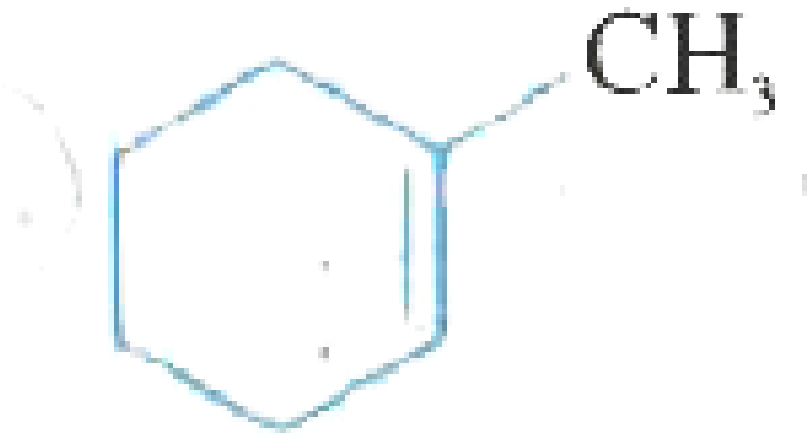

27.

On reductive ozonolysis yields

A. 6-oxoheptanal

B. 6-oxoheptanoic acid

C. 6-hydroxyheptanal

D. 3-hydroxypentanal

Answer: A

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

A. Tollen's reagent

B. Fehling's solution

C. $\mathrm{NaOH}/\mathrm{I}_2 / H^+$

D. $\mathrm{NaOH}/\mathrm{NaI}/\mathrm{H}^+$

Answer: C

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

A. Benzaldehyde

B. Acetone

C. Benzoquione

D. Benzophenone

Answer: A

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30. Schiff's reagent gives pink colour with

A. Aldehydes

B. Ethers

C. Ketones

D. Carboxylic acid

Answer: A

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31. When is reduced with, the compound obtained will be

A. $CH_3 - CH_2 -$ COOH

B. $CH_2 = CH - CH_2$ OH

C. $CH_3 - CH_2 - CH_2$OH

D. $CH_3 - CH_2 -$ CHO

Answer: B

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32. In a set of the given reactions, acetic acid yields a product C.

$$CH_3COOH + PCl_5 \rightarrow A$$

$$A \xrightarrow[\text{Anhy}AlCl_3]{C_6H_6} B \xrightarrow[\text{Ether}]{C_2H_5MgBr} C$$

Product C would be

A. $CH_3 - \overset{\overset{C_2H_5}{|}}{C}(OH) - C_6H_5$

B. $CH_3CH(OH)C_2H_5$

C. $CH_3COC_6H_5$

D. $CH_3CH(OH)C_6H_5$

Answer: A

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33. Which one of the following on treatment with 50% aqueous sodium hydroxide yields the corresponding alcohol and acid?

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

B. $C_6H_5CH_2$CHO

C. C_6H_5CHO

D. $CH_3CH_2CH_2$CHO

Answer: C

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34. Reduction of aldehydes and ketones into hydrocarbons using zinc amalgam and conc. HCl is called :

A. Wolff-Kishner Reduction

B. Clemmensen reduction

C. Cope Reduction

D. Dow Reduction

Answer: B

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35. The product formed in aldol condensation is

A. An alpha, beta unsaturated ester

B. A beta-hydroxy acid

C. A beta-hydroxy aldehyde or a bet-hydroxy ketone

D. An alpha - hydroxy aldehyde or ketone

Answer: C

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36. Which of the following presents the correct order of the acidity in the given compounds?

A. $FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$

B. $CH_3COOH > BrCH_2COOH > ClCH_2COOH > FCH_2COOH$

C. $FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$

D. $BrCH_2COOH > ClCH_2COOH > FCH_2COOH > CH_3COOH$

Answer: A

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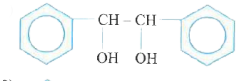
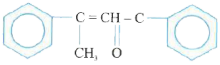
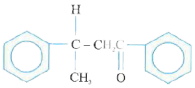
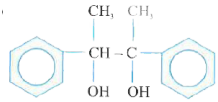
37. Acetophenone when reacted with a base, C_2H_5ONa, yields a stable compound which has the structure :

A. 

B. 

C. 

D. 

Answer: B

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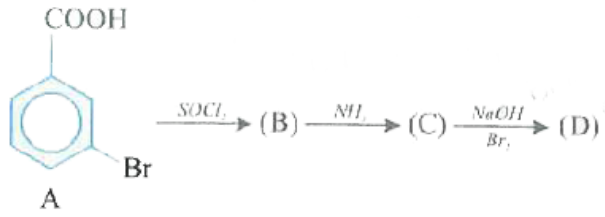
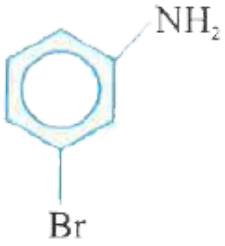
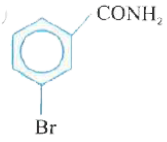
38. In a set of reactions m-bromobenzoic acid gave a product D. Identify the product D.



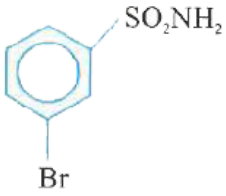
A.



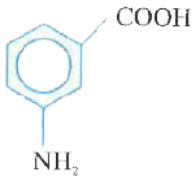
B.



C.



D.



Answer: A

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39. In the following reactions,

(a) $H_3C-\overset{\overset{CH_3}{|}}{CH}-\underset{\underset{OH}{|}}{CH}-CH_3 \xrightarrow{H^+/heat} \underset{\text{Major product}}{A} + \underset{\text{Minor product}}{B}$

(b) $A \xrightarrow[\text{in absence of peroxide}]{HBr, dark} \underset{\text{Major product}}{C} + \underset{\text{Minor product}}{D}$

The major products (A) and (C) are respectively:

A. $CH_3-\overset{\overset{CH_3}{|}}{C}=CH-CH_3$ and $CH_3-\overset{\overset{CH_3}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

B. $CH_2=\overset{\overset{CH_3}{|}}{C}-CH_2-CH_3$ and

$CH_3-\underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_3$

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

$\underset{\underset{Br}{|}}{CH_2}-\overset{\overset{CH_3}{|}}{CH}-CH_2-CH_3$

D. $CH_3 - \overset{\overset{CH_3}{|}}{C} = CH - CH_3$ and $CH_3 - \underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_3$

Answer: D

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40. Consider the reaction

$$RCHO + NH_2NH_2 \rightarrow R - CH = NNH_2$$

What sort of reaction is it?

A. Electrophilic addition-elimination reaction

B. Free radical addition - elimination reaction

C. Electrophilic substitution -elimination reaction

D. Nucleophilic addition - elimination reaction

Answer: D

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41. 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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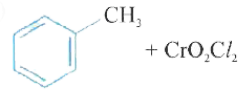
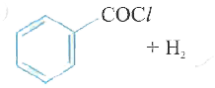
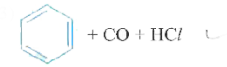
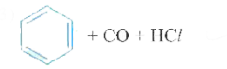
42. Reaction by which benzaldehyde cannot be prepared

A. 

B. 

C. 

D. 

Answer: D

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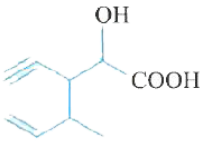
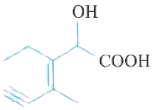
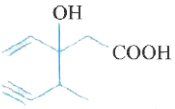
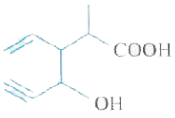
43. Structure of the compound whose $IUPAC$ name is $3-$ ethyl $-2-$ hydroxy$-4-$ methylhex$-3-$ en$-5-$ ynoic acid is

A. 

B. 

C. 

D. 

Answer: B

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

(i). $CH_2 = \overset{OH}{\overset{|}{C}}H - CH_2 - \overset{O}{\overset{||}{C}} - CH_3 \Leftrightarrow$

(ii). $CH_3 - \overset{\overset{O}{||}}{C} - CH_2 - \overset{\overset{O}{||}}{C} - CH_3 \Leftrightarrow$

(iii). $CH_3 - \overset{\overset{OH}{|}}{C} = CH - \overset{\overset{O}{||}}{C} - CH_3$

A. $I > II > III$

B. $III > II > I$

C. $II > I > III$

D. $II > III > I$

Answer: B

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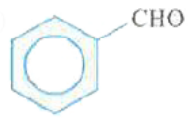
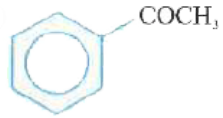
45. Which one is most reactive towards Nucleophilic addition reaction?

A. 

B. 

C. 

D. 

Answer: A

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46. Which of the following will not be soluble in sodium hydrogen carbonate?

A. Benzenesulphonic acid

B. 2,4, 6 -trinitrophenol

C. Benzoic acid

D. o-Ntirophenol

Answer: D

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47. Reaction of 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

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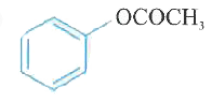
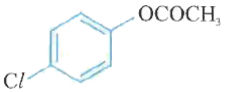
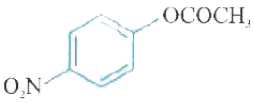
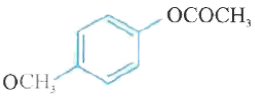
48. Which of the the following esters gets hydrolysed most easily under alkaline conditions?

A. 

B. 

C. 

D. 

Answer: C

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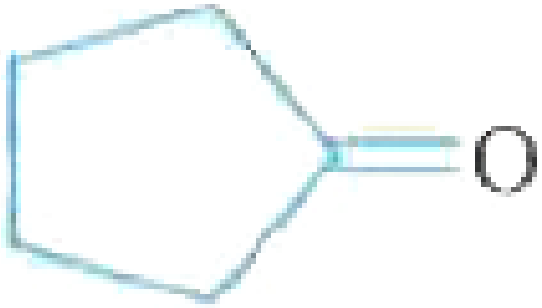
49. Treatment of cylcopentanone with

with methyl lithium gives which of the following species ?



A. Cyclopentanonyl radical

B. Cyclopentanonyl biradical

C. Cyclopentanonyl anion

D. Cyclopentanonyl cation

Answer: C

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

A. 3-Pentanone

B. n-amyl alcohol

C. pentanal

D. 2-pentanone

Answer: A

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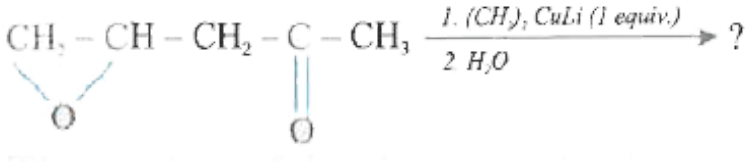
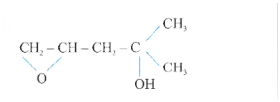
Exercise 4

1. 

The product of the given reaction is

A. 

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

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

D. no reaction takes place

Answer: B

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2. $C_6H_5CH_2CHO \xrightarrow[\Delta]{\text{dil NaOH}}$ (A)

The structure of compound (A) would be

A. $C_6H_5CH_2CH=CHCH_2C_6H_5$

B. $C_6H_5CH_2CH=\overset{C_6H_5}{\overset{|}{C}}-CHO$

C. $C_6H_5CH_2\underset{OH}{\underset{|}{CH}}-\underset{C_6H_5}{\underset{|}{CH}}-CHO$

D. $C_5H_5-\underset{OH}{\underset{|}{CH}}-CH_2CO_2H$

Answer: B

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3. Compound 'A' (molecular formula C_3H_8O) is treated with acidified potassium dichromate to form a product 'B' (molecular formula C_3H_6O)'B' forms a shining silver mirror on warming with ammoniacal silver nitrate 'B' when treated with an aqueous solution of $H_2NCONHNH_2$ and sodium acetate gives a product 'C'. Identify the structure of 'C'

A. $CH_3CH_2CH = \mathrm{NNHCONH_2}$

B. $CH_3 - \underset{\underset{CH_3}{|}}{C} = \mathrm{NNHCONH_2}$

C. $CH_3 - \underset{\underset{CH_3}{|}}{C} = \mathrm{NCONHNH_2}$

D. $CH_3CH_2CH = \mathrm{NCONHNH_2}$

Answer: A

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4. A compound has molecular formula $C_6H_{12}O$. It does not reduce Tollens or Fehling's reagent, but gives a crystalline derivative with 2,4-dinitro-phenyl hydrazine. With alkali and I_2, it gives yellow solid with a medicinal odour. Clemmensen reduction converts it to 2-methylpentane. The structure formula of the compound is most likely to be:

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

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

C. $CH_3CH_2CH_2 - \overset{\overset{O}{||}}{C} - CH_2CH_3$

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - \overset{\overset{O}{||}}{C} - \underset{\underset{CH_3}{|}}{CH} - (CH_3)$

Answer: A

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5. Compound (A) $C_5H_{10}O$ forms a phenyl hydrazone and gives negative Tollen's and iodoform tests. Compound (A) on reduction gives n-pentane. Compound (A) is :

A. $CH_3CH_2CH_2CH_2-\overset{O}{\overset{||}{C}}-H$

B. $CH_3CH_2CH_2-\overset{O}{\overset{||}{C}}-CH_3$

C. $CH_3CH_2-\overset{O}{\overset{||}{C}}-CH_2CH_3$

D. $CH_3CH_2CH_2CH_2CH_2-OH$

Answer: C

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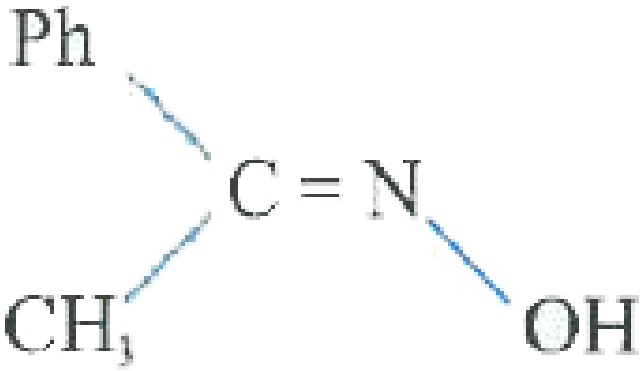
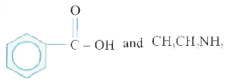
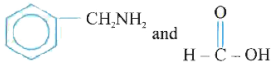
6.

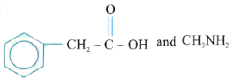


on treatment with acid (Conc H_2SO_4)Followed by acid hydrolysis yields

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

B. 

C. 

D. 

Answer: A

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7. $\mathrm{PhCO}\overset{14}{\mathrm{C}}\mathrm{HO} \xrightarrow{OH^-}$

The product (A) in the given reaction is

A. $\mathrm{PhCH}\overset{14}{\mathrm{O}}\mathrm{HCH}(OH)O^-$

B. $\mathrm{phCHOH}\underset{14}{C}OO^-$

C. $\mathrm{Ph}\underset{14}{C}\mathrm{OOCH_3}$

D. $\mathrm{PhCHOH}\underset{14}{\mathrm{C}}\mathrm{H_3}$

Answer: B

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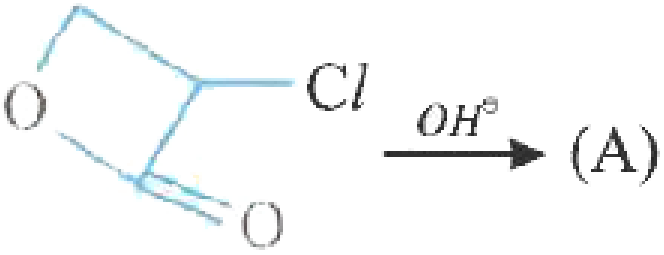
8. 

The product (A) of the reaction would be

A. Polyester

B. polythene

C. Bakelite

D. All of these

Answer: A

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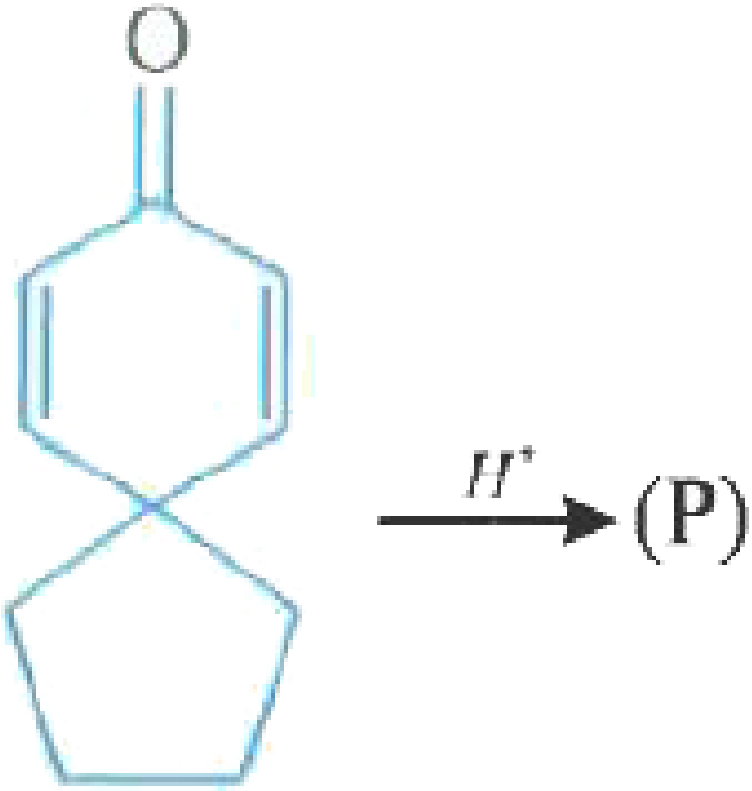
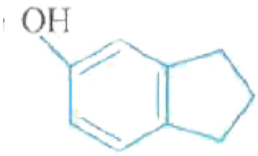
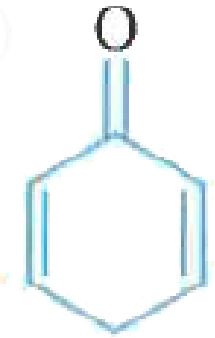
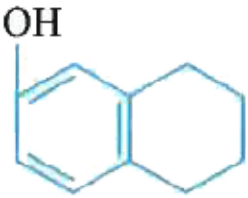
9. Indentify P in the following reaction



A.



B. 

C. 

D. None of these

Answer: C

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10. In the following complete reduction Ph COCOPh $\xrightarrow{LiAlH_4}$ product, the number of possible stereoisomers in the product is

A. 1

B. 2

C. 3

D. 4

Answer: C

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11. The correct order of reactivity of PhMgBr with

$$Ph - \overset{O}{\overset{||}{C}} - Ph, \quad CH_3 - \overset{O}{\overset{||}{C}} - H, \quad CH_3 - \overset{O}{\overset{||}{C}} - CH_3$$

(I) (II) (III)

A. $(I) > (II) > (III)$

B. $(III) > (II) > (I)$

C. $(II) > (III) > (I)$

D. $(I) > (III) > (II)$

Answer: C

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

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

B. $CH_3 - CH_2 - \overset{\overset{Cl}{|}}{\underset{\underset{Cl}{|}}{C}} - CH_2 - CH_3$

C. $CH_3 - CH_2 - CH_2 - CH_2 - \overset{\overset{Cl}{|}}{CH} - Cl$

D. $CH_3 - \overset{\overset{Cl}{|}}{CH} - \overset{\overset{Cl}{|}}{CH} - CH_2 - CH_3$

Answer: A

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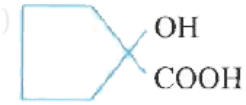
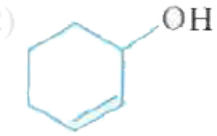
13. Predict the product in the following reaction

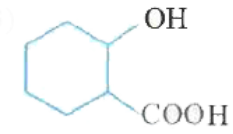
A.



B.



C.



D.

Answer: A

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14.

What is X ?

A. CH_3COOH

B. $BrCH_2COOH$

C. $(CH_3CO)_2O$

D. CHO-COOH

Answer: C

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15. Which one of the following compounds on heating with a base gives as the final product ?

A. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2CH_2CH_2 - \overset{\overset{O}{||}}{C} - CH_3$

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

C. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2CH_2CH_2CH_2 - \overset{\overset{O}{||}}{C} - CH_2Cl$

D. $CH_3 - \overset{\overset{O}{||}}{C} - CH_2CH = CH - \overset{\overset{O}{||}}{C} - CH_3$

Answer: A

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16. End product of following sequence of reaction

A. 

B. 

C. 

D. 

Answer: C

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17. The formation of cyanohydrin from ketone is an example of :

A. nucleophilic substitution.

B. electrophilic substitution.

C. electrophilic addition.

D. nucleophilic addition.

Answer: D

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18. A compound (X) C_4H_8O Which gives a 2,4-DNP derivative and a positive iodoform test is:

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

B. $CH_3 - CH_2 - CH_2 - \text{CHO}$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - \text{CHO}$

D. All of these

Answer: A

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19. Which one of the following structure is not an isomer of the compound CH_3 - CO - $CH_2CH_2CH_2CH_3$?

A. $CH_3CH_2OCH = CHCH_2CH_3$

B. $CH_3CH = CHCH_2CH_2CHO$

C. $(CH_3)_2CH - CO - CH_2CH_3$

D. $CH_3CH_2COCH_2CH_2CH_3$

Answer: B

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20. Which carbonyl group of the given compound is most reactive for nuecleophilic addition reaction?

A. 1

B. 2

C. 3

D. All have equal reactivity

Answer: B

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21. Identify the products (B) (C) formed in the following set of reactions.

A. 

B. 

C. 

D. 

Answer: A

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22. Crossed Cannizzaro reaction can be given by following combination:

A. CH_3CHO, HCHO

B. C_6H_5CHO,CH_3CHO

C. C_6H_5CHO, HCHO

D. All of these

Answer: C

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23. The major product of the following reaction after acidification is

$$Me_2CHCHO + H_2C = CH - COCH_3 \xrightarrow{OH^-}$$

A. 

B. 

C. 

D. 

Answer: C

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24. Write the product formed in the following reaction

A. 

B. 

C. 

D. 

Answer: A

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25. Compound 'X' $(C_4H_8O_2)$ is a sweet smelling liquid. It gives negative tests with Na Metal, $NaHCO_3$ and 2,4-DNP. Its another isomer 'Y' responds positively to 2,4-DNP and iodoform test, but negatively to Na metal and $NaHCO_3$ Identify X and Y

A.

Compound X	Isomer Y
$H-\overset{\overset{O}{\|\|}}{C}-OC_3H_7$	$CH_3-\overset{\overset{O}{\|\|}}{C}-OC_2H_5$

Compound X Isomer Y

B. $CH_3 - \overset{O}{\overset{||}{C}} - OC_2H_5$ $C_2H_5 - \overset{O}{\overset{||}{C}} - OCH_2$

Compound X Isomer Y

C. $C_2H_5 - \overset{O}{\overset{||}{C}} - OCH_3$ $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - OCH_3$

Compound X Isomer Y

D. $CH_3 - \overset{O}{\overset{||}{C}} - OC_2H_5$ $C_3H_7 - \overset{O}{\overset{||}{C}} - OH$

Answer: C

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26. Rank the following compounds in order of decreasing reactivity for nitration.

select the correct answer from the codes given below:

A. (4) > (2) > (1) > (3)

B. (4) > (2) > (3) > (1)

C. (2) $>$ (4) $>$ (1) $>$ (3)

D. (1) $>$ (2) $>$ (3) $>$ (4)

Answer: A

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27. In the Cannizzaro reaction given below:

$2Ph - CHO \xrightarrow{\overset{\Theta}{OH}} Ph - CH_2OH + PhCO_2^-$ 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 acid.

D. The deproatonation of Ph -CH_2 OH.

Answer: B

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28. Number of aldol products in the given reaction

$C_6H_5 - CHO + CH_3 - CHO \xrightarrow{\ominus OH}$ is

A. One

B. Two

C. Three

D. Four

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: B

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30. $CH_2O + CH_3CHO \xrightarrow[\Delta]{OH^-}$ (A).(A) reacts with cyclohyexanone in basic medium to give a final product. Structure of the final product is :

A. 

B. 

C. 

D. 

Answer: A

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Check Your Grasp

1. Give the IUPAC name of Crotonaldehyde .

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2. Write the structural formula of 3-phenylprop -2-enal.

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3. How is acetone obtained from ethanol ?

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4. Give the IUPAC names of following compounds

(i) $PhCH_2CH_2COOH$ (ii) $(CH_3)_2C = CHCOOH$

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5. Write chemical reactions to affect the following transformations :

(i) Butan-1-ol to butanoic acid

(ii) Benzyl alcohol to phenylethanoic acid

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6. Show, how the Ethylbenzene compound can be converted to benzoic acid .

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