CHEMISTRY

PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

ALDEHYDES, KETONES, CARBOXYLIC ACID

Organic Chemistry Aldehydes Ketones Carboxylic Acid

1. Which of the following reagents can be used to convert but$-1-yne$ to butanone ?

A. $K_2Cr_2O_7 / H^+$

B. dil.$H_2SO_4 / HgSO_4$

C. CrO_3 in presence of $(CH_3CO)_2O$

D. $O_3 / Zn - H_2O$

Answer: 2

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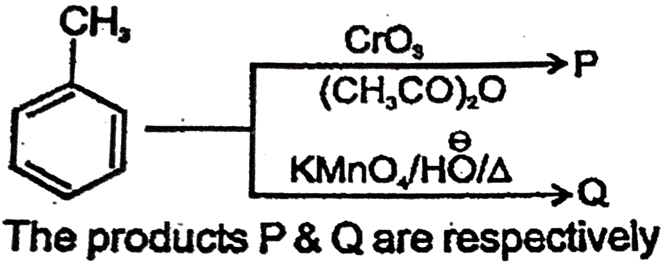
2.



The products P & Q are respectively

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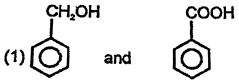
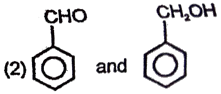
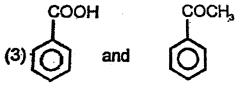
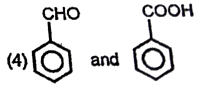
A. 

B. 

C. 

D. 

Answer: D

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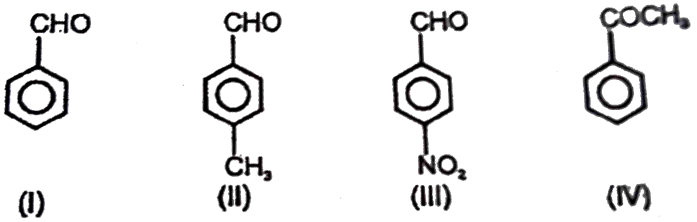
3. Observe the following compounds



The correct reactivity order of above compounds towards nucleophilic addition reaction is :

A. $III > I > II > IV$

B. $II > IV > I > III$

C. $III > II > IV > I$

D. $IV > II > I > III$

Answer: 1

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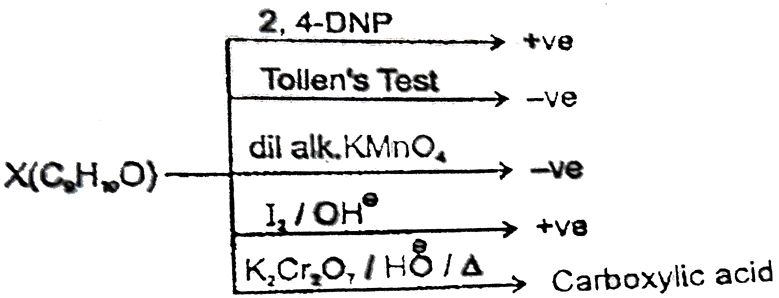
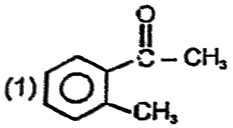
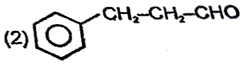
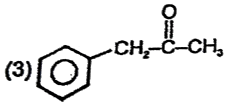


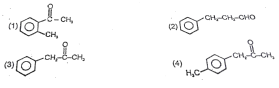
4.

The compound X can be

A. 

B. 

C. 

D. 

Answer: A

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5. $CH_3CHO + CH_3CH_2CHO \xrightarrow{dil.NaOH}$

The number of product (s) in the above reaction is (are) (excluding stereoisomers)

A. 1

B. 2

C. 3

D. 4

Answer: 4

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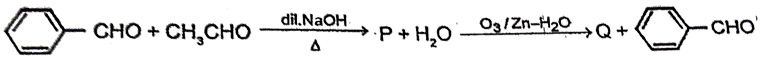
6. 

The porduct is :

A. CH_3CHO

B. $HCHO$

C. $HCOOH$

D. $OHC - CHO$

Answer: 4

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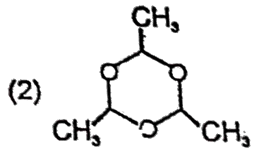
7. $3CH_3CHO \xrightarrow[298K]{H^{\oplus}} P$

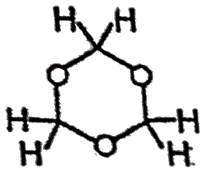
Product P is a pleasant smelling liquid $(p.\, b410K)$. . It is used as a hypnotic. The structure of P is :

A. $CH_3 - CH = CH - CHO$



B.

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

(4) 

D.

Answer: B

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8. If $3-$ hexanone is reacted with $NaBH_4$ followed by hydrolysis with D_2O, the product will be :

A. $CH_3-CH_2-\underset{\underset{OD}{|}}{CH}-CH_2-CH_2-CH_3$

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

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

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

Answer: 1

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9. Which of the following compounds is most acidic ?

A. CH_3CO_2H

B. $(CH_3)_2CHCO_2H$

C. $CH_3CH_2CO_2H$

D. CCl_3CO_2H

Answer: D

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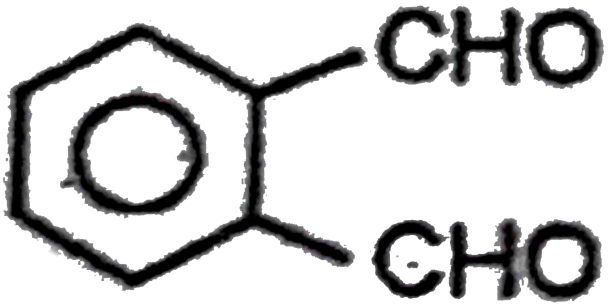
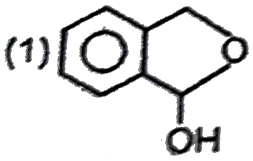
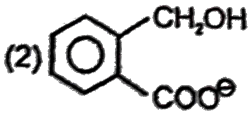
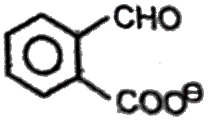
10. The treatment of

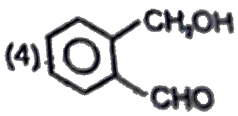


with concentrated KOH gives

A. 

B. 

C. 

D. 

Answer:

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11. The compound which readily undergoes decaroxylation is

A. $HOOC - CH_2 - COOH$

B. $C_6H_5 - COOH$

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

D. $CH_2 - CH_2 - CH_2 - COOH$

Answer: 1

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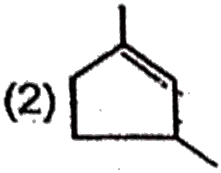
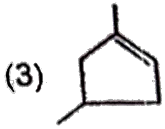
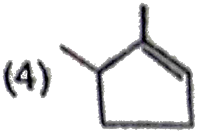
12. The compound which would yield $5-$ Oxo$-2-$ methylhexanal on reductive ozonolysis

A. 

B. 

C. 

D. 

Answer: B

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13. Which of the following on heating does not form an anhydride ?

A. Oxalic acid

B. Succinic acid

C. Glutaric acid

D. Maleic acid

Answer: 1

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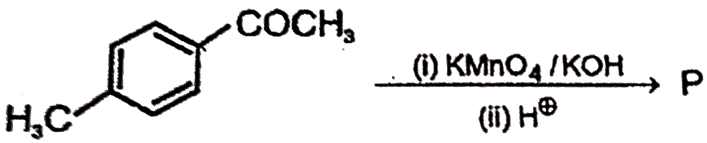

14.

The productP is :

A. N/A

B. N/A

C. N/A

D. N/A

Answer: 3

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15.

CH_3COOH $H-COOCH_3$ CH_3-CONH_2 $CH_3-CH_2-CH_2-C$

(I) (II) (III) (IV)

ltBRgt The correct increasing order of boiling points is

A. $II < IV < I < III$

B. $I < II < III < IV$

C. $IV < II < I < III$

D. $III < I < IV < II$

Answer: A

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16. Dry distillation of calcium acetate gives :

A. Actaldehyde

B. Ethane

C. Acetic acid

D. Acetone

Answer: D

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17. Which one of the following reaction is called Rosenmund reaction ?

A. Aldehydes are reduced to alcohols

B. Acids are converted to acid chlorides

C. Alcohols are reduced to hydrocarbons

D. Acid chlorides are reduced to aldehydes

Answer: 4

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18. RCOOH after treatment with PCl_5 and KCN is subjected to hydrolysis followed by Clemmension's reduction, product obtained as `:

A. RCH_2COOH

B. RCH_2COCl

C. $RCOCN$

D. RCN

Answer: 1

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19. In order to get propane gas which of the following should be subjected to soda lime decarboxylation?

A. Sodium formate

B. Mixture of sodium acetate and sodium ethanoate

C. Sodium butyrate

D. Sodium propionate

Answer: C

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20. Acetic acid reacts separately with the following alcohols. The rate of esterification is higher for :

A. CH_3OH

B. C_2H_5OH

C. $(CH_3)_2CHOH$

D. $(CH_3)_3COH$

Answer: 1

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21. Phenol can be converted into salicyclic acid by :

A. Cannizaro's reaction

B. Perkin's reaction

C. Tischenko reaction

D. Reimer-Tiemann reaction

Answer: D

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22. A new carbon-carbon bond formation is possible in:

A. Cannizaro reaction

B. Reimer- Tiemann reaction

C. HVZ reaction

D. Schmidt reaction

Answer: 2

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23. Aldehydes and ketones are distinguished by using :

A. Lucas reagent

B. Hinsberg reagent

C. Tollen's reagent

D. All of these

Answer: 3

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24. When acetamide reacts with Br_2 in presence of $NaOH$, there is a formation of :

A. CH_3NH_2

B. CH_3CN

C. CH_3CH_2OH

D. CH_3CHO

Answer: 1

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25. $R-CH=CH_2+CO+H_2 \xrightarrow[HighPressure]{HighTemp} RCH_2CH_2CHO.$

A. Mendius reaction

B. Oxo process

C. Sandmeyer reaction

D. Stephen's reaction

Answer: B

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26. $C_6H_5 - CH = CHCHO \xrightarrow{(X)} C_6H_5CH = CH_2OH$

In the above sequence (X) can be:

A. H_2 / Ni

B. $NaBH_4$

C. $K_2Cr_2O_7 / H^+$

D. Both (1) and (2)

Answer: 2

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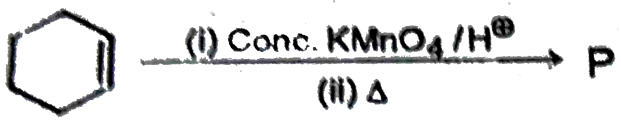
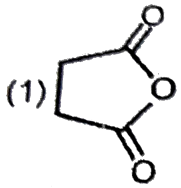


The product P is :

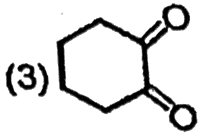
27.

The product P is :

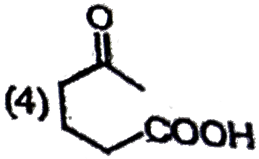


A.

B.



C.



D.

Answer: 2

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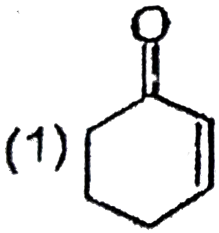
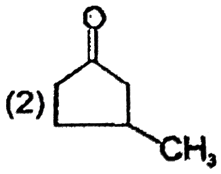
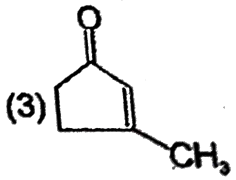
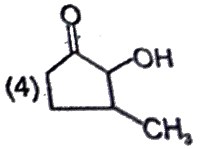
28. The diketone $CH_3 - \overset{O}{\overset{||}{C}} - (CH_2)_2 - \overset{O}{\overset{||}{C}} - CH_3$ on intermolecular aldol condensation gives the final product

A. 

B. 

C. 

D. 

Answer: 3

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29. $CH = CH \xrightarrow[H_2SO_4]{HgSO_4} A \xrightarrow[H_2O]{CH_3MgBr} B \xrightarrow{P\,/\,Br_2} C.$ Here C is :

A. $CH_3CH(Br)CH_3$

B. $CH_3 - CH_2 - CH_2 - Br$

C. $CH_2 = CH - Br$

D. $Br - CH = CH - CH_3$

Answer: 1

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30. In which of the following reactions, the product obtained is chiral ?

A. $CH_3COCH_3 \xrightarrow{NaBH_4}$

B. $CH_3COCl \xrightarrow{\text{Rosenmund reduction}}$

C. $CH_3CH_2COCH_2CH_3 \xrightarrow{Sn.HCl}$

D. $CH_3CH_2COCH_3 \xrightarrow{LiAlH_4}$

Answer: D

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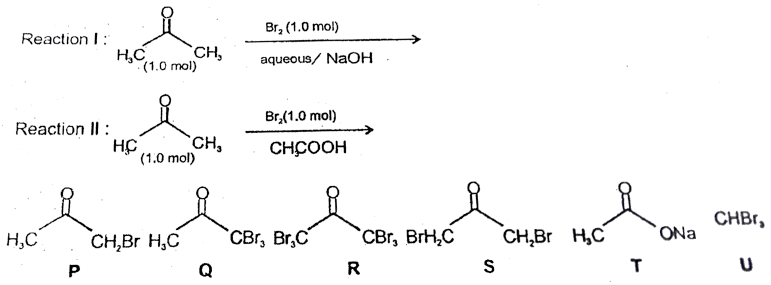
31. After completion of the reactions $(I$ and $II)$, the organic compounds (s) in the reaction mixtures is :



A. Reaction I: P and Reaction II: P

B. Reaction I: U, acetone and Reaction II: Q, acetone

C. Reaction I: T, U, acetone and Reaction II: P

D. Reaction I : R, acetone and Reaction II : S , acetone

Answer: 3

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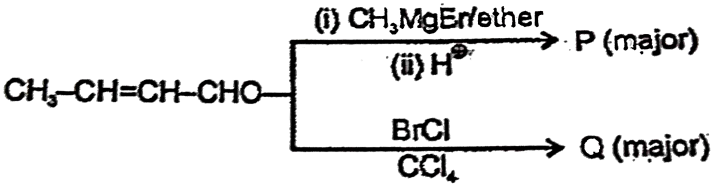
32. In the following sequence of reaction :



Product P and Q are respectively :

A. $CH_3 - \underset{CH_2}{\underset{|}{CH}} - CH_2CHO \quad \& \quad CH_3 - \overset{Cl}{\overset{|}{CH}} - CH - \underset{Br}{\underset{|}{CHO}}$

B. $CH_3 - CH = CH - \overset{OH}{\overset{|}{CH}} - CH_3 \quad \& \quad CH_3 - \overset{Br}{\overset{|}{CH}} - \underset{Cl}{\underset{|}{CH}} - CHO$

C. $CH_3 - \underset{CH_3}{\underset{|}{CH_2}} - CHO \quad \& \quad CH_3 - \overset{Br}{\overset{|}{CH}} - \underset{Cl}{\underset{|}{CH}} - CHO$

D.

$$CH_3 - CH = CH - \overset{OH}{\overset{|}{C}}H - CH_3 \quad \& \quad CH_3 - \overset{Cl}{\overset{|}{C}}H - \underset{Br}{\underset{|}{C}}H - CHO$$

Answer: 4

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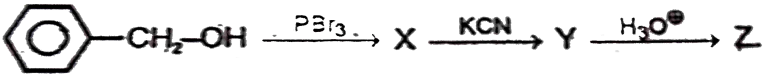
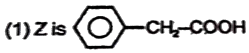
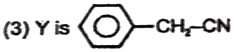
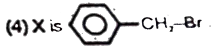


33. Which is incorrect ?

A. (1) Z is 

B. (2) X is 

C. (3) Y is 

D. (4) X is 

Answer: 2

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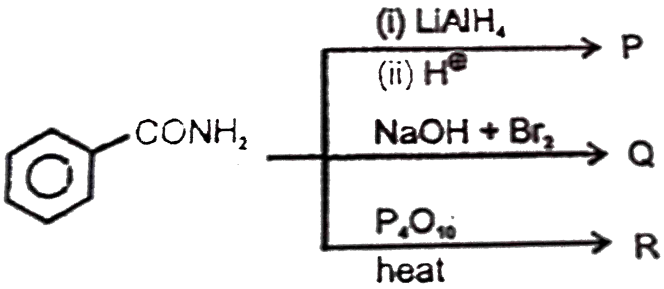

34.

Which is incorrect :

A. P is $2-$ phenylethanamin

B. Q is anilin, process is Hofmann's bromamide

C. R is benzene carbonitrile, process is dehydration

D. formation of P, involves reduction

Answer: 1

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35. Observe the following reaction

$$CH_2 - \underset{\underset{O}{||}}{C} - CH_2 - \underset{\underset{O}{||}}{C} - CH_2 \xrightarrow{HCN\,(\text{excess})} \xrightarrow{\overset{\oplus}{H_3O}/\,\Delta} \text{Products}$$

The correct statements (s) is / are

A. The product is a mixture of two compounds

B. The product is optically active

C. The product is a mixture of two chiral and one achiral stereoisomers

D. The product is a mixture of four stereoisomers.

Answer: 3

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36. Which of the following will not give $3-$ pentanone.

A. $(CH_3 - CH_2COO)_2Ca \xrightarrow{\Delta}$

B. $CH_3 - CH_2 - \underset{OH}{CH} - \underset{Br}{CH} - CH_3 \xrightarrow{dil.\,AgNO_3}$

C. $CH_3 - \overset{O}{\overset{||}{C}} - CH_2 - CH_2 - \overset{O}{\overset{||}{C}} - OC_2H_5 \xrightarrow[(2)\,NaOH\,(CaO)]{(1)\,H_2O/H^+}$

D. $CH_3 - CH_3 - \overset{O}{\overset{||}{C}} - \underset{CH_3}{CH} - \overset{O}{\overset{||}{C}} - OH \xrightarrow{\Delta}$

Answer: 3

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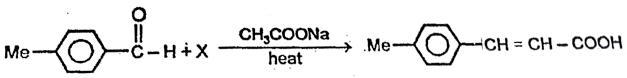
37. In the following reaction



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

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

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

D. $(CH_3CO)_2O$

Answer: 4

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38. Order of hydrolysis for the following is

(I) $RCOCl$ $(II)RCOOR$

(III) $RCONH_2$ $(IV)(RCO)_2O$

A. $I > IV > II > III$

B. $I > II > III > IV$

C. $I > III > II > IV$

D. $IV > III > II > I$

Answer: A

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39.

$$CH_3CH_2CH_2CH_2CH_2COOH \rightarrow CH_2CH_2CH_2Cl^- - \overset{NH_2}{\underset{|}{C}}H - COOH$$

the reagents used in the conversion are :

A. $(i)PBr_3(ii)NH_3$

B. $(i)\text{red}P/Br_2(ii)NH_3(\text{excess})$

C. $(i)PBr_3, NaCN(ii)LiAlH_4$

D. None of the above

Answer: B

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40. $2HCHO \xrightarrow{50\%\,NaOH} CH_3OH + HCOONa$

This reaction is called :

A. Aldol condensation

B. Tischenko reaction

C. Cannizaro reaction

D. Reimer Tiemann reaction

Answer: 3

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