



CHEMISTRY

BOOKS - BITSAT GUIDE

ALDEHYDE AND KETONES

Practice Exercise

1. Ozonide of $CH_2 = CH - CH_2OH$ on hydrolysis gives

- A. $HCHO, OHC - CHO$
- B. $HCHO, HOCH_2 - CHO$
- C. $HCHO, HOC - CH_2OH$
- D. None of the above

Answer: C



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2. Dry distillation of calcium acetate⁴ and calcium formate leads to the formation of aldehydes and ketones

A. 2, 1

B. 1, 2

C. 2, 2

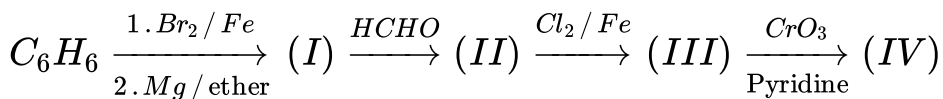
D. 1, 1

Answer: A



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3. In the following sequence of reactions, the final product is



A. p-chlorobenzaldehyde

B. p-chlorobenzylalcohol

C. p-chlorobenzoic acid

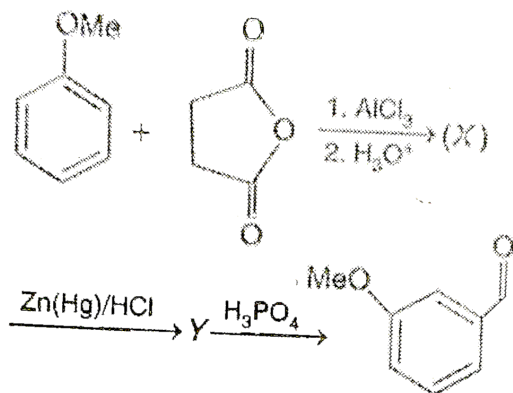
D. p-salicylaldehyde

Answer: A



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4. Identify the product (Y) in the following reaction sequence :



- A. $\text{MeO}-\text{C}_6\text{H}_4-(\text{CH}_2)_3\text{COOH}$
- B. $\text{MeO}-\text{C}_6\text{H}_4-(\text{CH}_2)_2\text{COOH}$
- C. $\text{MeO}-\text{C}_6\text{H}_4-\text{CH}_2\text{COOH}$
- D. $\text{MeO}-\text{C}_6\text{H}_4-\text{COOH}$

Answer: A

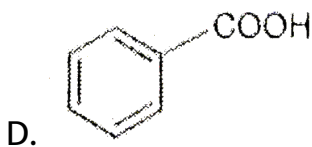
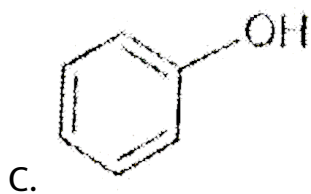
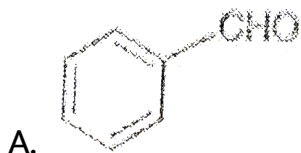


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5. Consider the following reaction,

\

The compounds X is



Answer: A



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6. The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is

A. benzophenone

B. acetophenone

C. benzoic acid

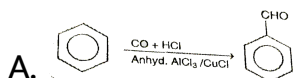
D. benzyl alcohol

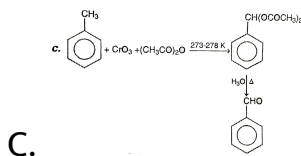
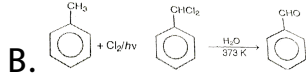
Answer: C



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7. Choose the Gattermann-Koch reaction.

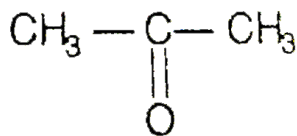
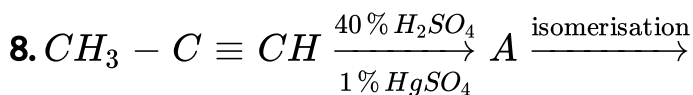




D. None of the above

Answer: A

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Structure of A and type of isomerism in the above reaction respectively are

A. prop-1-en-2-ol, metamerism

B. prop-1-en-1-ol, tautomerism

C. prop-2-en-2-ol, geometrical isomerism

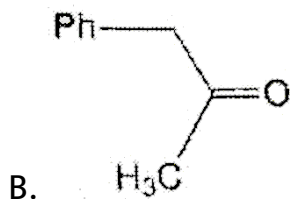
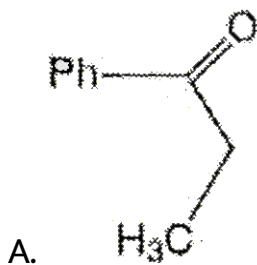
D. prop-1-en-2-ol, tautomerism

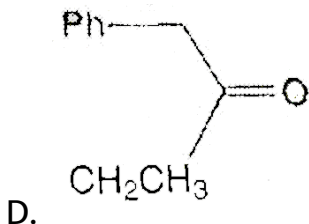
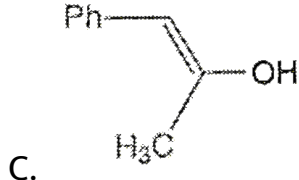
Answer: D



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9. $Ph - C \equiv C - CH_3 \xrightarrow{Hg^{2+} / H^+} A$, A is



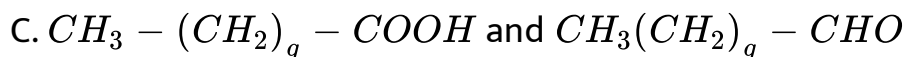
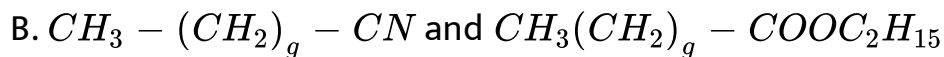
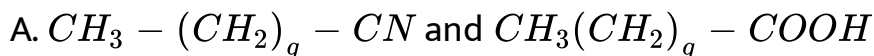


Answer: A



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10. Which of the substrate give the same product on the reduction with DIBAL-H?



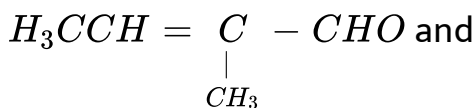
D. $CH_3(CH_2)_g - COOH$ and $CH_3(CH_2)_g COOC_2H_5$

Answer: B



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11. Identify the starting material from which the products



$H_3C - CH_2CH = CH - CHO$ are formed ?

- A. Two molecules of ethanol
- B. Two molecules of propanal
- C. One molecule of ethanal and two molecules of propanal
- D. One molecule of propanal and one molecule of ethanal

Answer: D



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12. Both $HCHO$ and CH_3CHO give similar reactions with all the reagents except

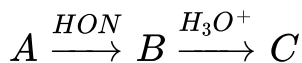
- A. Schiff's reagent
- B. ammoniacal $AgNO_3$
- C. Fehling solution
- D. ammonia

Answer: D



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13. Which of the following carbonyl compounds gives lactic acid as the end product in the following sequence ?



A. $HCHO$

B. CH_3CHO

C. C_6H_5CHO

D. CH_3COCH_3

Answer: B



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14. Oximino acetone is formed in the reaction

A. acetone + hydroxylamine

- B. acetone + ammonia
- C. acetone + nitrous acid
- D. None of the above

Answer: C



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15. Which of the following is used to prepare a medicine, which is used in making an important explosive, RDX?

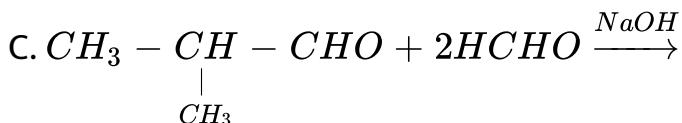
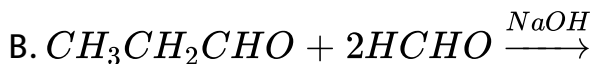
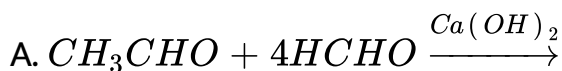
- A. Acetaldehyde
- B. Acetone
- C. Formaldehyde
- D. None of these

Answer: C



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16. Which of the following reactions gives pentaerythritol?

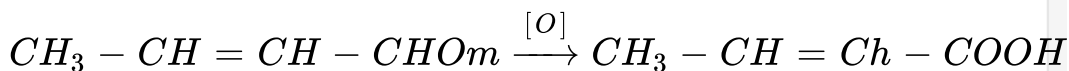


Answer: A



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17. Consider the following reaction,



The above reaction is completed by the reagent

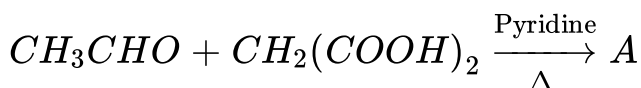
- A. alkaline $KMnO_4$
- B. Tollen's reagent
- C. selenium dioxide
- D. osmium tetroxide

Answer: B

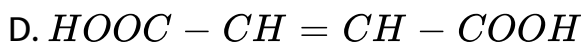
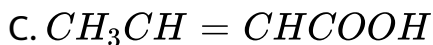
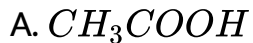


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18. Consider the following reaction,



A is



Answer: C



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19. In the aldol condensation of acetaldehyde and acetone in dilute alkali, the carbanion source will be

A. acetaldehyde

B. acetone

C. Both (a) and (b)

D. None of these

Answer: B



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20. For distinction between CH_3CHO and C_6H_5CHO , the used reagent is

A. KCN

B. HCN

C. NH_2OH

D. PCl_5

Answer: A



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21. Oxidation of ketones with H_2O_2 or with a peroxy acid is called Baeyer-Villiger oxidation. This oxidation reaction forms

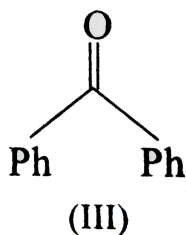
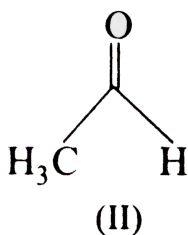
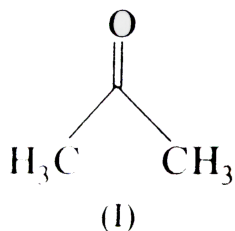
- A. carboxylic acid with the fewer number of carbons
- B. an alcohol with the same number of carbons as in the ketone
- C. an ester
- D. carboxylic acid with the same number of carbons as in the parent ketone

Answer: C



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22. The order of reactivity of phenyl magnesium bromide with the following compounds is



A. $II > III > I$

B. $I > III > II$

C. $II > I > III$

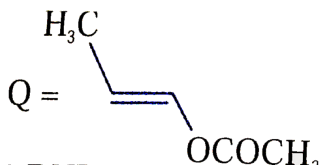
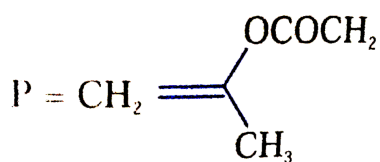
D. All react with the same rate

Answer: C



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23. The product of acid hydrolysis of P and Q can be distinguished by



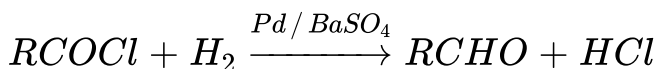
- A. Lucas reagent
- B. 2, 4-DNP
- C. Fehling solution
- D. NaHSO_3

Answer: C



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24. Consider the following Rosenmund reaction,



Here, $BaSO_4$

- A. promotes catalytic activity of Pd
- B. removes the HCl formed in the reaction
- C. deactivates palladium
- D. activates palladium

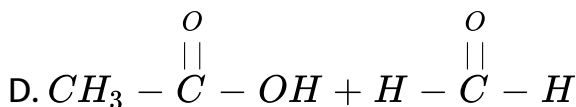
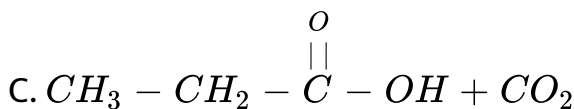
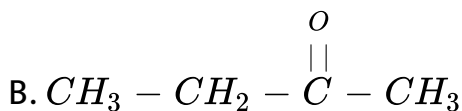
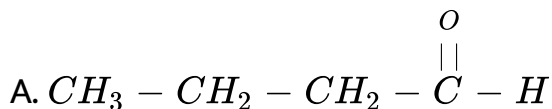
Answer: C



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25. Addition of water to alkynes occurs in acidic medium and in the presence of Hg^{2+} ions as a catalyst. Which of the

following products will be formed on addition of water to but-1-yne under these conditions?



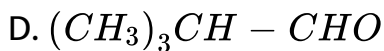
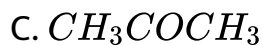
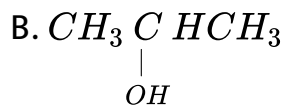
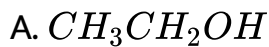
Answer: B



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26. An organic compound containing C , H and O gives red colouration with sodium nitroprusside solution but does not

reduces Tollen's reagent and yields chloroform on treating with NaOH and Cl_2 . The compound is

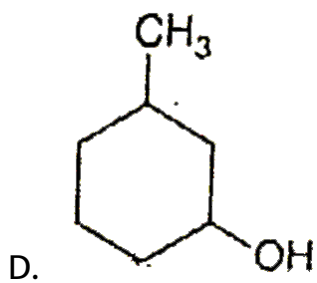
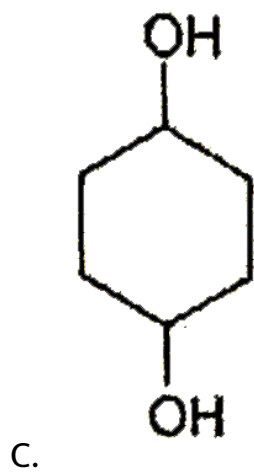
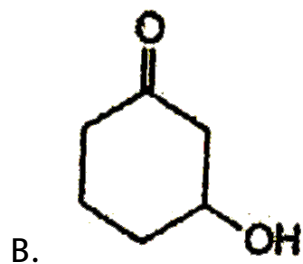
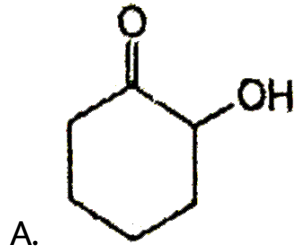


Answer: C



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27. Maximum dehydration takes place in that of

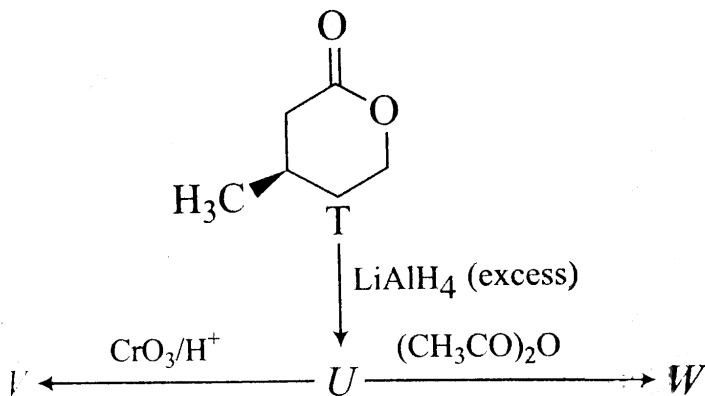


Answer: B



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28. With reference to the scheme given, which of the given statement (s) about T,U,V and W is/are correct?



A. T is soluble in hot aqueous NaOH

B. U is optically active

C. Molecular formula of W is $\text{C}_{10}\text{H}_{18}\text{O}_4$

D.V gives effervescence on treatment with aqueous

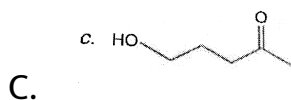
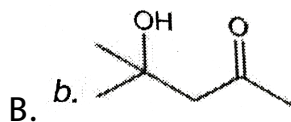
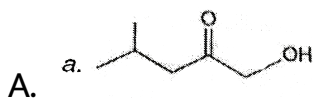


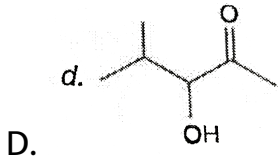
Answer: B



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29. Which of the following is the product of aldol condensation?





Answer: B

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30. Iodoform can be prepared from all except

- A. ethyl methyl ketone
- B. isopropyl alcohol
- C. 3-methyl-2-butanone
- D. isobutyl alcohol

Answer: D

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31. The Clemmensen reduction of ketones is carried out in the presence of

- A. $Zn - Hg$ with HCl
- B. $LiAlH_4$
- C. H_2 and Pt as a catalyst
- D. glycol with KOH

Answer: A



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32. Which one of the following aldehydes does not give Cannizzaro's reaction?

A. Formaldehyde

B. Acetaldehyde

C. Trimethyl acetaldehyde

D. Benzaldehyde

Answer: B



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33. When α, β -unsaturated carbonyl compounds undergo a ring closure reaction with conjugated dienes, the reaction is called

A. Claisen rearrangement

B. Diels Alder reaction

C. Cannizzaro reaction

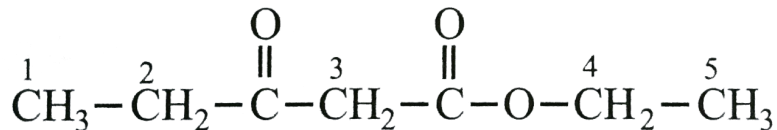
D. Perkin reaction

Answer: B



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34. Which H atom in the following ester is most acidic?



A. 1

B. 2

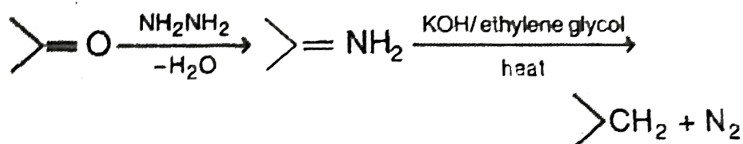
C. 3

D. 4

Answer: C



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35.

The above reaction is known as

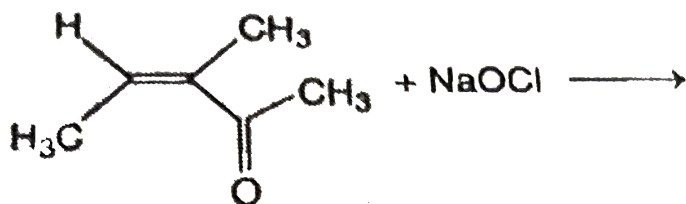
- A. Wolff-Kishner reduction
- B. Clemmensen's reduction
- C. Both (a) and (b)
- D. None of the above

Answer: A



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36. Identify the product formed in the following reaction:



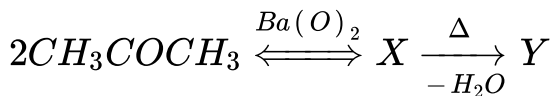
- A. *a.* + NaCl
- B. *b.* + CHCl₃
- C. *c.* + CHCl₃
- D. *d.* + NaCl

Answer: C

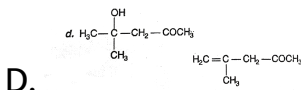
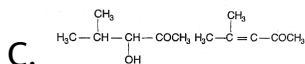
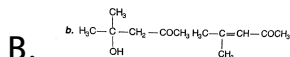
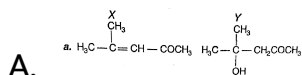


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37. Consider the following reaction,



Identify X and Y in the given reaction.

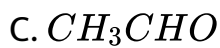
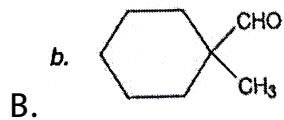
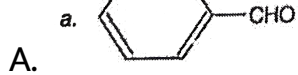


Answer: B



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38. Cannizzaro's reaction is not given by

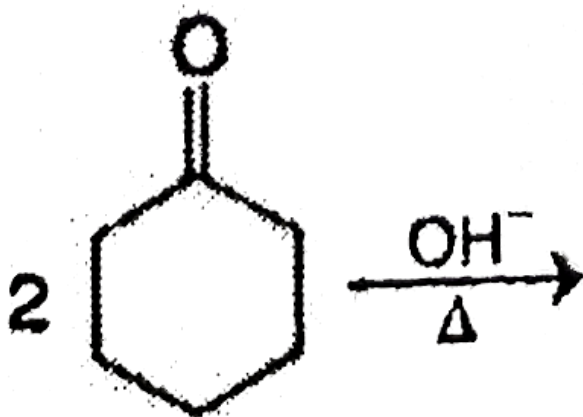



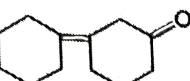
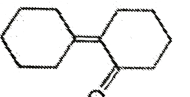
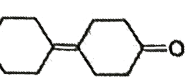
Answer: C



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39. The product formed in the following reaction is



- A. a. 
- B. b. 
- C. c. 
- D. d. 

Answer: C



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40. The compounds, benzaldehyde and acetone are distinguished by

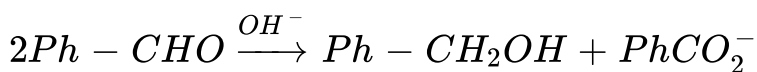
- A. Fehling's solution
- B. 2, 4-DNP
- C. Tollen's reagent
- D. sodium hydroxide solution

Answer: A



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41. Consider the following Cannizzaro reaction



In the above reaction, the slowest step of the reaction is

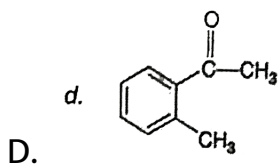
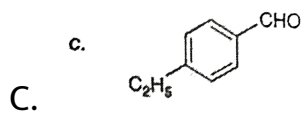
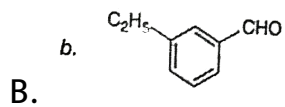
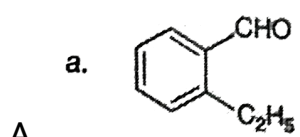
- A. the transfer of hydride ion to the carbonyl group
- B. The deprotonation of $Ph - CH_2OH$
- C. the attack of OH^- at the carbonyl group
- D. the abstraction of proton from the carboxylic acid

Answer: A



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42. An aromatic compound, A [$C_5H_{10}O$] undergoes Cannizzaro reaction, forms 2,4 - *DNP* derivative reduces Tollen's reagent and produces 1,2-benzenedicarboxylic acid on vigorous oxidation. The compound A would be

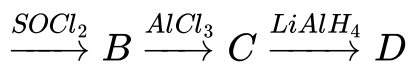
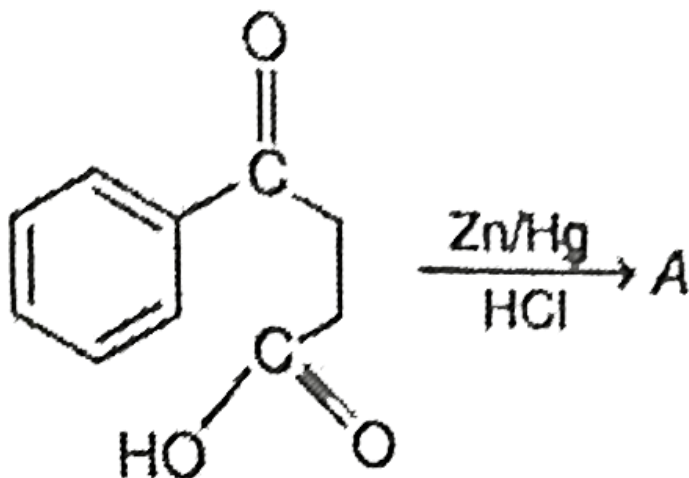


Answer: A

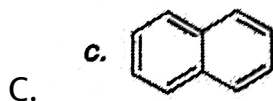
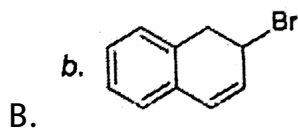
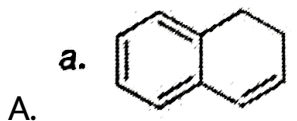


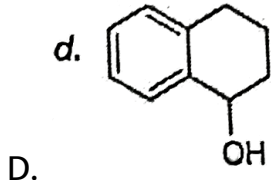
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43. Consider the following series of reaction,



The end product of the above series of reaction is





Answer: C

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44. The increasing order of the rate of HCN addition of compound a-d is

(i) $HCHO$

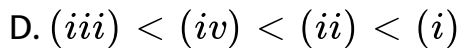
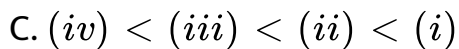
(ii) CH_3COCH_3

(iii) $PhCOCH_3$

(iv) $PhCOPh$

A. $(i) < (ii) < (iii) < (iv)$

B. $(iv) < (ii) < (iii) < (i)$

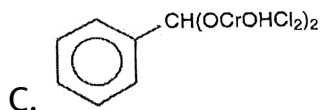
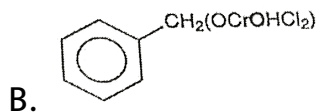
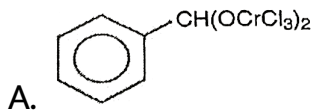


Answer: C

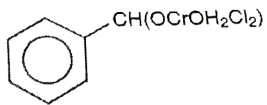


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45. Select the structure or chromium complex formed when the toluene reacts with chromyl chloride to give benzaldehyde on hydrolysis.



D.

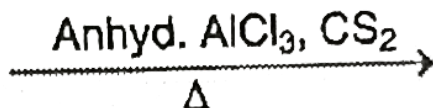
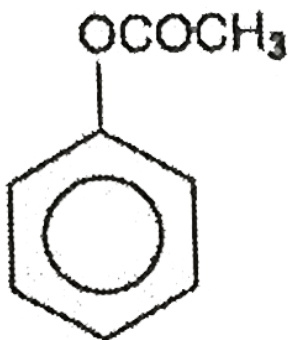


Answer: C



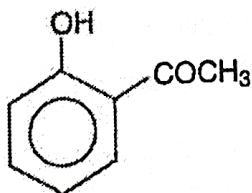
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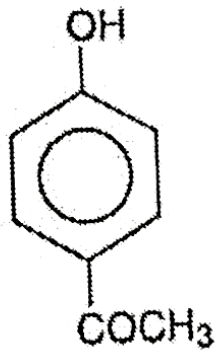
46.



Predict the product (s) formed in the given reaction.

A.





B.

C. Both (a) and (b)

D. None of these

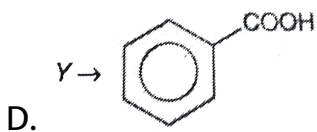
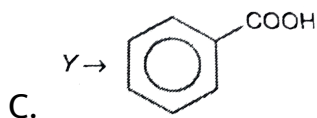
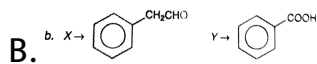
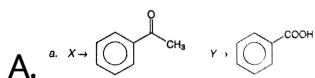
Answer: C



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47. An organic compound (A) with molecular formula C_8H_8O forms an orange red precipitate with 2,4 -DNP reagent and gives yellow precipitate on heating with iodine in the presence of sodium hydroxide . It neither reduces Tollen's reagent or

Fehling's solution , nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formulae $C_7H_6O_2$. Identify the compound (A) and (B) and explain the reactions involved .

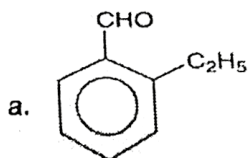


Answer: A

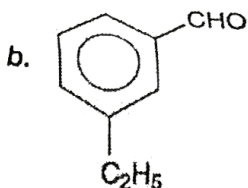


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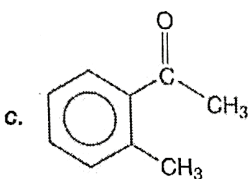
48. An organic compound with the molecular formula $C_9H_{10}O$ forms a 2,4-DNP derivative, reduces Tollens' reagent, and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1,2-benzenedicarboxylic acid. Identify the compound.



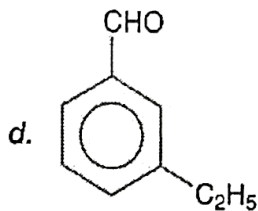
A.



B.



C.



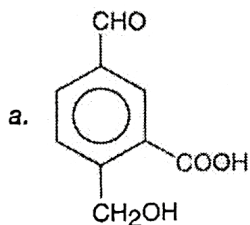
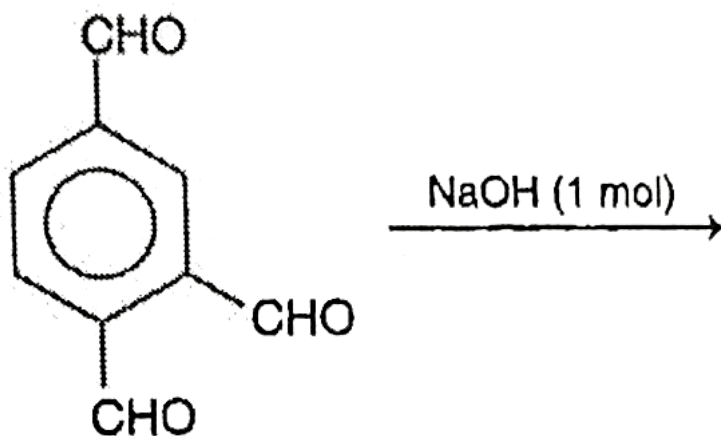
D.

Answer: A

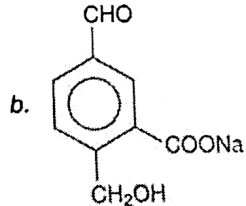


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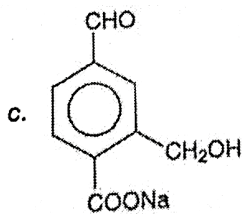
49. Predict the product(s) formed in the following reaction:



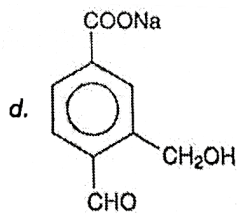
A.



B.



C.



D.

Answer: C



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50. Name the reaction which involves the conversion of benzaldehyde to cinnamic acid in the presence of acetic anhydride.

A. Benzoin condensation

B. Reformatsky reaction

C. Knoevenagel reaction

D. Perkin's reaction

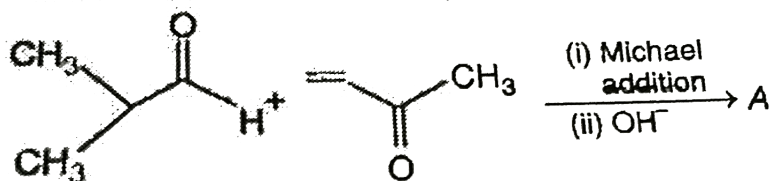
Answer: D



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1. How many chiral centres are possible for the product of following reaction?



A. 1

B. 0

C. 3

D. 2

Answer: A



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2. Arrange the following compounds in the increasing order of nucleophilic addition reaction:

I. $HCHO$

II. CH_3COCH_3

III. $C_6H_5COCH_3$

IV. $C_6H_5COC_6H_5$

A. $I < II < III < IV$

B. $IV < III < II < I$

C. $IV < II < III < I$

D. $III < IV < II < I$

Answer: B



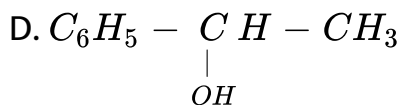
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3. Which of the following compounds will give positive iodoform test with I_2 and $NaOH$?

A. $C_6H_5COC_6H_5$

B. CH_3CH_2CHO

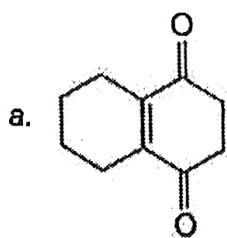
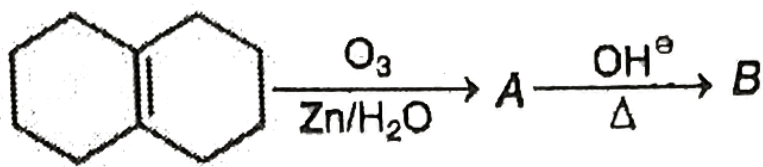
C. $C_6H_5COCH_2CH_3$



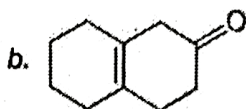
Answer: D

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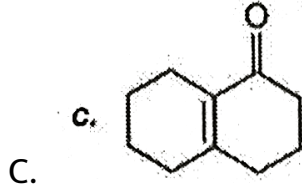
4. What will be the final product of the reaction?



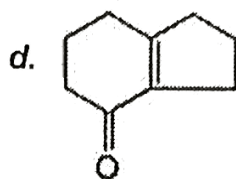
A.



B.



C.



D.

Answer: D



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5. The compound formed as a result of oxidation of propyl benzene by $KMnO_4$ is

A. benzaldehyde

B. benzyl alcohol

C. benzoic acid

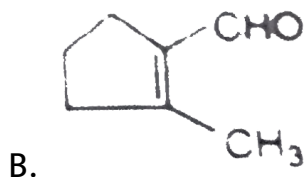
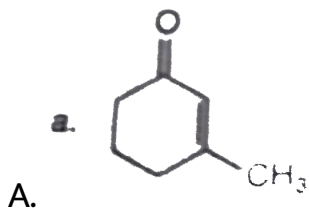
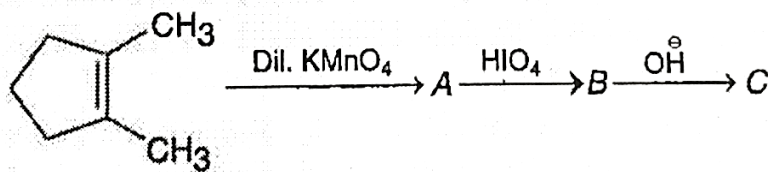
D. acetophenone

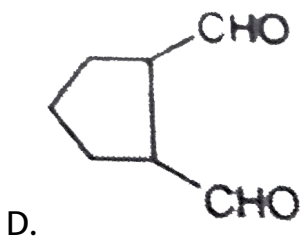
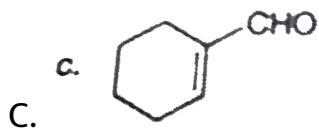
Answer: C



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6. What will be the correct structural formula of product for the following reaction ?





Answer: A



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7. Which of the following is process used for the preparation of acetone?

A. Wasber process

B. Wecker process

C. Wolff-Kishner reduction

D. Gattermann-Koch synthesis

Answer: B



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8. What will be the main product when acetylene reacts with hypochlorous acid?

- A. Trichloro acetaldehyde
- B. Acetaldehyde
- C. Dichloro acetaldehyde
- D. Chloro acetaldehyde

Answer: C



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9. Which of the following reagents can be used to prepare benzaldehyde from toluene?

A. CrO_3 in $(CH_3CO)_2O$

B. $K_2Cr_2O_7 + \text{conc. } H_2SO_4$

C. Hot alkaline $KMnO_4$

D. Conc. HNO_3

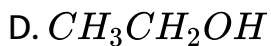
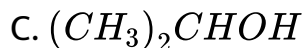
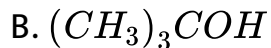
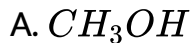
Answer: A



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10. Acetone on addition to methyl magnesium bromide forms a complex, which on decomposition with acid gives X and

$Mg(OH)Br$. Which one of the following is X?

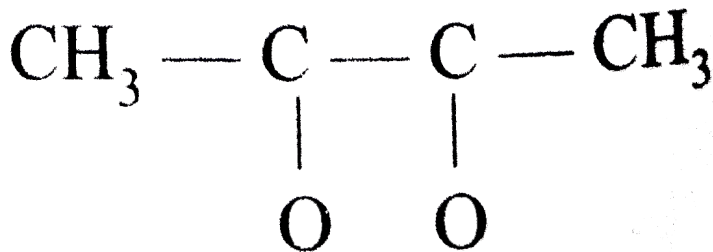
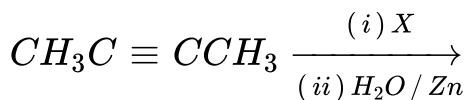


Answer: B



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11.



X in the above reaction is



Answer: C



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12. Which of the following ketones will not respond to iodoform test?

A. Methyl isopropyl ketone

B. Ethyl isopropyl ketone

C. Dimethyl ketone

D. 2-hexanone

Answer: B



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13. Acetone and acetaldehyde can be distinguished by

A. Molisch test

B. Tollen's test

C. Schiff's test

D. iodoform test

Answer: B



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14. Cyanohydrin of which of the following forms lactic acid

A. HCHO

B. CH_3CHO

C. $\text{CH}_3\text{CH}_2\text{CHO}$

D. CH_3COCH_3

Answer: B



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