**GRADE: 12**

**TOPIC: ALDEHYDES, KETONES AND CARBOXYLIC ACIDS**

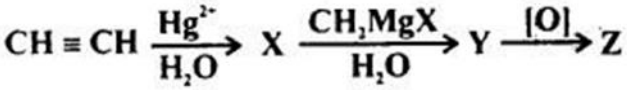
## I. MULTIPLE CHOICE QUESTIONS

1. Which of the following reactions will give benzolphenone?
   (i) Benzoyl chloride + Benzene + $AlCl_3$
   (ii) Benzoyl chloride + Phenylmagnesium bromide
   (iii) Benzoyl chloride + Diphenyl cadmium
   (a) (i)and(ii)
   (b) (ii) and (iii)
   (c) (i) and (iii)
   (d) (i), (ii) and (iii)
2. Propanone can be prepared from ethyne by
   (a) passing a mixture of ethyne and steam over a catalyst, magnesium at 420°C
   (b) passing a mixture of ethyne and ethanol over a catalyst zinc chromite
   (c) boiling ethyne with water in the presence of $HgSO_4$ and $H_2SO_4$
   (d) treating ethyne with iodine and NaOH
3. There is a large difference in the boiling points of butanal and butanal-1-ol due to
   (a) intermolecular hydrogen bonding in butan-1-ol
   (b) intermolecular hydrogen bonding in butanal
   (c) higher molecular mass of butan-1-ol
   (d) resonance shown by butanal
4. The addition of HCN to carbonyl compounds is an example of
   (a) nucleophilic addition
   (b) electrophilic addition
   (c) free radical addition
   (d) electromeric addition

5. Aldehydes other than formaldehyde react with Grignard's reagent to give addition products which on hydrolysis give
   (a) tertiary alcohols
   (b) secondary alcohols
   (c) primary alcohols
   (d) carboxylic acids
6. Which of the following will not give aldol condensation?
   (a) Phenyl acetaldehyde
   (b) 2-Methylpentanal
   (c) Benzaldehyde
   (d) 1-Phenylpropanone
7. Which of the following compounds does not react with NaHSO3?
   (a) HCHO
   (b) C6H5COCH3
   (c) CH3COCH3
   (d) CH3CHO
6. The product of hydrolysis of ozonide of 1-butene are
   (a) ethanol only
   (b) ethanal and methanal
   (c) propanal and methanal
   (d) methanal only
7. Benzoyl Chloride on reduction with H2/Pd-BaSO4 produces
   (a) benzoic acid
   (b) benzyl alochol
   (c) benzoyl sulphate
   (d) benzaldehyde
8. What is the test to differentiate between penta-2-one and pentan-3-one?
   (a) Iodoform test
   (b) Benedict's test
   (c) Fehling's test
   (d) Aldol condensation test

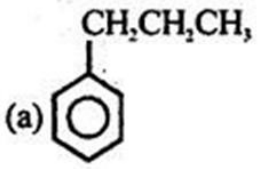
9. Hydrocarbons are formed when aldehydes and ketones are reacted with amalgamated zinc and conc. HCl. The reaction is called
   (a) Cannizzaro reaction
   (b) Clemmensen reduction
   (c) Rosenmund reduction
   (d) Wolff-Kishner reduction

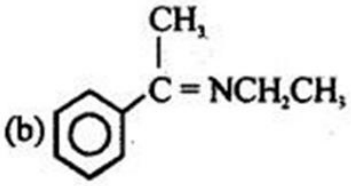
10. In the following sequence of reaction, the final product (Z) is

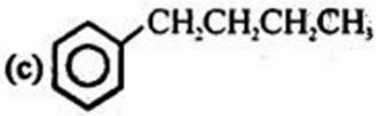


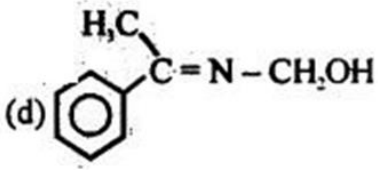

   (a) ethanal
   (b) propan-2-ol
   (c) propanone
   (d) propan-2-ol

11. Find the product of the given reaction

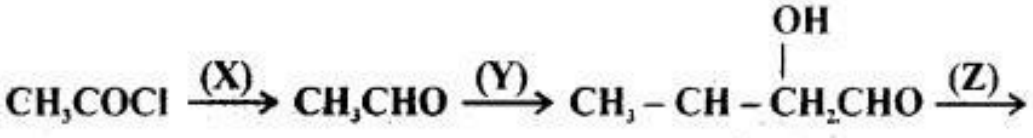



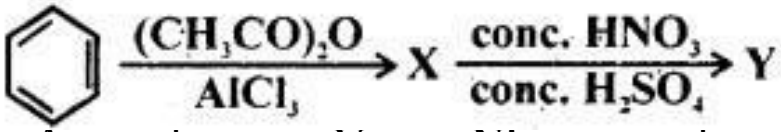



12. Fill in the reagents for the given conversation:




| X | Y | Z |
|---|---|---|
| (a) $Pd/BaSO_4$ | dil. NaOH | heat |
| (b) NaOH | Hydrolysis | heat |
| (c) $I_2$/NaOH | $LiAlH_4$ | $H_3O^+$ |
| (d) $CrO_3$ | Warm | $CO_2$ |

13. Identify the products (X) and (Y) in the given reaction



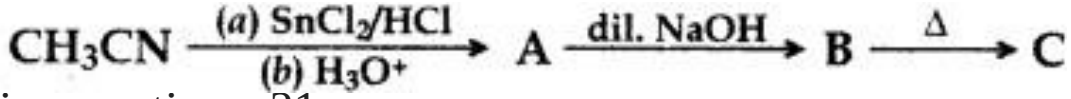

(a) X = Acetophenone, Y = m-Nitroacetophone
(b) X = Toluene, Y = m-Nitroacetotoluene
(c) X = Acetophenone, Y = o- and p-Dinitroacetophenone
(d) X = Benzaldehyde, Y = m-Nitrobenzaldehyde

14. Which of the following cannot reduce Fehling's solution?
(a)Formic acid
(b)Acetic acid
(c) Formaldehyde
(d)Acetaldehyde

16. The reagent used for separation of acetaldehyde and acetophenone
a. $NaHSO_3$
b. $C_6H_5NH_2$
c. $NH_2OH$
d. NaOH

## II. ANSWER THE FOLLOWING

17. Write structures of compounds A, B and C in each of the




following reactions: 21.

18. How would you bring about the following conversions :
    (i) Propanone to Propene
    (ii) Bromobenzene to 1-phenylethanol

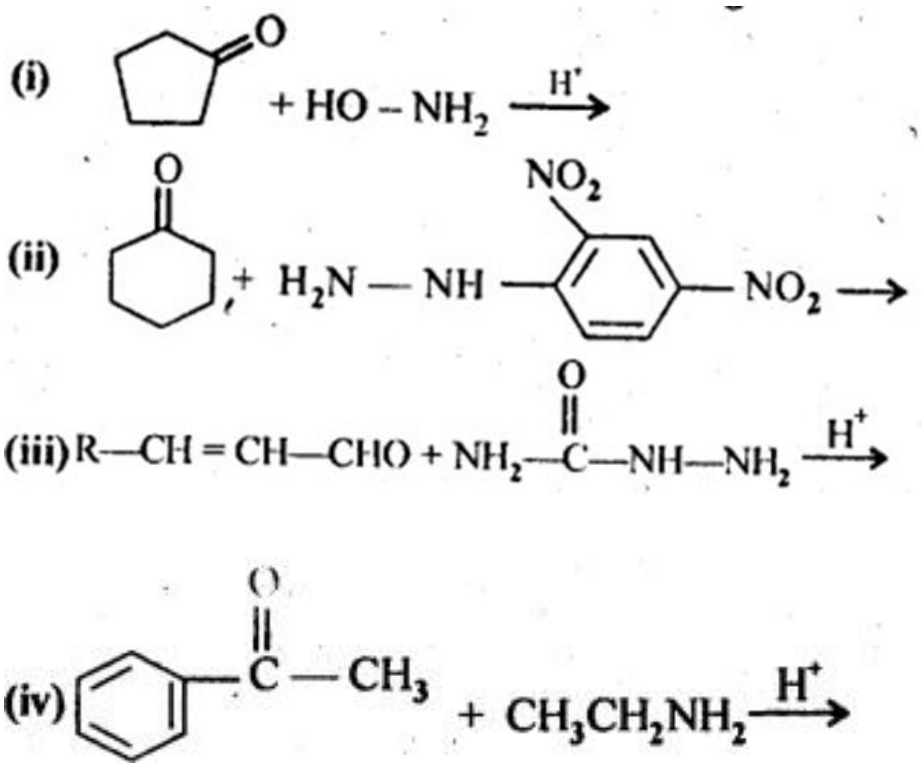
ANSWER IN BRIEF

19. An organic compound 'A' with molecular formula C8H8O forms an orange red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with I2 and NaOH. It neither reduces Tollen's reagent nor Fehling's reagent nor does it decolourize bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid 'W having molecular formula C7H6O2. Identify the compounds 'A' and 'B' and explain the reactions involved.

20. An organic compound with molecular formula $C_5H_{10}O$ does not reduce Tollen's reagent but forms an addition compound with sodium hydrogen sulphite and gives a positive iodoform test. On vigorous oxidation, it gives ethanoic acid and propanoic acid. Identify the compound and write all chemical equations

21. Arrange the following carbonyl compounds in increasing order of their reactivity in nucleophilic addition reactions :
    (a) Ethanal, propanal, propanone, butanone
    (b) Benzaldehyde, p-tolualdehyde, p-nitrobenzaldehyde, acetophenone

22. Predict the products of the following reactions:




23. What is meant by the following terms? Give an example of the reaction in each case.

(i) Cyanohydrin
(ii) Acetal
(iii) Semicarbazone
(iv) Hemiacetal
(v) Oxime
(vi) Ketal
(vii) Imine
(viii) 2,4-DNP derivative
(ix) Schiff's base.