TEST-B

SOLVED

Time:1 hr. **Max. Marks: 30**

SECTION-A

Tick the correct option:

1. The pair of organic compound which can be distinguished by using I_2/NaOH is **[1]**

   (i) Propan-2-ol and propanone (ii) Ethanol and ethanoic acid

   (iii) Ethanol and ethanal (iv) Benzaldehyde and benzophenone

2. Which of the following has lowest pKa value? **[1]**

   (i) Benzoic acid (ii) Ethanoic acid

   (iii) 4-nitrobenzoic acid (d) 2-hydroxy benzoic acid

3. Compound A gives a positive Tollen's reagent test as well as yellow precipitate with sodium hypoiodite. Compound A on reaction with semicarbazide gives B. The structure of compound B is **[1]**

   (i) $CH_3-CH_2-CH=N\,NHCONH_2$ (ii) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{C}}=N\,NHCONH_2$

   (iii) $CH_3-\underset{\displaystyle H}{\underset{|}{C}}=N\,NH\overset{\displaystyle O}{\overset{\|}{C}}-NH_2$ (iv) $CH_3-\underset{\displaystyle H}{\underset{|}{C}}=N-\overset{\displaystyle O}{\overset{\|}{C}}-NH\,NH_2$

Assertion-Reason type Questions:

(i) If assertion and reason both are correct and reason is the correct explanation of assertion.

(ii) If assertion and reason both are correct and reason is not the correct explanation of assertion.

(iii) If assertion is correct and reason is wrong.

(iv) If assertion is wrong and reason is correct.

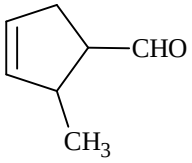
4. Assertion: Benzaldehye gives a reddish brown precipitate with Fehling's solution **[1]**
   Reason: In Fehling's test, the oxidation state of copper changes from +2 to +1.

5. Assertion: Benzoic acid does not give Hell-Volhard-Zelinsky reaction with Br_2/red P. **[1]**
   Reason: Hell-volhard-Zelinky reaction requires the presence of alpha hydrogen in carboxylic acids.

One word /One Sentence type Questions.

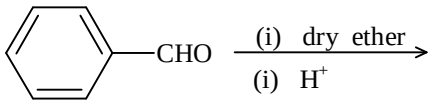
6. Why is benzoic acid stronger than ethanoic acid? **[1]**

7. Write the IUPAC names of the following compounds: **[1]**



SECTION-B

8. Complete the following by writing down the structure of the major product **[2]**

(i) CH_3CH_2MgBr +  $\xrightarrow[(i)\ H^+]{(i)\ \text{dry ether}}$

(ii) $(CH_3)_2CHMgBr + CO_2 \xrightarrow[(i)\ H_2O/H^+]{(i)\ \text{dry ether}}$

9. Account for the following **[2]**

(i) 2, 4, 4-trimethyl cyclohexanone forms cyanohydrin with HCN but 2, 2, 6-trimethyl cyclohexanone does not.

(ii) propanone is less volatile than propanal.

10. Explain the following name reaction **[2]**

(i) Aldol condensation

(ii) Cannizarro reaction

11. (i) Write the mechanism of the following reaction **[1½+1½]**

$$CH_3 - CHO + HCN \xrightarrow{OH^-} CH_3 - \underset{\displaystyle OH}{\underset{|}{CH}} - CN$$

(ii) Write the structures of compound A to C

$$CH_3\underset{\displaystyle CH_3}{\underset{|}{CH}} - \overset{\displaystyle O}{\overset{\|}{C}} - Cl \xrightarrow[BaSO_4]{H_2/Pd} A \xrightarrow[HCl]{NH_2NH_2} B \xrightarrow[Glycol]{KOH} C$$

12. How will you make the following conversions? **[3]**

(i) Ethanoic acid into 2-methyl propan-2-ol

(ii) Ethanal into butane-1,3-diol

(iii) Ethyl benzene into methyl benzoate

13. Give a chemical test to distinguish between the following pair of organic compounds: **[3]**

(i) Ethanal and propanal

(ii) Ethanoic acid and methanoic acid

(iii) Benzoic acid and phenol

14. (a) Give reasons: **[2+1]**

(i) Propanone is completely miscible in water in all proportions but acetophenone is immiscible

(ii) 2-methyl benzoic acid is stronger acid than benzoic acid.

(b) Convert methanal into trioxan.

15. (a) Organic compound A($C_8H_{16}O_2$) on hydrolysis in acidic conditions gives a carboxylic acid B and an alcohol C. **[3+2]**

Dehydration of alcohol C gives but-1-ene. C on vigorous oxidation gives B.

(i) What are the structures of A, B and C?

(ii) Write IUPAC name of A

(iii) What happens when A reacts with $LiAlH_4$?

(b) What happens when (give chemical equation only)

(i) Ethanal reacts with excess of methanol in the presence of dry HCl gas.

(ii) Acetone reacts with hydroxylamine in the presence of acidic medium.

