TEST-B

SOLVED

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

SECTION-A

Tick the correct option:

1. Which of the following compound cannot undergo dehydrogenation with copper at 300°C?

   (i) 1-phenyl ethanol (ii) 2-phenyl ethanol **[1]**

   (iii) 2-methyl propan-2-ol (iv) 2-methyl propan-1-ol

2. To which of the following compounds, it is most difficult to add H^+ ion? **[1]**

   (i) water (ii) ethanol (iii) dimethyl ether (iv) phenol

3. $CH_3CH_2ONa + (CH_3)_3CCl \rightarrow$ 'X'. The compound X is a major product. The structure of X is

   (i) $CH_3CH_2 - O - C(CH_3)_3$ (ii) $CH_3CH_2C(CH_3)_3$ **[1]**

   (iii) $CH_3CH_2C(CH_3) = CH_2$ (iv) $(CH_3)_2C = CH_2$

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: Monohydric alcohols and ethers are functional isomers. **[1]**

   Reason: Ether and monohydric alcohols having comparable molecular mass have different boiling points.

5. Assertion: Acid-catalysed dehydration of alcohols proceed via carbocation. **[1]**

   Reason: Neo-pentyl alcohol on dehydration in the presence of H_2SO_4 gives 2-methyl but-2-ene.

One word /One Sentence type Questions.

6. Write the structures of the following compounds: **[1]**

   (i) 3-Ethoxy-2-methyl hexane

   (ii) Isobutyl alcohol

7. While separating a mixture of ortho and paranitrophenols by steam distillation, name the isomer which is steam volatile. Gives reason: **[1]**

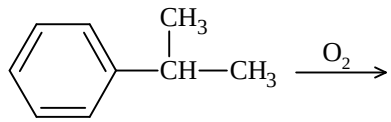
SECTION-B

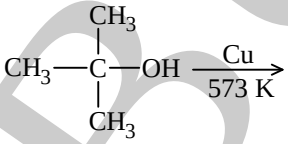
8. Write equations for the preparation of **[2]**
   (i) Prepan-2-ol using a Grignard reagent
   (ii) Phenol using benzene, sulphuric acid and NaOH

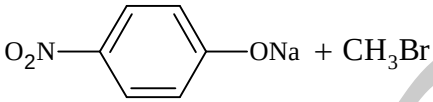
9. Explain the following name reactions: **[2]**
   (i) Hydroboration-oxidation
   (ii) Kolbe reaction

10. How will you bring about the following conversions? **[2]**
    (i) Phenol into 2-hydroxy benzaldehyde
    (ii) Propene into 2-methoxy propane

11. Complete the following reactions by writing down the structure of the major product. **[3]**

(i) 

(ii) 

(iii) 

12. Account for the following: **[3]**
    (i) Preparation of ethers by acid dehydration of secondary or tertiary alcohols is not a suitable method.
    (ii) Basic strength of alkoxides follows the order:
    $(CH_3)_3CO^- > (CH_3)_2CHO^- > CH_3CH_2O^-$
    (iii) Phenol is more ionised in water than ethanol

13. Write the mechanism for the following reaction: **[3]**
    (i) Acid catalysed dehydration of ethanol to form ethene
    (ii) Bromination of phenol using Br_2/CS_2

14. (a) Arrange the following set of compounds in order of property indicated: **[2+1]**
    (i) Pentanol, n-butane, ethoxy ethane, butan-2-ol → **increasing boiling point**.
    (ii) Propan-1-ol, 2, 4, 6-trinitrophenol, nitrophenol, 3, 5-dinitrophenol, phenol. 4-methyl phenol → **increasing acidic strength**.

15. (a) Organic compound A(C_6H_6O) on reaction with CO_2 / NaOH at 400 K gives a compound B. Acidification of compound B gives C. The compound C on acetylation with ethanoic anhydride gives D which is a popular pain killer. **[3+1+1]**
    (i) Write the structures of compounds A, B, C and D.
    (ii) What happens when C reacts with CH_3OH in the presence of few drops of conc. H_2SO_4?
    (b) Convert methanal into n-butane.
    (c) How is 1-propoxypropane synthesised from propan-1-ol?