TEST PAPER NO. 12

TOPIC : ORGANIC FUNCTIONAL GROUP : III
ALDEHYDE, KETONE AND CARBOXYLIC ACID

M.M. 50 **TIME: 3 HRS.**

Name of Student_____ Roll No. _____

Q.NO. 1-10 carries 1 mark, 11-20 2 marks, 21-25 carries 3 marks, 26 carries 5 marks.

1. Arrange the following compounds in increasing order of their boiling points:
   CH_3CHO, CH_3CH_2OH, CH_3OCH_3, $CH_3CH_2CH_3$
2. Draw the structures of the following derivatives:
   a. Cyclopropanone oxime b. The ethylene ketal of hexan-3-one
3. Write the mechanism of esterification reaction?
4. Write the structure of following compound:
   a. α-Methoxypropionaldehyde b. 4-Oxopentanal
5. Give the name of reagent involved for following transformation:
   a. Hexan-1-ol to hexanal
   b. Ethanenitrile to ethanal
6. Arrange the following compound in increasing order of their reactivity in nucleophilic addition reaction with explaination:
   Ethanal, Propanal, Propanone, Butanone
7. What is the effect of substitutent on the acidity of carboxylic acid?
8. What are: a. Acetal b. Semicarbazone
9. Allthough phenoxide iion has more number of resonating structures than carboxylate ion, carboxylic acid is stronger acid than phenol. Why?
10. Discuss the structure of Carbonyl group?
11. Complete the following reaction:
    a. Hydrolysis of Propyne in presence of Hg^{2+}/H_2SO_4
    b. Benzene + C_2H_5COCl (in presence of Anh. $AlCl_3$ /CS_2)
12. Write the following name reaction:
    a. Wolf Kishner
    b. Clemenson
13. Explain Aldol Condensation with example? (Mechanism Also)
14. Write short note on Cannizaro Reaction? Example and Mechanism.
15. Write the chemical reactions to affect the following transformations:
    a. Butan-1-ol to butanoic acid
    b. Cyclohexene to hexane-1,6-dioic acid
16. Show how the following compounds can be converted to benzoic acid:
    a. Ethyl benzene b. Phenlethene (Styrene)
17. Distinguish b/w the following pair:
    a. Propanone and propanal b. Phenol and Benzoic acid
18. Convert ethanal into following compound:
    a. Butane-1,3-diol b. But-2-enal

19. Which of the following will undergo Cannizaro and which will go for aldol condensation reaction:
    a. Methanal b. 2-Methylpentanal c. Benzaldehyde
    d. Benzophenone e. Cyclohexanone f. 1-Phenlypropanone
    g. 2,2-Dimethylbutanal h. Butan-1-ol
20. Explain the :
    a. Cyclohexanone forms cyanohydrin in good yield but 2,2,6-trimethylcyclohexanone does not.
    b. There are two NH_2 groups in semicarbazide. However, only one is involved in the formation of semicarbazones.
21. Write the chemical reaction of ethanl with following agent:
    a. HCN b. Dil NaOH c. Fehling Reagent
22. Carry out the following conversion:
    a. Propanone to propene
    b. Benzoic acid to Benzaldehyde
    c. Benzoic acid to m-Nitrobenzyl alcohol
23. Describe the following:
    a. Acetylation b. Decarboxylation c. HVZ reaction
24 Predict the producgts formed when cyclohexanecarbaldehyde reacts with following reagents:
    a. PhMgBr and then H_3O^+
    b. Tollen's Reagent
    c. Semicarbazide and weak acid
25 An organic compound A with molecular formulae 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 Tollens or Fehlings' reagent, nor does it decolourises bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid B having molecular formulae C_7H_6O . Identify the compound A and B and explain the reaction invovlved.
26 a. An organic compound A molecular formulae $C_8H_{16}O_2$ was huydrolysed with dilute sulfuric acid to give a carboxylic acid B and an alcohol C. Oxidation of C with chromic acid produced B. C on dehydration gives but-1-ene. Write equations for the reactions invovlved.
    b. An organic compound contains 69.77% Carbon, 11.63% Hydrogen and rest oxygen. The molecular mass of the compund is 86.. It does not reduce Tollen's Reagent but forms an addidtion compound with sodium hydrogensulfite and give positive iodoform test. On vigorous oxidation it gives ethanoic and propanoic acid. Write the possible structure of the compound.