DINHATA COLLEGE

B.Sc. (CHEMISTRY) GENERAL ASSIGNMENT – 2018

SUBJECT – CHEMISTRY, PAPER – IV

FULL MARKS: 45

Group – A (Organic)

1. (a) Ethyl amine is more basic than aniline. Justify.

    (b) Compare the boiling points of Salicylaldehyde and *para*-hydroxybenzaldehyde.

    (c) To produce ethyl benzene from benzene, Friedel-Crafts acylation is more suitable than alkylation process. Justify.

    (d) Vinyl chloride is more stable than benzyl chloride in case of substitution reaction. – Explain

    (e) Both glucose and fructose form same osazone – explain with reason.

2. (a) Synthesize the following compounds by using diethyl malonate.

    (i) Krotonic acid, (ii) 2-butanone. $1.5 \times 2 = 3$

   (b) Synthesize following compounds by using Grignard's reagent.

    (i) Benzoic acid, (ii) Secondary butyl alcohol, (iii) Benzyl alcohol. $3 \times 1 = 3$

   (c) How will you prepare

    (i) Fluorobezene and (ii) Chlorobenzene from aniline ? $2 \times 1 = 2$

   (d) What do you understand by the term "Inversion of came Sugar"?   2

3. (a) Prepare the following compounds from benzene diazonium chloride –

    (i) Phenol and (ii) Benzoic acid $2 \times 1 = 2$

   (b) How will you distinguish 1°, 2° and 3°–amines.   2

   (c) Explain the following terms – $3 \times 1 = 3$

    (i) Enantiomers

    (ii) Prochiral centre.

    (iii) Meso compounds

    (d) Fructose does not have any –CHO group, but still it gives positive response to Tollen's and Fehling's test – explain with reason.   3

4. (a) what is Mutarotation ?

   (b) Maleic acid can form an hydrogen bonding readily but fumaric acid does not.

Explain.

   (c) How will you convert glucose to fructose?

   (d) Explain Huckel's rule for aromaticity.

   (e) Which one is aromatic and why?

      (i) Pyrrole ,   (ii) 1,3–cyclohexadione   (2 × 4) + (1 × 2) = 10

5. (a) Predict the products –

(i) Toluene + CO_2 + HCL $AlCl_3$ $\longrightarrow$ A

(ii) o–Nitroaniline + $NaNO_2$ + HCl (0^0C-5^0C) $\longrightarrow$ B + CuCN $\xrightarrow{\text{Heat}}$ C

(iii) Phenol + CCl_4 + NaOH(aq) $\longrightarrow$ D + C_2H_5OH $\xrightarrow{H^+}$ ◯ E

(b) Prepare dimedone from acetone by using diethyl malonate.

(c) How will prepare primary alcohol by using Grignard reagent?   (5 × 1) + 3 + 2 = 10

6. (a) write short notes on (any two) –   (3 ×2) + 4 = 10

   (i) Perkin reaction.

   (ii) Hoffmann degradation reaction.

   (iii) Schmidt reaction.

  (b) Ozonolysis of *ortho*-xylene produces glyoxal, methyl glyoxal and dimethyl glyoxal in the ratio of 3:2:1. Justify.

Group – B (Inorganic)

Answer any two questions------

7. (a) what are the differences between transition elements and representative elements?

   (b) What I_2 shows basic character?

   (c) What happens when NH_4Cl is treated with Nesslar's reagent?   (3 + 2.5 + 2) = 7.5

8. (a) Why O_2 is paramagnetic but N_2 is diamagnetic? Justify write the help of M.O.T.

   (b) PCl_5 is a stable compound but $BiCl_5$ is rare. Justify.

   (c) Write short note on heavy water.   (2.5 + 2.5 + 2.5) = 7.5

9. (a) Discuss the extraction process of 'Au'.   (3 + 2 + 2.5) = 7.5

   (b) Which one is the stronger acid and why?

     i) Perchloric acid   and   (ii) Periodic acid.

   (c) Discuss the structure and synthetic procedure of Marshal`s acid.