Reg. No..... (Pages : 3) **K 5122**

Name.....

FINAL YEAR B.Sc. DEGREE EXAMINATION, MARCH/APRIL 2005

Part III—Group (iii)—Chemistry

Paper IV—ORGANIC CHEMISTRY—II

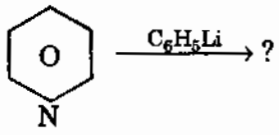
Time : Three Hours Maximum : 60 Marks

Answer **all** *questions, choosing* **either** *(a)* **or** *(b) from each question.*

Section A

Each question carries 2 marks.

1. (a) Pyridine on nitration gives 3-nitro pyridine and with $NaNH_2$ it gives 2 aminopyridine. Why ?

   (b) 

   What type of reagent is Phenyl Lithium ?

2. (a) Using a suitable Grignard reagent, write down the steps to prepare propanoic acid.

   (b) Ethanol cannot be used as a solvent with grignard reagent. Why ?

3. (a) Write the synthesis of quinoline.

   (b) Name a nonbenzoid aromatic compound. Explain its aromaticity.

4. (a) Two pentoses are got by stepping up D-Erythrose. Name them. Draw their configurations also.

   (b) Name the monosaccharides got by the hydrolysis of the following carbohydrates :—

   Sucrose, Maltose, Lactose and Starch.

5. (a) Define the terms epimers and anomers.

   (b) Freshly prepared solution of glucose has a specific rotation of + 110°. It decreases and becomes 52·5°. It does not change further. Explain these observations.

6. (a) Draw the structure of sucrose.

   (b) Sucrose is not a reducing sugar. But fructose, a ketohexose is a reducing sugar. Rationalise.

7. (a) What is a coenzyme ? Give an example and one function of it.

   (b) What is A.T.P. ? What is its importance ?

8. (a) What are the different compounds that belong to the vitamin B group.

   (b) Name a vitamin that is responsible for the coagulating nature of blood and also a vitamin that is related to carotenoids.

9. (a) What are steroids ? Give examples.

   (b) Draw the structure of Diel's hydrocarbon.

Turn over

17. (a) (i) List the possible electronic transitions for CH_2=CH—CHO.

(ii) Calculate the C—H stretching vibration frequency from the following data :

$K = 5 \times 10^5$ gm. sec.$^{-2}$

(iii) Give the nature and number of the n.m.r. peaks of the following compounds :—

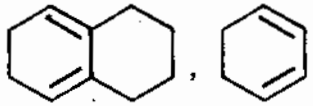
CH_3—CO—CH_3, CH_3—CH_2—OH, C_6H_5—CH_3, CH_3—O—CH_3.

(2 + 4 + 4 = 10 marks)

(b) (i) Define the term chemical shift. What are the two scales used to measure this ? How are they related ?

(ii) How will you identify the presence of H-bonding using I.R. data ?

(iii) Calculate the λ_{max} of the following compounds :



(iv) State Beer-Lambert's law.

(3 + 2 + 3 + 2 = 10 marks)

[2 × 10 = 20 marks]