



NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS

SCHOOL OF SCIENCE AND TECHNOLOGY
OCTOBER 2013 EXAMINATION

Course Code: CHM 421

Course Title: HETEROCYCLIC CHEMISTRY

Time Allowed: 2½ Hours

INSTRUCTION: Answer any four Questions

Question 1

- a. Give a brief description of the general physical properties of Quinoline. (6 marks)
- b. Discuss on the various uses of Quinoline and its derivatives. (5 marks)
- c. List 4 methods of synthesis of Quinoline. (4 marks)
- d. Describe briefly the Skraup synthesis of Quinoline showing the reaction pathway. (2½ marks)

Question 2

- a. Give a concise description of Quinine and its structure. (6 marks)
- b. State 5 uses of Chloroquine. (5 marks)
- c. Discuss any 2 chemical properties of Isoquinoline. (4 marks)
- d. Describe the biological importance of tryptophan. (2½ marks)

Question 3

- a. Describe the compound Indole and draw its structure. (5 marks)
- b. Describe any 2 chemical properties or reactions of Indole. (4 marks)
Show the reaction pathway for one of the reactions. (3 marks)
- c. Describe the compound Serotonin, its use and the structure. (5½ marks)

Question 4

- i. Describe the physical and
ii. Chemical properties of Benzofuran. (8 marks)
- b. Describe the major difference between the chemistry of Chromones and Coumarins. (4 marks)
- c. Discuss on any of the synthesis of Chromones and show the reaction pathway. (5½ marks)

Question 5

- a. Draw the structure of Quinine. (4 marks)
- b. Give a brief description on the uses and activities of the drug. (5½ marks)
- c. Describe the synthesis of racemic Warfarin. (8 marks)

Question 6

- a. List the methods of Indole synthesis. (4 marks)
- b. Indole can be reduced under Birch conditions. Discuss (6 marks)
- a. Papaverine and Morphine are found in the latex from poppy seed capsules; differentiate these two compounds in terms of structure and function. (7½ marks)