

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**JUNE/JULY EXAMINATION**

**COURSE CODE: CHM305**

**COURSE TITLE: ORGANIC CHEMISTRY**

**TIME ALLOWED:2 hours**

**INSTRUCTION: ANSWER ANY FIVE QUESTIONS**

1 (a) Discuss the classes of alcohols based on the number of hydroxyl group and

give one examples of each (name and structure).

(b) Name the following compounds;

(i) (ii) (iii)



(iv) (v)

(c) Discuss the esterification reaction of alcohols.

2 (a) Compare and contrast, ethers and alcohols.

(b) Discuss the Williamson Synthesis.

(c) State the Physical and chemical properties of ethers.

3 (a) Epoxides are compounds formed when an oxygen atom is linked to the carbon

chain forming a three membered ring. Discuss the methods of preparation of

epoxides.

(b) List the reactions of epoxides.

(c) Choose one of the reactions listed in 3b above and discuss in detail.

4 Discuss the followings:

1. Friedel – Crafts acylation
2. Cannizzaro Reaction
3. Saponification
4. Aldol Condensation
5. Iodoform reaction

5 (a) Show the Cross Aldol condensation between the compounds below:



(b) What are Quinones

6 (a) What is Diels-Alder reaction?

(b) Show the route of obtaining a product from the reaction of the two compounds below:



7 (a) With the aid of structures, differentiate between Thiophene, Pyrrole, and Furan.

(b) Discuss briefly the physical and chemical properties of Pyrrole.

(c) Describe a test for Pyrrole.