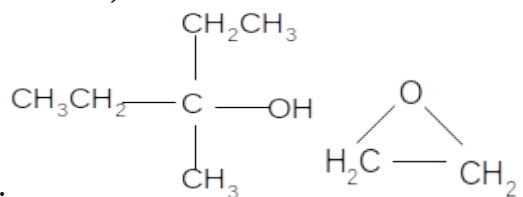




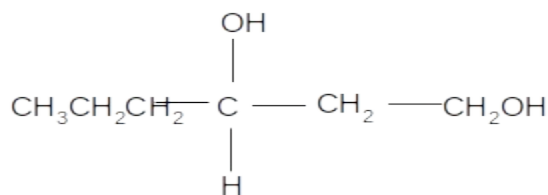
**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**JUNE/JULY EXAMINATION**

**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).



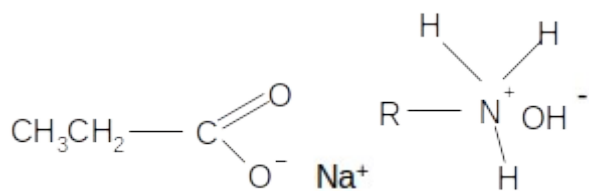
(b) Name the following compounds;



(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.

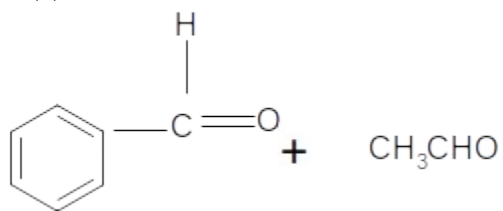
(b) List the reactions of epoxides.

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

4 Discuss the followings:

- a) Friedel – Crafts acylation
- b) Cannizzaro Reaction
- c) Saponification
- d) Aldol Condensation
- e) Iodoform reaction

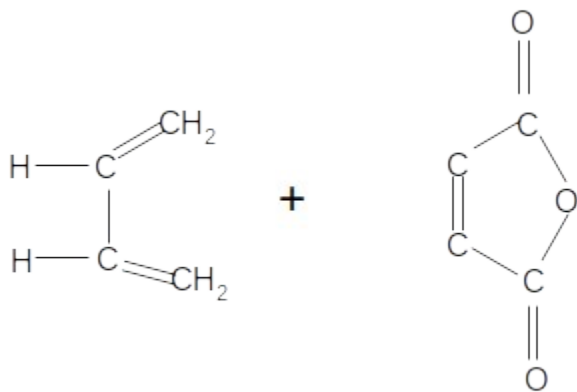
5 (a) Show the Cross Aldol condensation between the compounds below:



(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.