

NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF PURE & APPLIED SCIENCES
JANUARY 2018 EXAMINATION QUESTIONS

CHM416: Organic Synthesis
CREDIT: 2
TIME ALLOWED: 2 (TWO) HOURS.

INSTRUCTION: ANSWER FOUR (4) QUESTIONS, QUESTION 1 IS COMPULSORY.

ALL QUESTIONS CARRY 15 MARKS EXCEPT QUESTION 1 WHICH CARRIES 25 MARKS.

Question 1

(a). Explain the application of the following in oxidation of organic compounds

- (i). Chromic acid (8 marks)
- (ii). Pyridiniumchlorochromate (4 marks)
- (iii). Ozone.(4 marks)

(b). Differentiate between primary, secondary and tertiary alcohol.**5 marks**

(c). Using the appropriate reagents describe how aldehyde can be prepared from oxidation of primary alcohol at the same time avoiding further oxidation of the intermediate to carboxylic acid.

(7 marks)

Question 2

(a). What is Reduction reaction.**4 marks**

(b). List three methods by which the reduction organic compounds can be achieved.**6 marks**

(c). Starting with a ketone, write the reaction for mechanism of Clemmensen reduction of Carbonyls.

5 marks

Question 3. Discuss the bonding (include hybridization) in acetylene derivatives. **15 marks**

Question 4. Discuss the general mechanism for Aldol condensation. **15 marks**

Question 5

(a). Comment on the synthetic application of aldol condensation. **3 mark**

(b). Describe the Reformsky reaction. **6 marks**

(c). What are the advantages of Wittig reaction over other methods of preparation of Alkenes. **6 marks**

