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

CHM305: ORGANIC CHEMISTRY III
CREDIT: 3 UNIT
TIME: 3 HOURS
INSTRUCTION: ANSWER QUESTION ONE & ANY OTHER FOUR QUESTIONS.

CHM 305 END OF SEMESTER EXAMINATION

1. (a). Show how ethanol can be prepared by hydration of alkene.
   (b). Write short note on preparation of ether using Williamson synthesis
   (c). Using appropriate reagents and catalyst, discuss how aromatic alkanone can be prepared by Friedel-Craft acylation?
   (ii). Give the structure of 3-hydroxypropanal and phenylethanal
2. (a). Explain the process of production of alcohol in large and concentrated quantity from Maize starch.
   (b). Water is more acidic than alcohol discuss.
   (c). Using Lucas test differentiate between primary, secondary and tertiary alcohols.

3. (a)(i). Differentiate between symmetrical and unsymmetrical ethers.

   (ii). Draw the structure of the following:

   - Oxetane
   - Oxane
   - Oxalane
   - 1,4-Dioxane

   (c). Complete the table below:

Formula, IUPAC names, Common names and Sources of Some Carboxylic acids

Formula	IUPAC Name	Common Name	Source
HCOOH	Methanoic acid	Formic acid	Vinegar Plant
CH_3COOH	Ethanoic acid		Animal Products

	Propanoic acid	Propanionic acid	Rancid butter
$CH_3(CH_2)_2COOH$		n-Butyric acid	
$CH_3(CH_2)_{14}COOH$	Hexadecanoic acid		
	Octadecanoic acid	Stearic acid	

4 (a).Predict the type of alcohol formed when these carbonyl compounds are treated with Grignard reagent.

- Aldehyde ----------→
- Ketone ----------→

(b). Write short note on Michael nucleophlic addition to α,β-Unsaturated carbonyl compound. Take Benzalacetophenine and ethylmanoate as the Michael donor and acceptor.

5. (a). Write the equation for electrophilic substitution reactions of thiophene with:

H_2SO_4, CH_3COCl and HNO_3.

(b). Give five medicinal/ physiological uses of pyridine derivatives.

(c). List four industrial uses of Oxalic acid.

(d). Classify these amino acids into Neutral, Acidic and Basic amino acids.

- Aspatic and Glutamic acid.
- Glycine and Cystine
- Lysine and Arginine

6. (a). Discuss the Oxidation and Acylation reactions of glucose.

(b). Write on the classification of carbohydrate.