ELIZADE UNIVERSITY

ILARA-MOKIN

ONDO STATE

FACULTY: BASIC AND APPLIED SCIENCES

DEPARTMENT:PHYSICAL AND CHEMICAL SCIENCES

FIRST SEMESTER EXAMINATIONS

2016/2017 ACADEMIC SESSION

COURSE CODE: CHM 303

COURSE TITLE: Organic Chemistry II

DURATION: 2 hours

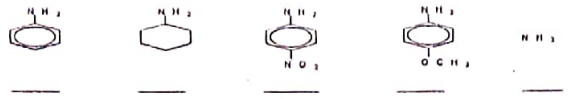
HOD's SIGNATURE

TOTAL MARKS: 60

INSTRUCTION: Answer only three questions

Question One.

a. Account for the reason why amines are similar to ammonia in their reactions **[2marks]**
b. Explain the following trends observed in the basicity of amines
   (i). Aliphatic amines have higher basicity than ammonia **[6marks]**
   (ii) Aromatic amines are less basic than aliphatic amines **[3marks]**
c. Arrange the following amines in decreasing order of base strength **[5marks]**



d. (i). With suitable illustrations differentiate between symmetrical and unsymmetrical ethers **[2marks]**
   (ii). What are epoxides?. Why are they more reactive than aliphatic ethers **[2marks]**

Question Two.

a. Differentiate between fats and oils. **[2marks]**
b. (i) Classify each of the following fatty acids either as a saturated or unsaturated fatty acids:
   Linoleic, Lauric, oleic, myristic, palmtic, linolenic, stearic **[2marks]**
   (ii). Which of the two in question 2b(i) will contain more unsaturated fatty acids? **[1 mark]**
c. Enumerate the various chemical analyses that can be used to indicate the types of fatty acid present in fat or oil samples. Give a concise definition of each of them. **[8marks]**
d. (i). Classify the following alcohols as primary, secondary or tertiary.
   - 2- propanol **[1mark]**
   - 4-methyl pentanol **[1mark]**
   - 2,3-dimethylbutan-2-ol. **[1mark]**

   (ii). Name a simple test to distinguish 1°, 2° and 3°. State the reagents and conditions required for the test and write down the expected observation. **[4marks]**

Question Three.

a. Identify the classes of alcohols in the following reactions and predict the product obtainable from each reaction.

i. $CH_3(CH_2)_4CH_2OH \xrightarrow{PCC} X$ [2marks]

ii. $CH_3(CH_2)_4\text{-}CH_2\text{-}OH \xrightarrow{KMnO_4/H^+} X$ [2marks]

iii. $CH_3\text{-}\underset{\displaystyle OH}{\underset{|}{C}}H\text{-}CH_2CH_3 \xrightarrow{KMnO_4/H^+} X$ [2marks]

iv. $CH_3\text{-}\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle OH}{\overset{|}{C}}}}\text{-}CH_2CH_3 \xrightarrow{KMnO_4/H^+} X$ [2marks]

v. $CH_3CH_2OH \xrightarrow{\text{Conc. } H_2SO_4}$ X [2marks]

b. (i). Distinguish between Haloform test and Iodoform test **[2marks]**

c. (i) Mention at least 2 salient areas where alcohols find application **[2marks]**

(ii). What are Halohydrins? **[2marks]**

d. Give the IUPAC and common names of the following Organic compounds **[4marks]**

(i). $CH_3CH_2CH_2CH{=}O$ (ii). $CH_3\underset{\displaystyle CH_3}{\underset{|}{C}}HCH{=}O$

Question Four

4a (i). Explain the effects of substituent on the base strength of aromatic amines. **[5 marks]**

b(i) What are heterocycles? **[1mark]**

(ii). State all the methods of classifying heterocyclic compounds **[3marks]**

(iii). Compare and contrast Aziridine and Azirine **[2marks]**

c. What are Polynuclear aromatic compounds? Mention any 5 organic compounds that are polycyclic aromatic. **[3marks]**

d. (Classify the following heterocycles as saturated and unsaturated and indicate the class of heterocyclic compounds each belongs : Diazetidine, Diazete, Piperidine , pyridine, Azocane, and Azocine **[6marks]**