



# Technical University of Mombasa

*Faculty of Applied and Health Sciences*

DEPARTMENT OF PURE AND APPLIED SCIENCES

DIPLOMA IN ANALYTICAL CHEMISTRY

(DAC 11M)

## **ACH 2307 : ORGANIC CHEMISTRY III**

**SEMESTER:** EXAMINATIONS

**SERIES:** DECEMBER 2013

**TIME:** 2 HOURS

### **INSTRUCTIONS:**

You should have the following for this paper

- *Answer booklet*

This paper consists of **FIVE** questions.

Answer Question **ONE (compulsory)** and any other **TWO** questions

*This paper consists of 3 PRINTED pages*

## Question ONE

a) Giving an example, explain the meaning of the following terms used in polymer industries.

- (i) Homopolymer
- (ii) Copolymer
- (iii) Addition polymer
- (iv) Condensation polymer
- (v) Monomer

**(10marks)**

b) State FIVE advantages of emulsion polymerization

**(10marks)**

c) With an example in each case explain the formation of the following isomers.

- (i) Optical
- (ii) Geometrical
- (iii) Functional group

**(10marks)**

## Question TWO

a) Using an example explain the meaning of the following terms

- (i) Tautomerism
- (ii) Chiral carbon

**(4marks)**

**(2marks)**

b) Sec butyl chloride has two stereoisomeric forms. Draw their mirror images (optical isomers) and show how they rotate plane polarized light. Also indicate which one is dextrorotary and levorotatory.

**(6marks)**

c) Give an example of a monomer with

- (i) Functionality of one
- (ii) Functionality of two
- (iii) Functionality of three

**(6marks)**

d) List the main reactants that are used in solution polymerization

**(2marks)**

### **Question THREE**

- a) State FIVE difference between thermoplastics and thermosetting plastics. **(10marks)**
- b) List seven draw backs of rubber. **(7marks)**
- c) State TWO disadvantage of solution polymerization process **(3marks)**

### **Question FOUR**

- a) On a polymer state verses temperature graph indicate different polymer states Tg and Tm points. **(5marks)**
- b) List and discuss any five factors that affects Tg. Value of a polymer **(15marks)**

### **Question FIVE**

- a) (i) Define a condensation polymer. **(2marks)**  
(ii) Naming the monomers, write condensation polymerization reaction for formation of nylon 66. **(6marks)**
- b) State SIX advantages of valcanised rubber. **(12marks)**