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

COURSE CODE: CHM408
COURSE TITLE: POLYMER CHEMISTRY
TIME ALLOWED: 2 hrs
INSTRUCTION: Answer any four questions

Question 1

a) Write short notes on the following:
i) Monomer ii) homopolymer iii) copolymer
(6marks)

b) State five major differences between addition polymers and condensation polymers
(7 $\frac{1}{2}$ marks)

c) What are geometric isomers? Give two examples.
(4 marks)

Question 2

a) Identify the components of four condensation polymers and their uses **(7 $\frac{1}{2}$ marks)**

b) Differentiate between tactic and atactic polymers.
(10 marks)

Question 3

a) Differentiate between the types of polymer solvents.
(6marks)

b) Discuss the solution process which occurs when a polymer is added to a solvent **(5marks)**

c) Explain how the following affects polymer solubility:
i) polarity ii) cross linking iii) molecular weight iv) branching
(6 $\frac{1}{2}$ marks)

Question 4

a) Discuss in detail the mechanical properties of polymers
(8 $\frac{1}{2}$ marks)

b) Enumerate five agents of degradation and likely susceptible polymers.
(5marks)

c) Define polymer degradation and enumerate types of polymer degradation**. (4marks)**

Question 5

a) Give a detailed explanation of copolymerization.
(4marks)

b) Mention the benefits of copolymerization
(4marks)

c) List and discuss the different types of copolymers
(9 $\frac{1}{2}$ marks)

Question 6

a) Define the term chromatography
(3marks)

b) Briefly write on the relevance of chromatography to the polymer industry **(4 $\frac{1}{2}$ marks)**

c) State any three physical properties of polymer that can be identified by the following techniques:
(10 marks)

i) infrared/FTIR
ii) thermomechanical analysis
ii) differential thermal analysis
iv) X-ray