NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
MARCH/APRIL 2015 EXAMINATION

COURSE CODE: CHM 408
COURSE TITLE: POLYMER CHEMISTRY
INSTRUCTION: Answer question 1 and any other three (3) questions Time: 2hours

Question 1

a) Write short notes on each the followings:

i) Monomer ii) homopolymer iii) copolymer ($4\frac{1}{2}$ marks)

b) Describe five major differences between addition polymers and condensation polymers (10 marks)

c) What are geometric isomers? Give two examples to illustrate. (3 marks)

Question 2

a (i) Enumerate five agents of polymer degradation

(ii) For each agent mentioned in a (i) above, give two (2) examples of susceptible polymers. ($7\frac{1}{2}$ marks)

b) List and explain the four chemical structures that affect the dissolution of polymers. (10marks)

Question 3

a) Analyze critically the types of polymer solvents ($7\frac{1}{2}$ marks)

b) Describe the solution process which occurs when a polymer is added to a solvent. (6 marks)

c) Distinguish between tactic and atactic polymers (4 marks)

Question 4

a) Discuss any six properties of thermoplastics which distinguish them from thermosetting polymers ($7\frac{1}{2}$ marks)

b) With the aid of example (and equations) describe the mechanism of condensation polymerization. (10 marks).

Question 5

5a) What do you understand by the term “copolymerization.”?(3 marks)

5b) Mention the benefits of copolymerization with at least two examples of copolymers and the extent of improvement achieved ($8\frac{1}{2}$ marks)

5c) Describe briefly the different types of copolymers (6 marks)

Question 6

a) Explain briefly the term “chromatography “ ($3\frac{1}{2}$ marks)

b) Outline 6 importance of chromatography to the polymer industry (6 marks)

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

i) infrared/FTIR

ii) thermomechanical analysis

iii) differential thermal analysis

iv) X-ray

(8 marks)