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

COURSE CODE: CHM 408

COURSE TITLE: POLYMER CHEMISTRY

Answer question 1 and any other three questions

Question 1

a) i) Define good solvent and poor solvent. (2 marks)

ii) Mention at least five polymers and their dissolution solvents. (5 marks)

b) Describe the relevance of chromatography in the polymer industry (6 marks)

c) Identifythree physical properties of polymer which can be discovered by the following techniques:

i) infrared/FTIR ii) thermomechanical analysis iii X-ray (4 $\frac{1}{2}$ marks)

Question 2

a) Discuss in detail each of the following isomerism:

i) Orientational isomerism. (3 $\frac{1}{2}$ marks)

ii) Geometricalisomerism. (3 $\frac{1}{2}$ marks)

iii) Structural isomerism. (3 $\frac{1}{2}$ marks)

b) Differentiate between tactic and atactic polymers. (7 marks)

Question 3

a) Discuss six properties of thermoplastics which distinguish it from thermosetting polymers (7 marks)

b) With relevant equations describe the mechanism of condensation polymerization**.** (10 ½ marks)

Question 4

a) Discuss the significance of these steps in addition polymerization (8 $\frac{1}{2}$ marks)

(i) initiation

(ii) propagation

b) Discuss the properties of polyurethane (9marks)

Question 5

a) Discuss in detail the mechanical properties of polymers. (5 marks)

b) Enumerate five agents of degradation and two likely susceptible polymers. (7 $\frac{1}{2}$ marks)

c) Elucidate with illustrations polymer degradation and enumerate the types of polymer degradation.
(5 marks)

Question 6

List and elucidate any five simple identification tests for polymer. (17 $\frac{1}{2}$ marks)