

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**JUNE/JULY EXAMINATION**

**COURSE CODE: CHM302**

**COURSE TITLE: Polymer Chemistry I**

**TIME ALLOWED:2 hours**

**INSTRUCTION: Answer only four questions**

**Question 1**

a) Differentiate between natural rubber and synthetic rubber.(5marks)

b) Enumerate five physical groups of polymers, with two examples each.(5marks)

c) Differentiate between the four copolymers(7marks)

**Question 2**

a) What are basic chemicals? (2****marks)

b) In what way is additional chain-growth polymerization different from condensation step-growth polymerization?(9marks)

c) List three factors each that could cause the termination of chain growth in;

i) cationic addition chain reaction(3marks)

ii) anionic addition (3marks)

**Question 3**

a) List and highlight factors that affect solubility of a solute in a solvent (10 marks)

b) Differentiate between solubility and solvolysis(7marks)

**Question 4**

a) Define Ziegler-Natta catalyst(2marks)

b) Differentiate between thermosets and thermoplastics(8 marks)

c) List and explain five properties of polymer (7marks)

**Question 5**

a) Discuss tacticity in polymer(7marks)

b) Highlight the main differences between elastomers and fibers(10marks)

**Question 6**

a) List two factors that determines the rate of solubilization of a solute (5marks)

b) Discuss the influence of named intermolecular forces on fibers (5marks)

c) Describe crosslinking. What are the differences between the bonds formed in crosslinking and those formed in polymer synthesis?(7marks)