



National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Sciences
Department of Pure & Applied Sciences
January/February, 2018 Examination Questions

CHM408: Polymer Chemistry

CREDIT UNIT: 2 Units

TIME: 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE & ANY OTHER THREE QUESTIONS.

QUESTION ONE

- What is polymerization reaction? (5 marks)
- Enumerate any five properties each of addition polymerization and condensation polymerization. (10 marks)
- Highlight the properties of: i) thermoplastic and ii) thermosetting in terms of heat. (5 marks)
- Enumerate any five (5) factors which affect the mechanical properties of a polymer. (5 marks)

QUESTION TWO

- Distinguish between thermoplastics and thermosetting polymers. (10 marks)
- Mention at least ten applications each of thermoplastic and thermosetting polymers. (5 marks)

QUESTION THREE

- What is polymer degradation? (2 marks)
- Write short note on the following: oxidative degradation, thermal degradation, photolytic degradation, and hydrolytic degradation. (8 mark; 2 marks each)
- Give one polymer in each case that is degradable by each of the following degradation agents:
i) ozone, ii) bioorganism, iii) oxygen, iv) water v) sunlight (5 marks)

QUESTION FOUR

- Explain briefly the two stages of solution process of polymers (5 marks)
- Discuss the effect of chemical structure on solubility of polymers. (10 marks)

QUESTION FIVE

- Describe any five simple identification tests for polymer. (**10 marks**)
- Write short notes on the following basic thermodynamic parameters: Enthalpy, Entropy and Gibbs' free energy. **3 marks**
- Give a formula that connects these parameters together (in 5b above). (**2 mark**)

