

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESS WAY, JABI - ABUJA.**

**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE AND APPLIED SCIENCE**

**NOVEMBER 2018, SECOND SEMESTER EXAMINATION**

**COURSE CODE: CHM 302**

**COURSE TITLE: POLYMER CHEMISTRY 1**

**COURSE UNIT: 2**

**TIME: 2HOURS**

**INSTRUCTION: Question one is compulsory. Answer question one and any other three questions.**

**QUESTION ONE**

1a. Write short note on classification of polymers. (11 marks)

1b) State the main source of raw materials for the production of polymers. (2 marks)

1c. Enumerate the factors that determine the rate of dissolution of polymers. (2 marks**)**

1d. Explain the effect of chain length on the physical properties of polymers**.**

(10 marks)

**QUESTION TWO**

2ai.What is vulcanization? (11/2 marks)

2aii. Explain how vulcanization affect the nature and reactivity of natural rubber. (9 marks**)**

2b. Distinguish between the following terms;

1. Polymer **(**11/2 marks)
2. Monomer (11/2 marks)
3. Polymerization (11/2 marks)

**QUESTION THREE**

3a. Discuss briefly cross linking. (4marks)

3b. Give three (3) differences between Thermosets and Thermoplastics. (6 marks)

3c. Write the reaction showing the formation of Polyethylene. (5 marks)

**QUESTION FOUR**

4a. Write short note on the following;

1. Addition polymerization

ii. Condensation polymerization (12marks)

4b. Give three examples of natural and synthetic polymers. (3 marks)

**QUESTION FIVE**

5a) Mention and describe the configuration of polymers. (8½ marks**)**

5b) Explain briefly the effect of polymer configurations on the physical properties of polymers.

(6½ marks)