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
SECOND SEMESTER EXAMINATION 2021_2

COURSE CODE: **CHM302**
COURSE TITLE: **POLYMER CHEMISTRY 1**
TIME: **2 HOURS**
INSTRUCTION: **Answer question one and any other three questions.**

QUESTION ONE

1a. In what way is monomer different from polymer and polymerization? 6 marks

1b. Name and explain the basic structural properties of polymer?
8 marks

1c. Discuss the importance of branched polymer molecule?
5marks

1d. Explain how strong carbon-carbon bonds in chain-growth polymers can be biodegraded?
6 marks

QUESTION TWO

2a. Differentiate between High-density polyethylene [HDPE] and Low-density polyethylene [LDPE]
8 marks

2b. Discuss the importance of Ziegler-Natta catalysts as an initiator in polymer chemistry?
5marks

2c. State the factors that determine the solubility of a polymer. 2 marks

QUESTION THREE

3a. Discuss the types of bonding that occur in polymers. 10 marks

3b. Explain the reason why hydrolysable stitches is used for biomedical applications. 3 marks

3c. Define the term crystallite.

2 marks

QUESTION FOUR

4a. Differentiate between solubility and solvolysis. 4 marks

4b. State the uses of two products of condensation polymerization. 4 marks

4c. Discuss the term degradation of polymer? 7 marks

QUESTION FIVE

5a. Polymers are designed synthetically to meet specific needs and desired impressions, state what should be taken into cognizance in the production of the appropriate polymer.

6 marks

5b. State why some polymers can be melted and reshaped. 3 marks

5c. Describe the production of polyethylene by the process of high degree technique. 6 marks