



NATIONAL OPEN UNIVERSITY OF NIGERIA  
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE  
EXPRESS WAY,  
JABI - ABUJA.  
FACULTY OF SCIENCES  
DEPARTMENT OF CHEMISTRY  
2024 1 EXAMINATION-

COURSE CODE: CHM 408  
COURSE TITLE: POLYMER CHEMISTRY  
COURSE UNIT: 2  
TIME: 2 HOURS  
INSTRUCTION: Answer question one and any other two questions.  
Question 1 score 30 marks with the other two scoring 20 marks each

**Question 1**

a. Fill in the blank spaces (8 marks)

Name(s)	Formula	Monomer	2 Properties	2 Uses
Polyethylene Low density (LDPE)				
Polyethylene High density (HDPE)				
Polypropylene (PP) different grades				

- b. State how polyurethane is synthesized (7 mark)  
c. With the aid of structural representation compare and contrast between polyvinyl alcohol, polyethylene oxide and polyacetaldehyde? (7 mark).  
e. With the aid of a diagram and using polyvinylchloride polymerization illustrate orientational isomerism and its formation? (8 mark)

**Question 2**

- a. Discuss the following simple tests used to identify polymers? (5 mark)  
i. Direct Observation (2.5 mark)  
ii. Immersion in Water (2.5 mark)
- b. Describe the effect of stretching on the entropy of rubber. (5 mark)  
c. In a tabular form, show any two thermosetting polymers giving their properties and two industrial Relevance? (6 mark)  
d. Briefly discuss- elastomeric material. (4 mark)

**Question 3**

- a. Discuss Differential scanning calorimetry or Differential thermal analysis (6 marks)
- b. With the aid of a diagram, discuss the types copolymerization  
Block copolymers (4 mark)