



**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 SCIENCES

FEBRUARY/MARCH 2018 EXAMINATION

COURSE CODE: CHM 302

COURSE TITLE: POLYMER CHEMISTRY 1

TIME: 2 HOURS

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

QUESTION ONE

1ai) Polymers are macromolecules while all macromolecules are not polymers. Explain.

3 marks

1aii) Enumerate the classes of polymers. 11 marks

1b) Expatriate on condensation polymerization. 5 marks

1c) Account for the principle of liquid crystal nature of polymers. 3 marks

1d) Explain briefly crystallinity in polymers. 3 marks

QUESTION TWO

2a) Write short note on addition polymerization including the mechanism of its formation.

15 marks

QUESTION THREE

3a). How do the arrangements of molecules within a polymer and link between molecular chains in a polymer determine the properties, shapes and uses of the following:

- i. Thermosets
- ii. Thermoplastics

12 marks

3b) Will cross-links be possible in polyalkanes ? Give reason for your answer.

3 marks

QUESTION FOUR

Enumerate on the effect of chain length on the physical properties of polymers.

9 marks

Highlight the main differences between elastomers and fibers. 6 marks

QUESTION FIVE

5a) Write short notes on the following types of linkages in polymers;

- i. Linear alternating copolymers
- ii Random or statistical copolymers
- iii Block copolymers

11 marks

5b) Complete the following polymerization reactions;

