



**FEDERAL UNIVERSITY OF TECHNOLOGY,
MINNA
DEPARTMENT OF CHEMISTRY
SECOND SEMESTER EXAMINATION 2021/2022
SESSION**

COURSE CODE: CHM562

UNITS: 3

**COURSE TITLE: END-USED PROPERTIES AND THE
APPLICATION OF SOME COMMERCIAL POLYMERS**

TIME ALLOWED: 2 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS.

- (a) Explain the term 'Polymer morphology'

(b) List four structural features in polymers and discuss any two of them.

(c) Outline the relationship between the polymer structure and its properties.
- (a) With the aid of a suitable sketch, explain how the mechanical characteristics of polymer depend on the temperature.

(b) State Hook's Law and discuss the behavior of a brittle polymer material undergoing stress versus strain deformation.

(b) Why is Amoton's Law not obeyed by engineering plastics undergoing friction and wear application?
- (a) Enumerate the advantages of using polymer as insulating material in electrical and electronic engineering applications.

(b) Explain the term Volume resistivity of polymer under an electronic field.

(c) Write short Notes on any two of the following Optical properties of Polymers.

I. Transmission of light

II. Refraction of light

III. Gloss

4. (a) List and explain the application of Polymer based on their interaction with chemicals/solvents.
(b) What are the factors that determine the polymer solubility?
(c) In a tabular form clearly classify the various chemical processes of polymer materials.

5. (a) Briefly explain the effects of chemical structure and temperature on thermal stability of polymers.
(b) Define heat of combustion and discuss how critical it is in accessing fire hazard of polymers.
(c) Outline the various stages involve in polymer flame radical reaction and state the effects of the byproducts.