



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DTP 2034
COURSE	: PLASTIC PROPERTIES & TESTING
SEMESTER/SESSION	: 2-2024/25
DURATION	: 3 HOURS

Instructions:

1. This booklet contains **3** questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**

**THIS BOOKLET CONTAINS 3 PRINTED PAGES INCLUDING COVER PAGE**

**QUESTION 1 (40 MARKS)**

Light transmission is when light travels through a transparent or translucent material.

- a) Define these terms: (8 marks)
- i. Transparent
  - ii. Opaque
  - iii. Translucent
  - iv. Colorant
- b) One of the optical properties is the surface reflectance. (8 marks)
- i. Present the phenomenon of surface reflectance. (8 marks)
  - ii. Illustrate how the phenomenon happens. (5 marks)
- c) Polyvinyl chloride (PVC) is widely used in daily life. (2 marks)
- i. Sketch the polyvinyl chloride (PVC) structure. (2 marks)
  - ii. List three (3) benefits of PVC. (3 marks)
  - iii. Write four (4) applications of PVC. (4 marks)
- d) Show three (3) differences between *dielectric constant* and *dielectric strength*. (10 marks)

**QUESTION 2 (20 MARKS)**

Surrounding factors affect the polymer resistance.

- a) i. Discuss how the oxidation occurs. (5 marks)
- ii. Explain two (2) methods for decreasing the oxidation process. (4 marks)
- b) i. Present how to conduct an immersion test. (8 marks)
- ii. Write three (3) factors affecting water absorption. (3 marks)

**QUESTION 3 (40 MARKS)**

Different properties enable the varied uses of polymers.

- a)           i. Describe the electrical properties of *metal* and *plastic*. (6 marks)
- ii. Discuss the terms of *conductor* and *insulator*. Give two (2) examples of each term. (8 marks)
- b)           UV resistance is important in decreasing polymer degradation.
- i. Discover two (2) ways the UV light degrades the polymer. (6 marks)
- ii. UV stabilizers may decrease the effect of UV light. Explain the function of the material. (4 marks)
- iii. Give an example of the UV stabilizer and its advantages. (3 marks)
- iv. Show an experiment to show the UV analysis in the laboratory. (10 marks)
- v. Besides UV rays, list three (3) other factors that are risky to plastics. (3 marks)

-----End of question-----

