

**UNIVERSITY COLLEGE TATI (UCTATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE	: DTP 2044
COURSE	: PLASTICS PROCESSING
SEMESTER/SESSION	: 1-2024/2025
DURATION	: 3 HOURS

Instructions:

1. This booklet contains **5** 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 up your hands and ask the invigilator.

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

THIS BOOKLET CONTAINS 4 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) Identify **one (1)** way to overcome bridging in the extrusion process. (2 marks)
- b) Explain the functions of each zones of an extruder screw. (9 marks)
- c) What is the L/D ratio for an extruder? Predict the effect of an extruder with a high L/D ratio. (4 marks)
- d) Compare the extrusion and injection molding process. (6 marks)
- e) Describe why it is important to dry polymer pellets before being used in any plastics processing. (4 marks)

QUESTION 2

- a) Illustrate the process of co-rotating and counter-rotating twin screw extruders. You may include a drawing to assist your explanation. (9 marks)
- b) Demonstrate the steps in the injection molding cycle. In your answer, include the movement of the screw and the mould. (10 marks)
- c) Analyze the function of the following components of an extruder: (6 marks)
 - i. Vent port
 - ii. Breaker plate
 - iii. Screen pack

QUESTION 3

- a) Blow molding is a process to produce hollow articles like bottles, barrels and toys. Illustrate the general steps in blow molding. (9 marks)
- b) An important parameter for blow molding is the blow ratio. Determine what the blow ratio is and its effect on the blow molding process. (4 marks)
- c) The most utilized processes in blow molding are injection blow molding and extrusion blow mounding. Differentiate the processes. (4 marks)

QUESTION 4

- a) Blown film is a process that is used to make thin-film bags, such as garbage bags and other high-volume, thin-walled film materials. Sketch the blown film processing line and label it accordingly. (9 marks)
- b) Determine the functions of the following: (4 marks)
 - i. collapsing guides
 - ii. freeze line
- c) Identify the defects that can occur on blown film products and their possible remedy. (4 marks)

QUESTION 5

- a) Discover the materials used as mould for casting process. (4 marks)
- b) There are few types of casting process. Explain **two (2)** of them briefly. (4 marks)
- c) Produce **two (2)** safety precautions when dealing with compression molding. (4 marks)
- d) Differentiate between compression and transfer molding process. (4 marks)

-----End of questions-----