



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DTP 3073
COURSE	: PLASTIC FABRICATION AND FINISHING
SEMESTER/SESSION	: 2-2022/23
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 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 (20 MARKS)

- a) In-mold decorating is a process for labeling or decorating a plastic object during plastic injection molding process. (5 marks)
- i. Discover how the process has been done. (5 marks)
 - ii. State three (3) advantages of this type of decoration. (3 marks)
- b) Hot stamping is a clean, simple and economical method for decorating thermoplastic products. Mention three (3) types of hot stamping and distinguish between three of them. (12 marks)

QUESTION 2 (25 MARKS)

- a) Find three (3) differences between machining plastics and metals (6 marks)
- b) Sawing must be done using correct blade to get the good cutting for plastics. Present two (2) types of blade and briefly explain for each. (10 marks)
- c) Routing is a type of milling operation commonly used to machine flat plastic sheet stock. (3 marks)
- i. Name three (3) common types of router (3 marks)
 - ii. Label the below figure from (a) to (f). (6 marks)

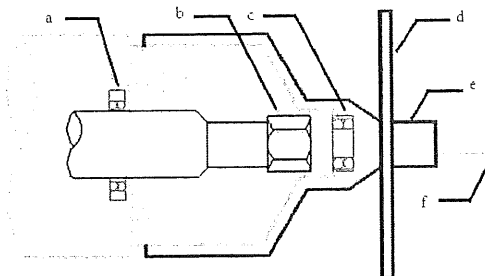


Figure 1: Router diagram

PLASTIC FABRICATION AND FINISHING (DTP 3073)

QUESTION 3 (20 MARKS)

- a) Waterjet cutting is the world's most versatile machine tools
- State two (2) types of waterjet cutting and give two examples of materials can be cut for each (6 marks)
 - List two (2) advantages of this technique. (4 marks)
- b) CO₂ laser is used to deliver powerful radiation in laser cutting.
- State four (4) parameters that determine the cutting dynamic. (4 marks)
 - Predict three (3) factors why laser cutting could be one of the choice in industries. (6 marks)

Question 4 and Question 5 are based on Figure 2.

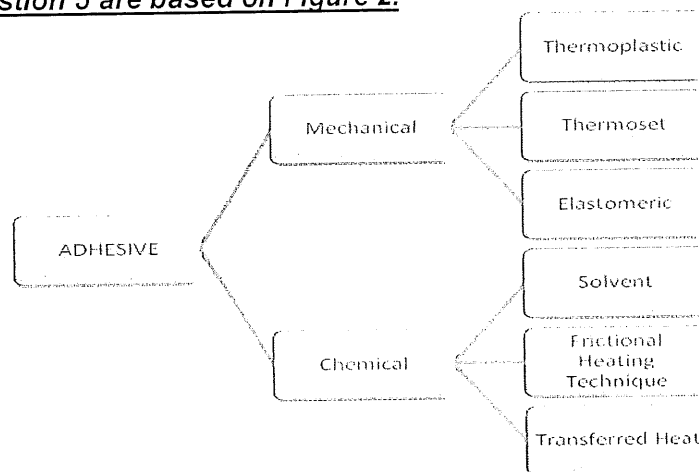


Figure 2: Type of adhesives

QUESTION 4 (20 MARKS)

- a) Hot-melt is a type of thermoplastic adhesive that easy to use, flexible and also obtained highest adhesive qualities when cooled.
- i. Prepare steps of hot-melt adhesive technique. (4 marks)
 - ii. Outline two (2) types of polymer used in this adhesive. (2 marks)
- b) Thermoset resins adhesives are widely used in wood and clay industries
- i. Discover how these resins could act as adhesives. (3 marks)
 - ii. One of the thermosetting resins is phenolic-based resin and available in four types in market; phenol formaldehyde, resorcinol-formaldehyde, resin-bonded grinding wheels and sandpapers. (8 marks)
- Both of phenol formaldehyde and resorcinol-formaldehyde are used in wood industry. Distinguish them in terms of types of adhesives and the way of adhesives acting.
- iii. Present how the resin-bonded grinding wheels adhesives are made. (3 marks)

QUESTION 5 (15 MARKS)

- a) The major chemical adhesions that used frictional heating technique are spin welding, dielectric bonding and ultrasonic bonding. Present the difference three of them by explaining about the technique of adhesion. (9 marks)
- b) Laser welding is one of the new techniques of adhesion.
- i. Discover the criteria that referring to laser welding technique. (4 marks)
 - ii. Write two (2) advantages of laser welding. (2 marks)

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