



## UNIVERSITY COLLEGE TATI (UC TATI)

## FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DTM 1012
COURSE	: MANUFACTURING TECHNOLOGY
SEMESTER/SESSION	: 1 - 2023/2024
DURATION	: 2.5 HOURS

Instructions:

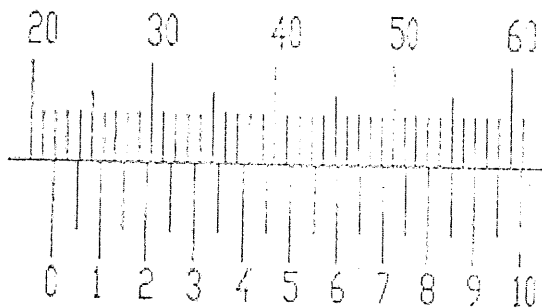
1. This booklet contains **five (5)** questions. Answer **all** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hand and ask the invigilator.

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

**THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE**

**QUESTION 1**

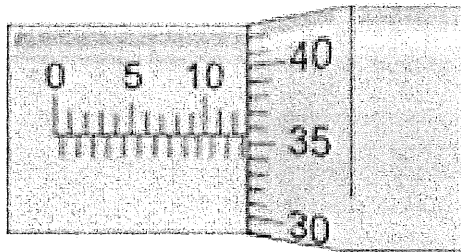
- a) The 5S method applies standard house-keeping practices in the workplace through the 5 principles of Japanese words. **Identify** three (3) of those words. (3 marks)
- b) Casting and machining are parts of processing methods for a variety of materials. **Discuss** the differences between these two methods. (4 marks)
- c) Plug limit gauge has a "GO" and "NO GO" ends. **Explain** what does it means by "GO" and "NO GO". (4 marks)
- d) **Solve** the measurement below (unit in mm):
- i) Vernier Caliper (5 marks)



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ii) Micrometer

(5 marks)



### QUESTION 2

Joining processes are widely used to assemble various parts of an automobile. Welding, brazing, soldering, adhesive bonding and mechanical fastening are the terms normally used with joining processes.

- a) **Define** the term of mechanical fasteners. (3 marks)
- b) **Describe** three (3) distinct zones that can be found in a typical fusion weld joint. (6 marks)
- c) **Classify** three (3) advantages of bolts. (6 marks)
- d) **Sketch** figure of punching and blanking. (6 marks)

### QUESTION 3

The production of stainless steel products from beginning involves quite a few important steps. Among the most important steps are melting and casting, forming, heat treatment, descaling, cutting and finishing. Semi-finished steel shapes undergo a series of forming operations such as hot working or cold working process before being converted into bars, plates or wire.

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- a) **Define** the term of elastic deformation and recrystallization. (4 marks)
- b) **Describe** five (5) process flow of modern beverage can production. (5 marks)
- c) **Classify** between hot rolling and cold rolling process. (6 marks)
- d) **Present** three (3) types of drill press. (6 marks)

**QUESTION 4**

A lathe is a tool that rotates the work piece on an axis of rotation to perform various operations such as cutting, drilling, turning, facing, knurling and sanding.

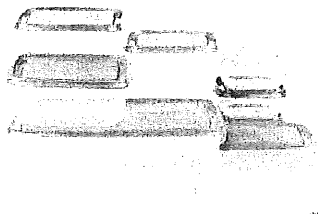
- a) **Describe** the definition of turning operation. (3 marks)
- b) **Give** four (4) examples of lathe operations. (4 marks)
- c) **Solve** the calculation of RPM (rev/min) by which a work piece is to be machined on a lathe machine. Given the diameter of a mild steel work piece is 50mm and cutting speed is 28m/min. (6 marks)
- d) **Classify** three (3) purpose of cutting fluids. (6 marks)

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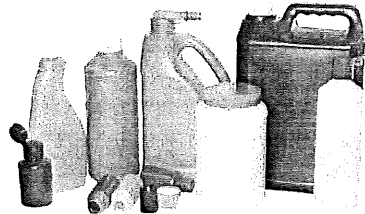
**QUESTION 5**

Plastic in general can be moulded, cast, formed and machined into complex shapes in few operations.

a) **State** the process to produce products in **Figure i, ii, iii** below: (3 marks)



**Figure i**



**Figure ii**



**Figure iii**

- b) **Illustrate** the process of injection moulding. (5 marks)
- c) **Differentiate** between thermoset and thermoplastic. (6 marks)
- d) **Categorize** and **sketch** two (2) basic shapes of chips. (4 marks)

-----End of Questions-----

**RUBRIC**

Criteria	Marks
All questions answered will be marked according to the answer scheme	/100

