



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DTM 1012
COURSE	: MANUFACTURING TECHNOLOGY
SEMESTER/SESSION	: 2 - 2022/2023
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

MANUFACTURING TECHNOLOGY (DTM 1012)

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)

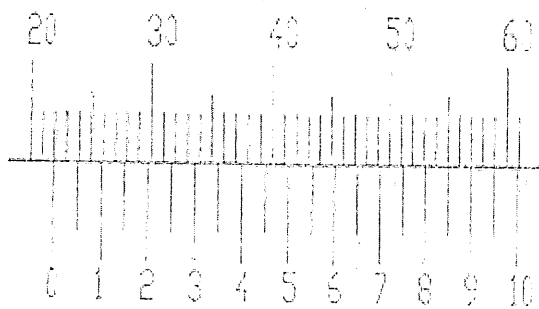
c) Plug limit gauge has a "GO" and "NO GO" ends. **Explain** what does it means by "GO" and "NO GO".

(4 marks)

d) **Solve** the measurement below (unit in mm):

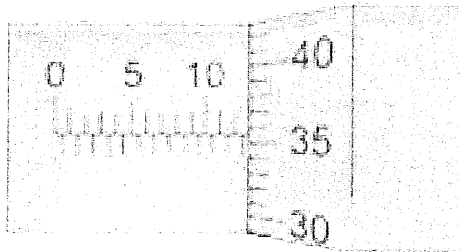
i) Vernier Caliper

(5 marks)



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.

- 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

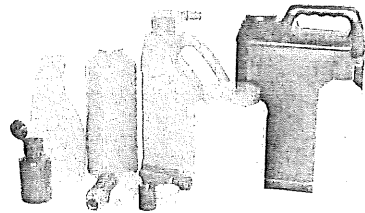


Figure ii



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-----

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

