

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

COURSE CODE	: DMT 3042
COURSE	: INDUSTRIAL ROBOTICS
SEMESTER/SESSION	: 1-2022/2023
DURATION	: 3 HOURS

Instructions:

1. Answer all 4 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 5 PRINTED PAGES INCLUDING COVER PAGE**

INDUSTRIAL ROBOTICS (DMT 3042)

QUESTION 1

- a) List four (4) classifications of industrial robots (4 marks)
- b) Define the meaning of playback robot (2 marks)
- c) Explain point-to-point robot in terms of movement, control path and location memory (6 marks)
- d) Explain two (2) advantages and two (2) disadvantages of coordinate system robot (8 marks)

QUESTION 2

- a) List seven (7) robot components (7 marks)
- b) List three (3) common robot drive units (3 marks)
- c) Position controller is one of the subsystems in robot controller.
 - i. Explain the function of position controller in robot controller subsystem (2 marks)
 - ii. Explain how the fault can be detected by the position controller. (6 marks)
 - iii. Explain the action taken if there is fault detected (2 marks)
- d) State three (3) things that can be displayed on manual control device (6 marks)
- e) Explain two (2) functions of input and output in robot controller subsystem (4 marks)

QUESTION 3

- a) Define power leadthrough mode in online programming (6 marks)
- b) There are two (2) methods in offline programming
- i. List all the methods (2 marks)
 - ii. Explain off-line programming (12 marks)
- c) *“A person doing the teaching has physical contact with the robot arm and actually gains control and walks the robot’s arm through the desired positions within the working envelope.”*
By referring to the above statement, state the method of robot programming used.
(2 marks)
- d) Define Manual Leadthrough programming (8 marks)

QUESTION 4

- a) List six (6) CIM concepts in CIM Wheel (6 marks)
- b) Explain any four (4) CIM capabilities (8 marks)
- c) List four (4) components in Flexible Manufacturing System (FMS) (4 marks)
- d) Define Flexible Manufacturing System (FMS) (2 marks)

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

