

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE(MINOR)- SEMESTER-I&II EXAMINATION – SUMMER 2025

Subject Code:N114AO01

Date:03-06-2025

Subject Name:Introduction to Robotics

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Explain flexible automation.	03
(b) With diagram explain the anatomy of the robot and various components of any robot system.	04
(c) Classify Robotic systems on the basis of various parameters.	07
Q.2 (a) Define Degree of Freedom in Robotics.	03
(b) Write Differentiate between stepper and Servo motors.	04
(c) Write Classification and applications of sensors used in Robotics	07
OR	
(c) Write different types of Grippers and Explain any one type of Gripper in detail.	07
Q.3 (a) Explain reason to use transmissions in a robot manipulator.	03
(b) Explain terminologies: Dexterity, Accuracy, Repeatability, Work Volume.	04
(c) Write controller used in robotics and explain pneumatic controller.	07
OR	
Q.3 (a) State the physical characteristics in sensor selection.	03
(b) Explain articulated arm in robot.	04
(c) Explain the use of Actuators and its selection while designing a robot system.	07
Q.4 (a) Write three advantages and disadvantages of Robots.	03
(b) Explain different commands of Textual robot language with suitable example.	04
(c) Explain “Remote Centered Compliance (RCC) device for assembly operation.	07
OR	
Q.4 (a) List types of offline programming.	03
(b) Explain Structure of Robot language.	04
(c) Explain “Python” programming language in robotics.	07
Q.5 (a) Explain Robot end effectors and write any two limitations of Magnetic Grippers.	03
(b) Explain Socio-Economic aspect of robotization.	04
(c) Explain need and use of different AI techniques in robotics.	07
OR	
Q.5 (a) Write different Industrial applications of robot	03
(b) Explain different safety aspects for Robot.	04
(c) Explain in details new trends & recent updates in robotics in India.	07
