

Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech Mid Semester Exam

Semester: IV

Subject Code: (303122251)

Subject Name: (Fundamental of Robotics and Robot Kinematics)

Date: (29/01/2024)

Time: (1hr: 30min)

Total Marks: 40

Sr. No.		Marks
Q.1	(A) Five One-line Questions (1) Define resolution in the context of robotic systems. (2) Name the key components of a robotic system. (3) What are D.C. servo motors used for in robotics? (4) What role do positional and velocity sensors play in robotics? (5) Explain the significance of image processing in robotics.	05
	(B) Five Fill in the blanks (1) The primary function of actuators is to convert _____ signals into mechanical motion (2) A robot's ability to repeatedly return to a specific position is referred to as _____. (3) Robot vision systems use cameras and sensors to capture and process _____ information. (4) _____ sensors are designed to measure the force and torque applied to a robotic system. (5) _____ and _____ are crucial components for feedback control in robotic systems.	05
Q.2	Attempt any four (Short Questions) (1) Classify robots on the basis of their physical configuration. (2) Explain the following terms. (i) Control Resolution, (ii) Accuracy, (iii) Repeatability. (3) Explain the types of motion system in robot. (4) Write any five differences between AC servomotor and DC servomotor. (5) Explain the types of robot motion control system.	12
Q.3	Attempt any two questions (1) Write at least five differences between hydraulic, pneumatic and electric actuating systems. (2) What is Encoder? Explain construction and working of rotary optical encoder. (3) What is the use of hydraulic motors? Explain any two types of hydraulic motors with neat figure.	08
Q.4	(A) What are Sensors? Explain their use in robotic application with their classification. (B) Explain the function of Image Processing & Analysis in detail.	05 05
	OR	
	(B) Explain principle, construction and working of a stepper motor with neat figure.	05