

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3151110****Date:07/09/2021****Subject Name:Robotics & Automation****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) What is Robotics? Explain it in detail.	03
	(b) Write Asimov's Law of Robotics.	04
	(c) Explain Dynamic stabilization of robots in detail.	07
Q.2	(a) Give classification of Robot Language.	03
	(b) Explain different types of robots.	04
	(c) State the characteristics of work which promote application of robots. Discuss robot application for assembly and inspection.	07
OR		
	(c) Explain any one manufacturing process which used Robotics.	07
Q.3	(a) List different features of Arduino controller.	03
	(b) Give difference between Microcontroller & Microprocessor.	04
	(c) Explain different generations of Robotics.	07
OR		
Q.3	(a) What are different types of material handling operations.	03
	(b) List and Explain different types of actuators.	04
	(c) Explain DC motor interfacing with arduino by its program and interfacing diagram.	07
Q.4	(a) List out basic modes of operation in Robot language structure.	03
	(b) List and Explain different types of sensor.	04
	(c) Explain DHT11 sensor interfacing with arduino by its program and interfacing diagram.	07
OR		
Q.4	(a) List different features of Raspberry Pi.	03
	(b) Write Short note:- Robot operating System(ROS).	04
	(c) Explain IR sensor interfacing with arduino by its program and interfacing diagram.	07
Q.5	(a) Differentiate Palletizing and De palletizing.	03
	(b) Explain solution of simple inverse kinematic algorithm.	04
	(c) Explain any one algorithm associated with Path planning of Robots.	07
OR		
Q.5	(a) Give classification of proximity sensor.	03
	(b) Discuss different inputs to an inverse Kinematics algorithm.	04
	(c) Explain different selection criteria for robots.	07
