

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023****Subject Code:3151109****Date:05-12-2023****Subject Name:Industrial 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.
Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) What is automation & list its advantage & disadvantage.	03
	(b) Explain basic construction and configuration of pick and place robot.	04
	(c) What do you mean by SCADA system? Explain basic SCADA architecture and typical features.	07
Q.2	(a) What is a PLC? Draw block diagram of PLC. Explain each block in detail.	03
	(b) What is robot? & Explain Basic construction and configuration of robot?	04
	(c) List the different types of speed-measuring devices. Explain, with neat sketches, the construction and working of any two of them.	07
	OR	
	(c) How flow sensor works? Explain in detail.	07
Q.3	(a) How pH measurement is done? Explain it in brief.	03
	(b) Explain with the help of circuit diagram and waveform how TRIAC works.	04
	(c) What do you mean by actuators? Explain stepping motor with neat diagram.	07
	OR	
Q.3	(a) What is PLC? & List the selection criteria for PLC.	03
	(b) List down features of DCS.	04
	(c) Write short note on AC & DC drive.	07
Q.4	(a) With a neat sketch, explain the construction and working of a distributed control system used in process industries.	03
	(b) List & draw symbol of the power electronics component. Differentiate Power MOSFET & IGBT.	04
	(c) Explain the basic principles of servo systems. Enlist types of DC servo motors with neat diagram.	07
	OR	
Q.4	(a) Explain any one displacement transducer with neat diagram.	03
	(b) List the PLC Programming Languages & Draw four symbols of ladder Diagram.	04
	(c) What is sensor & Actuator? List various types of sensor & Explain construction and operation of Resistance thermometer.	07
Q.5	(a) What do you mean by welding robot & Pick & place robot?	03
	(b) Explain in brief (i) PROFI-BUS (ii) MODBUS	04
	(c) Explain DIAC in detail.	07
	OR	
Q.5	(a) What is IOT? List advantage of IOT in industry.	03
	(b) Explain Industry 4.0 in detail.	04
	(c) How Humidity measurement is done? Explain it in brief.	07
