

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170925****Date:13/12/2021****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define Automation and its role in process automation.	03
	(b) Describe the different components and applications of PLC.	04
	(c) Draw and explain the generalized block diagram of Industrial Instrumentation system.	07
Q.2	(a) List out the various sensors used for pressure measurement.	03
	(b) Explain the role of Power MOSFET and IGBT in Automation system.	04
	(c) Identify the different types of transducers used for temperature measurement. Distinguish between their suitability for different temperature ranges.	07
OR		
	(c) Discuss the construction, working principle and application of LVDT.	07
Q.3	(a) Discuss the difference between fixed and modular PLCs.	03
	(b) Give brief overview idea about PLC Communication and networking in Industrial Automation.	04
	(c) Explain the function of Actuators in process industries with suitable example.	07
OR		
Q.3	(a) List out the difference between analog and discrete I/O in PLC based system.	03
	(b) Compare between Modbus and Profibus.	04
	(c) Draw and explain the PLC ladder diagram for Star delta Starter.	07
Q.4	(a) List out about various programming languages used in PLC.	03
	(b) How PLC communicates with field Instruments and SCADA?	04
	(c) Explain the function of On Delay and Off Delay Timers in PLC Programming with suitable example.	07
OR		
Q.4	(a) Distinguish between SCADA and DCS with reference to different applications in Industrial Automation System.	03
	(b) How PLC's are selected for different applications?	04
	(c) Draw the block diagram of DCS along with its features and advantages.	07

- Q.5** (a) Explain the basic construction and configuration of robot for industrial applications. **03**
- (b) Discuss the difference between AC Servo Motor and DC Servo Motor. **04**
- (c) Draw and explain the major components of Internet of things in industrial automation. Also list out its application. **07**
- OR**
- Q.5** (a) Discuss about software configuration of DCS. **03**
- (b) What is Industry4.0 revolution? **04**
- (c) Discuss the significance and application of pick and place and welding robots for industrial applications. **07**
