



GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2171103

Date: 26/11/2019

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.

- Q.1** (a) What are the applications of signal conditioning circuit? **03**
(b) Write short note on MMI. **04**
(c) Write a short note on computer based data acquisition system. **07**
- Q.2** (a) Explain features and advantages of DCS systems. **03**
(b) Discuss in brief about the network access protocol that are used as communication methods for distributed control highways. **04**
(c) Discuss in brief about the various types of information display that can be achieved using DCS for efficient monitoring of plant parameters. **07**
- OR**
- (c) Compare relative features of twisted pairs, coaxial cables and fiber optic cable. **07**
- Q.3** (a) Explain the basic principle of pH measurement with neat diagram. **03**
(b) Draw the architecture of PLC and explain each block in detail. **04**
(c) Explain different types of SCADA architecture in details. **07**
- OR**
- Q.3** (a) Explain any one displacement transducer with neat diagram. **03**
(b) Write a short note on: System characteristics for the selection of PLC **04**
(c) Enlist types of flow meters. Explain any one in detail. **07**
- Q.4** (a) Explain elements of ladder diagram and its application. **03**
(b) What do you mean by actuators? Explain stepping motor with neat diagram. **04**
(c) Explain the hydraulic servos with neat diagram. **07**
- OR**
- Q.4** (a) With a neat sketch, explain the construction and working of a distributed control system used in process industries. **03**
(b) What is IOT? List advantage of IOT in industry. **04**
(c) Explain use of solenoid as an electrical actuator. How it is used to change gears? **07**
- Q.5** (a) Why isolation is required in I/O Bus? Explain I/O Bus isolation using opto-coupler. **03**
(b) Explain in brief (i) PROFI-BUS (ii) MODBUS **04**
(c) Explain the basic principles of servo systems. Enlist types of DC servo motors with neat diagram. **07**
- OR**
- Q.5** (a) Explain basic construction and configuration of pick and place robot. **03**
(b) Compare RS-232C, RS-422 and RS485 interfaces. **04**
(c) What is Automation and explain different types of Automation system. **07**
