

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3162421****Date:13-12-2023****Subject Name: Industrial Automation****Time:02:30 PM TO 05:00 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.

- Q.1** (a) Explain in brief Network Control System. **03**
(b) Compare Localized Process and Distributed Process in Tabular form. **04**
(c) What are the advantages of Automation? Explain in detail Component of Industrial Automation. **07**
- Q.2** (a) Define PLC and Relay Logic. **03**
(b) Explain advantages & limitations of DCS. **04**
(c) Draw P.L.C. system layout & explain the functionality of all inter-connected parts. **07**
- OR**
- (c) Explain in details Input/output Modules of PLC. **07**
- Q.3** (a) Explain in brief Boolean algebra PLC programming. **03**
(b) Draw the timing diagram of Retentive Timer. **04**
(c) Explain in detail the PLC Counter Functions. **07**
- OR**
- Q.3** (a) Explain Advantages & Limitations of PLC. **03**
(b) Explain PLC Wiring Diagram. **04**
(c) Explain the P.L.C. arithmetic functions & Draw block format of each. **07**
- Q.4** (a) Explain PLC SKIP Function. **03**
(b) Explain in brief Data Logging & Process Survey. **04**
(c) Describe PLC Scanning Considerations in detail. **07**
- OR**
- Q.4** (a) Explain in brief Use of DCS in Petroleum-Refining Environment. **03**
(b) Explain in detail Remote Terminal Unit. **04**
(c) Explain the P.L.C. SEQUENCER function. Write the ladder for Sequencer with Timer Pulsing. **07**
- Q.5** (a) Explain DCS Applications in Cement Plant. **03**
(b) Explain use of DCS in Oil and Gas Processing Environment. **04**
(c) Define SCADA systems. Explain in details SCADA Systems. **07**
- OR**
- Q.5** (a) Explain in brief Master Terminal Unit. **03**
(b) Explain in brief Data Acquisition System. **04**
(c) Explain the Different levels of DCS Systems **07**
