

Seat No. **MAR_APR 2025 SUMMER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Industrial Automation (ETC)****Sub. Code: 80811/84924/81069/84922****Day and Date: MAY ,10-05-2025****Total Marks: 70****Time: 02:30 PM To 05:00 PM**

- Instructions:**
- 1. All questions are compulsory**
 - 2. Draw neat labelled diagrams wherever necessary**
 - 3. Figures to the right indicate full marks**

Q1) Solve following MCQ.**[14]**

- i.** What does SCADA stand for?
 - A. Sensor Control and Data Analysis
 - B. Supervisory Control and Data Acquisition
 - C. Sequential Control and Digital Automation
 - D. Standard Control and Device Actuation

- ii.** Which IEC 61131-3 language is graphical and uses blocks?
 - A. Structured Text
 - B. Ladder Diagram
 - C. Instruction List
 - D. Function Block Diagram

- iii.** Which of the following steps is included in the PLC scan?
 - A. Programming, compiling, and linking
 - B. Input read, logic execution, output update
 - C. Power-on, delay, shutdown
 - D. Load, unload, and reset

- iv.** Which SCADA feature stores past data for analysis?
 - A. Alarm handling
 - B. Real-time monitoring
 - C. Trending
 - D. Logic execution

- v.** What is the primary DCS component used for user interaction?
 - A. Power Supply
 - B. Controller Module
 - C. Junction Box
 - D. Operator Station

- vi. Which of the following is a function of marshalling cabinets?
- A. Memory storage
 - B. Signal conditioning and wiring organization
 - C. Software update
 - D. Redundancy management
- vii. Which of the following is considered during PLC troubleshooting?
- A. Signal bandwidth
 - B. Power supply noise
 - C. Ladder logic errors and input status
 - D. Operator feedback only

Q2) Answer any two questions **[14]**

- a. Define PLC and explain its functions and advantages. **[7]**
- b. Describe various types of input/output (DI, DO, AI, AO) with suitable examples and ratings. **[7]**
- c. Explain the evolution of automation and need for PLC in industries. **[7]**

Q3) Answer any two questions **[14]**

- a. Describe interfacing of PLC with a temperature control loop. **[7]**
- b. Explain various IEC 61131-3 programming languages used in PLCs. **[7]**
- c. Describe the steps involved in PLC installation and troubleshooting. **[7]**

Q4) Answer any two questions **[14]**

- a. Explain page sequencing and graphical animation in SCADA. **[7]**
- b. Discuss comparison of different SCADA packages available commercially. **[7]**
- c. Describe event reporting and alarm management in SCADA systems. **[7]**

Q5) Answer any two questions **[14]**

- a. Explain different types of operator stations in DCS systems. **[7]**
- b. Describe power supply cards used in DCS systems and their importance. **[7]**
- c. Discuss the latest trends and developments in DCS technology. **[7]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (81069) Industrial Automation (ETC) Part 3 SEM 5
- 2] (101) Bachelor of Engineering (84924) Industrial Automation (ETC) Part 3 SEM 5
- 3] (1154) B.Tech. CBCS (84922) Industrial Automation (ETC) Part 3 SEM 5
- 4] (1154) B.Tech. CBCS (80811) Industrial Automation (ETC) Part 3 SEM 5

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