

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2018****Subject Code: 2182408****Date: 30/04/2018****Subject Name: Programmable Logic Controller for Power  
Electronics(Departmental Elective III)****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) Define PLC. State need of PLC in automation. **03**  
 (b) State advantages and disadvantages of PLC. **04**  
 (c) List the five standard PLC languages as defined by the International Standard for Programming Logic Controllers and give a brief description of each. **07**
- Q.2** (a) List the types of PLC and explain any one in brief. **03**  
 (b) Explain in short: 1. Relay Instruction 2. Data Handling Instruction. **04**  
 (c) Draw the block diagram of PLC. Explain the analog modules & system used in PLC for signal processing. **07**
- OR**
- (c) Explain the BCD or Multi bit data processing using PLC. **07**
- Q.3** (a) Define following terms : 1. Scanning Cycle 2. Scanning Time 3. Speed of Execution. **03**  
 (b) List the types of Register used in PLC and explain general characteristics of register. **04**  
 (c) List the basic programming language of PLC. Define Ladder Logic. Implement PLC ladder logic for 2 to 4 Decoder. **07**
- OR**
- Q.3** (a) List and explain operation faults of PLC. **03**  
 (b) List the input and output device used with PLC with their functions. **04**  
 (c) List the basic programming language of PLC. Define Ladder Logic. Implement PLC ladder logic for 4:1 Multiplexer. **07**
- Q.4** (a) List the log function possible with PLC. Explain one with suitable example. **03**  
 (b) Explain addition and subtraction function using PLC with suitable example. **04**  
 (c) Explain PLC SKIP and MASTER CONTROL RELAY function with suitable example. **07**
- OR**
- Q.4** (a) List the trigonometric function possible with PLC. Explain one with suitable example. **03**  
 (b) Explain multiplication and division function using PLC with suitable example. **04**  
 (c) Explain PLC FIFO function and FAL function with suitable example. **07**
- Q.5** (a) Explain with suitable example Jump function with non- return. **03**  
 (b) Explain how a matrix function is applied to reduce program length in PLC? **04**  
 (c) Draw the necessary diagram and Explain Basic two axis ROBOT with PLC sequencer control. **07**
- OR**
- Q.5** (a) Explain with suitable example Jump function with return. **03**  
 (b) List the shift Register in PLC. Explain Shift Register function with suitable application. **04**  
 (c) Draw the necessary diagram and Explain industrial three axes ROBOT with PLC sequencer control. **07**

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