

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER – V • EXAMINATION – WINTER- 2016**

Subject Code: **3351704**Date: **25- 11 - 2016**Subject Name: **PLC Programming**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. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1** Answer any seven out of ten. **14**
1. Name any four PLC modules.
  2. Draw ladder logic for RS flip-flop.
  3. List types of timer function used for PLC.
  4. List different type of arithmetic function used for PLC programming.
  5. Which common types of register used in PLC ?
  6. List the different types of PID Tuning methods.
  7. List types of counter function used for PLC.
  8. Calculate the count for time delay of 60 second for 5 second time base in timer function.
  9. List different type of comparison function used for PLC programming.
  10. List any four types of industries where PLC used .
- Q.2**
- (a) Develop ladder logic for ONE SHOT flip flops in PLC. **03**  
OR
- (a) Draw PLC network in master – slave mode. **03**  
(b) Draw block diagram of PLC based automation system. **03**  
OR
- (b) Describe holding register for PLC in detail **03**  
(c) Explain input and output register addressing schemes for PLC. **04**  
OR
- (c) Draw ladder logic in block format for retentive time delay on timer function for 180 second delay for 1 second time base. **04**  
(d) Explain analog signal processing with suitable example. **04**  
OR
- (d) Explain MCR function with block format with suitable example. **04**
- Q.3**
- (a) Explain multiply function with block format with suitable example. **03**  
OR
- (a) Explain force mode function with ladder diagram. **03**  
(b) Explain SKIP function with block format with suitable example. **03**  
OR
- (b) How input signals can be converted to make suitable to input module of PLC? **03**  
(c) Explain BCD or multibit process for PLC analog operation. **04**  
OR
- (c) Explain monitor mode function with ladder diagram . **04**  
(d) Explain square root function with block format with suitable example. **04**

- OR
- Q.4** (d) Explain BIT SET function showing bit pattern in the registers. **04**
- (a) Draw neat sketch of PLC applications for temperature control of the tank. **03**
- OR
- (a) Draw neat sketch of PLC applications for level control of the tank. **03**
- (b) Draw ladder logic to develop level control of the tank. **04**
- OR
- (b) Describe PLC sequencer with suitable example. **04**
- (c) Explain block diagram for PLC based automation system with sketch. **07**
- Q.5** (a) Describe PID module for PLC with the help of block diagram **04**
- (b) Explain PLC networking in brief. **04**
- (c) Explain ADD function for PLC programming with example. **03**
- (d) Explain MOVE function for PLC with example. **03**

\*\*\*\*\*