

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-Vth Examination December 2010****Subject code: 151704****Subject Name: Industrial Control Systems****Date: 21 /12 /2010****Time: 03.00 pm - 05.30 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 do you mean by PLC ? Draw the functional block diagram of PLC and explain it in detail. Also mention at least five applications of PLC in industrial automation. **07**
- (b) Explain the concept of continuous process and discontinuous process with example and also explain any one application of Cascade Control in continuous process. **07**
- Q.2** (a) Draw the circuit diagram of Analog Proportional Controller and explain it in detail with necessary terms and equations. **07**
- (b) Explain "Controller Tuning" in detail **07**
- OR**
- (b) Explain Distributed Control System (DCS) in detail. **07**
- Q.3** (a) Analog- Discontinuous type of controller in detail. **07**
- (b) Ratio Control scheme with example. **07**
- OR**
- Q.3** (a) Analog- PID Controller in detail. **07**
- (b) Feed Forward control scheme with example. **07**
- Q.4** (a) Explain the characteristics of Control Valves in detail. **07**
- (b) Explain the components and working of DDC and its benefits. **07**
- OR**
- Q.4** (a) Explain SCADA system in detail with suitable diagram. **07**
- (b) Explain the selection criteria for Control Valves. **07**
- Q.5** (a) Which are the programming languages used for PLC? Draw and explain a ladder diagram program for any one industrial application/process. **07**
- (b) Explain the following terms . **07**
- 1)Manipulating variable 2) Process load 3)Process lag
- OR**
- Q.5** (a) Explain the comparison of various controller configurations. **07**
- (b) What is PI diagram? Draw and explain a PI diagram for any one industrial application/process. **07**
