

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012****Subject code: 170802****Date: 08/06/2012****Subject Name: Industrial Automation****Time: 02:30 pm – 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.

Q.1 (a) Explain generalized Automation and production systems and their classification **07**

(b) Discuss characteristic of different discontinuous controller mode in detail. **07**

Q.2 (a) Explain the Discrete State Process Control with suitable example **07**

(b) Define following Process Characteristics: **07**

1. Process Equation
2. Process Load
3. Process Lag
4. Self Regulation

OR

(b) Define following terms with respect to Process control **07**

1. Error
2. Variable Range
3. Control Parameter Range
4. Control Lag
5. Dead Time
6. Cycling
7. Controller Modes

Q.3 (a) Explain PID controller. **07**

(b) Explain Architecture and block diagram of PLC **07**

OR

Q.3 (a) Explain PI controller. **07**

(b) Explain Two position control Mode Action By **07**

1. Electromechanical Design
2. Analog Electronics Design
3. Digital electronics Design

Q.4 (a) Develop a ladder diagram for ON-OFF operation of Motor by using **07**

1. START-NO; STOP-NO push buttons.
2. START-NC; STOP-NC push buttons.

(b) Write a ladder diagram for temperature measurement and control jig **07**

OR

Q.4 (a) Explain Timer and Counter instructions with timing diagram for PLC **07**

(b) Write a ladder diagram for a Bottle filling and Conveyor belt jig **07**

Q.5 (a) Enlist the types of I/O modules and draw the block diagram of I/O module separately connected to the PLC. **07**

(b) Discuss importance of Local Area Networks for DCS **07**

OR

Q.5 (a) Discuss architecture-hierarchy of DCS at function levels **07**

(b) Explain roll of Common system components of SCADA **07**
