

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 151704****Date: 07/06/2012****Subject Name: Industrial Control Systems****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) Classify process variables. Define and explain each. **07**
(b) Explain feedback and feed forward control in detail. **07**
- Q.2** (a) Discuss concept of linearity, stability and order of a system. **07**
(b) Discuss types and uses of mathematical modeling. **07**
- OR**
- (b) Derive mathematical model of a liquid level system without resistance element. **07**
- Q.3** (a) Explain on-off controller in detail. **07**
(b) Discuss proportional controller in detail. **07**
- OR**
- Q.3** (a) Discuss integral windup and anti windup. **07**
(b) Explain process reaction curve method of tuning. **07**
- Q.4** (a) Explain on-off controller around Op-amps in detail. **07**
(b) Explain electronic PID controller with its circuit. **07**
- OR**
- Q.4** (a) Draw line symbols and prepare P&I representation of flow ratio controller. **07**
Q.4 (b) Explain ratio control in detail. **07**
- Q.5** (a) Explain benefits of DDC. **07**
(b) Discuss control valve characteristics. **07**
- OR**
- Q.5** (a) Show and discuss basic parts of PLC. **07**
(b) Discuss hierarchical DCS. **07**
