

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 151704****Date: 24-06-2014****Subject Name: Industrial Control System****Time: 10.30 am - 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) Explain Ratio Control Scheme with neat schematic diagram. **07**
(b) Explain Cascade control Scheme. Why secondary loop is faster than Primary Loop? **07**
- Q.2** (a) Enlist and discuss the distinguishing features of DCS. **07**
(b) Describe the merits and demerits of DCS. **07**
- OR**
- (b) Explain SCADA with neat sketch. **07**
- Q.3** (a) Draw PLC Ladder diagram to realize 4:1 multiplexer and explain it in brief. **07**
(b) Explain Importance of PI diagram with Example. **07**
- OR**
- Q.3** (a) Give Classification of control valves. Explain Globe valve with neat sketch and its merits & demerits. **07**
(b) Enlist Selection criteria for Control Valves. **07**
- Q.4** (a) Explain DDC with example. **07**
(b) Design PID temperature control system which inputs error in 0 – 4 Volt range. The output of final control element is 0 - 8 volt, for $K_p=2.4\%$, $K_i=9.0(\%/min)/\%$, $K_d = 0.7 \%/ (\%/min)$ **07**
- OR**
- Q.4** (a) Explain Electronic Proportional Controller. **07**
(b) Explain PI Controller with schematics & waveforms **07**
- Q.5** (a) Give the closed response of PID Controller. **07**
(b) Why derivative action is not used alone? Explain PD controller mode with waveforms. **07**
- OR**
- Q.5** (a) Explain any one method of controller tuning. **07**
(b) Differentiate between the feedback & feed forward operation with the help of example. **07**
