

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: 181701**Date: 05-06-2014****Subject Name: Control System Architectures****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.

- Q.1 (a)** Describe structure of instrumentation subsystem for continuous I/O devices with examples. **07**
- (b)** 1. Draw the general structure of control subsystem. **03**
2. Define operator panel. List out commonly used active display & control elements. **04**
- Q.2 (a)** Explain “Hybrid control-Two step with dead band” automation strategy with an example. **07**
- (b)** With necessary sketch explain Rack, Bus & Modules in controller hardware structure. **07**
- OR**
- (b)** With neat sketch explain controller capacity expansion using Bus Extension Modules. **07**
- Q.3 (a)** Explain the functions of all layers in software structure of controller. **07**
- (b)** Discuss difference between PLC, loop controller & Programmable controller. Explain PAC in detail. **07**
- OR**
- Q.3 (a)** Write short note on: Front End Processor. **07**
- (b)** 1. List merits and demerits of operator station. **03**
2. Explain Display Screen Layout of operator station. **04**
- Q.4 (a)** Draw the structure of SCADA and explain RTU in detail. **07**
- (b)** Describe Cold & Hot standby. Explain availability enhancement in DCS. **07**
- OR**
- Q.4 (a)** Explain Fieldbus Input - Output with merits & demerits. **07**
- (b)** Explain configuration of following control function in DCS: (i)Function Block Diagram, (ii) Instruction List **07**
- Q.5 (a)** Describe the application of DCS in Petroleum – refining industry. **07**
- (b)** 1. Give classification for types of alarms. **03**
2. Explain graphic display & control group display for DCS reporting. **04**
- OR**
- Q.5 (a)** Explain PID control algorithm with application. **07**
- (b)** List down alarm detection methods for generation of alarm. Explain any three in detail. **07**
