

Seat No.: _____

Enrolment No. _____

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

Subject Code:181701

Date: 04/11/2014

Subject Name: Control System Architecture

Time: 02:30 PM TO 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.

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|------------|------------|--|-----------|
| Q.1 | (a) | Give comparison between operator station and operator panels. State The advantages and disadvantages of operator stations. | 07 |
| | (b) | Discuss the structure of control sub system and explain various steps Performed by it. | 07 |
| Q.2 | (a) | Explain watchdog module of processor subsystem. | 07 |
| | (b) | Show the information flow from process to various subsystem levels Of DCS system. Based on failure analysis, how availability of DCS System is enhanced? | 07 |
| OR | | | |
| | (b) | Illustrate the general software structure of the controller. Brief about Real-time scheduling. | 07 |
| Q.3 | (a) | Explain with neat sketch “hardware structure. Of controller “. | 07 |
| | (b) | Discuss various activities in project implementation in chemical plant. | 07 |
| OR | | | |
| Q.3 | (a) | Compare centralized I/O (CIO), Remote I/O (RIO) and Field bus I/O (FIO). | 07 |
| | (b) | Write short note on “Front end Processor” | 07 |
| Q.4 | (a) | Explain system availability of communication in DCS & NCS. | 07 |
| | (b) | Describe the application of DCS in Pulp & paper industry. | 07 |
| OR | | | |
| Q.4 | (a) | Explain the followings
(i) Regulatory PV point
(ii) Regulatory control point | 07 |
| | (b) | Explain typical SCADA system and its hierarchy. | 07 |
| Q.5 | (a) | Explain various displays available within DCS system. | 07 |
| | (b) | Discuss position PID algorithm with its limitations and features. | 07 |
| OR | | | |
| Q.5 | (a) | Write short note Hazard and Operability studies (HAZOP). | 07 |
| | (b) | Explain about strategy for alarm systems performance improvement. | 07 |
