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# **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VIII • EXAMINATION – SUMMER • 2015** 

Subject code: 181701

Time: 10.30AM-01.00PM

**Instructions:** 

## Subject Name: CONTROL SYSTEMS ARCHITECTURE

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Draw block diagram of basic package of Distributed Control 07 System. Brief about each component of it.
  - (b) Explain Overview display and Detail display available within DCS 07 system.
- Q.2 (a) Brief about a. Switching instrumentation devices, b. Integrating 07 instrumentation devices and c. interfacing devices.
  - (b) Brief about higher level programming language "Functional Block 07 Diagram".

#### OR

- (b) Discuss Velocity PID algorithm with its limitations and features. 07
- Q.3 (a) Give comparison between modern operator station and mimic 07 control panels. Brief about logging station.
  - (b) Explain Hybrid control strategy with suitable example. 07

#### OR

- Q.3 (a) Why isolation & protection is required with any automation 07 system? State the preferred solution for overcoming these safety problems.
  - (b) Draw automation system structure for localized and distributed 07 process. Also discuss various possible automation systems for both processes.
- Q.4 (a) Brief about various standby schemes of DCS. Discuss various 07 options for availability enhancement in DCS.
  - (b) In context of communication between components, brief about 07 following: i. Physical level compatibility ii. Communication protocol iii. Network access protocol

#### OR

- **Q.4** (a) Explain in detail: Field bus I/O.
- Q.4 (b) State the difference between DCS and SCADA. Draw hardware 07 structure layout for typical RTU.
- Q.5 (a) Discuss about prioritization of alarms and logical processing of 07 alarms
  - (b) Write short note on Hazard and Operability studies(HAZOP). 07

OR

- Q.5 (a) Discuss types of reports and logs that can be configured in DCS 07 system.
  - (b) Brief about automation plan required to implement automation 07 system strategy.

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### Date:15/05/2015

Total Marks: 70

07

Enrolment No.