

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VIII. EXAMINATION – WINTER 2016

Subject Code: 181701**Date: 21/10/2016****Subject Name: Control Systems 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.

- Q.1 (a) Draw a block diagram of basic package of Distributed control system. Brief each component of it. 07
 (b) Explain direct digital control system with block diagram. 07
- Q.2 (a) Brief about communication protocol, network topology and network access protocol. 07
 (b) Explain how reliability is increased with distributed control system. 07
- OR
- (b) Discuss discrete control system (should include identification of I/Os, block diagram, allocation of I/O channels to digital module, flow chart, etc.) for water heating process (level is controlled by inlet flow and temperature is controlled by heater current). 07
- Q.3 (a) Discuss about detailed display available with DCS system. Also brief about graphical display. 07
 (b) Discuss in detail: Watchdog Module. 07
- OR
- Q.3 (a) Discuss about overview display and group display available with DCS system. 07
 (b) Brief about software structure of controller. 07
- Q.4 (a) State the techniques by which advance/ enhanced human interface is provided. 07
 (b) Draw hardware structure of RTU. List out typical requirements for an RTU system. 07
- OR
- Q.4 (a) What do you mean by active and passive component on display screen? Draw a sketch showing Display screen layout. Give comparison between mimic panel and operator station. 07
 (b) Explain typical SCADA system and its hierarchy. 07
- Q.5 (a) How SCADA differs from DCS. Draw a system block diagram for SCADA in DCS and SCADA in NCS. 07
 (b) Write Short note :ALARM Risk 07
- OR
- Q.5 (a) Explain FEP in detail. 07
 (b) Explain about strategy for alarm systems performance improvement. 07
