# GUJARAT TECHNOLOGICAL UNIVERSITY
### BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

**Subject Code:2171709**                                    **Date:23/11/2016**
**Subject Name:Distributed Control Systems and SCADA**
**Time:10.30 AM to 1.00 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) | Explain, with a neat diagram typical SCADA system and its hierarchy. | **07** |
| | (b) | Draw block diagrams of (i) Direct digital control system (ii) Distributed control system | **7** |
| | | | |
| **Q.2** | (a) | Explain, in detail all key features of SCADA system | **07** |
| | (b) | Explain about Smart transmitters use in FIELDBUS communication. | **07** |
| | | **OR** | |
| | (b) | Explain in detail about different Bus Access Methods. | **07** |
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| **Q.3** | (a) | Explain about Integration of PLCs and DCS with Direct I/O | **07** |
| | (b) | Explain Network Linkages. | **07** |
| | | **OR** | |
| **Q.3** | (a) | Explain MODBUS protocol in detail | **07** |
| | (b) | Explain in detail ISO reference model | **07** |
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| **Q.4** | (a) | Explain: Hierarchical computer structure for a large manufacturing complex. | **07** |
| | (b) | Explain RTU in Detail. | **07** |
| | | **OR** | |
| **Q.4** | (a) | Discuss Velocity algorithm in detail with their limitations | **07** |
| | (b) | In context of DCS, discuss Overview display and Group display in detail. | **07** |
| | | | |
| **Q.5** | (a) | Explain software configuration in context of DCS. | **07** |
| | (b) | State important characteristics of multiplexer designs. Explain Super commutation and Sub commutation. | **07** |
| | | **OR** | |
| **Q.5** | (a) | Discuss various data highway options (cable type) available for DCS in detail. | **07** |
| | (b) | Discuss features of Keyboard used for DCS | **07** |

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