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# GUJARAT TECHNOLOGICAL UNIVERSITY
## BE - SEMESTER–VII(NEW)  EXAMINATION – SUMMER 2019

Subject Code:2171709                                    Date:16/05/2019
**Subject Name:Distributed Control Systems and SCADA**
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.**

|   |   |   | MARKS |
|---|---|---|---|
| **Q.1** | **(a)** | What do you mean by DCS? In which automation requirement it is necessary? | **03** |
|   | **(b)** | Explain the concept of DDC. | **04** |
|   | **(c)** | Draw and explain the hierarchical structure of DCS in detail | **07** |
| **Q.2** | **(a)** | Briefly explain DCS configurations | **03** |
|   | **(b)** | Explain the difference between PLC & DCS | **04** |
|   | **(c)** | What do you mean by "Field Station" in DCS. Explain it in detail | **07** |
|   |   | **OR** |   |
|   | **(c)** | What is SCADA? Draw and explain functional architecture of SCADA | **07** |
| **Q.3** | **(a)** | List out SCADA software packages available in the market | **03** |
|   | **(b)** | Explain the concept of RTU. | **04** |
|   | **(c)** | Give one application based example of DCS. Draw suitable diagram to explain in detail | **07** |
|   |   | **OR** |   |
| **Q.3** | **(a)** | List out DCS vendors available in the market. | **03** |
|   | **(b)** | Explain cascade control scheme and algorithm for DCS module | **04** |
|   | **(c)** | Give one application based example of SCADA. Draw suitable diagram to explain in detail. | **07** |
| **Q.4** | **(a)** | Briefly explain the concept of MMI. | **03** |
|   | **(b)** | Explain trend display and mimic display for DCS. | **04** |
|   | **(c)** | Explain industrial communication system in detail. | **07** |
|   |   | **OR** |   |
| **Q.4** | **(a)** | List out various network topologies and explain any one. | **03** |
|   | **(b)** | Explain communication between DCS components. | **04** |
|   | **(c)** | Explain Field Bus communication in detail. | **07** |
| **Q.5** | **(a)** | Explain the benefits of SCADA system | **03** |
|   | **(b)** | Explain SMART Transmitter. | **04** |
|   | **(c)** | Which are the maintenance considerations for DCS? | **07** |
|   |   | **OR** |   |
| **Q.5** | **(a)** | Explain the benefits of DCS. | **03** |
|   | **(b)** | Explain PROFIBUS in brief. | **04** |
|   | **(c)** | Explain redundant and fault tolerant systems in detail. | **07** |

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