Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015**

**Subject Code: 2723101** **Date: 10/12/2015**

**Subject Name: Virtual Biomedical Instrumentation**

**Time:2:30 pm to 5:00 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)** | Explain necessary components of virtual Data acquisition system. | **07** |
| | **(b)** | Write a short note on the flash ADC architecture. | **07** |
| **Q.2** | **(a)** | Enlist types of DAC. Explain working of any one in detail. | **07** |
| | **(b)** | Write a short note on Historical perspective of virtual instrumentation. | **07** |
| | | **OR** | |
| | **(b)** | Explain role of Hardware and software in Virtual Instrumentation. | **07** |
| **Q.3** | **(a)** | Explain 4 to 20 mA current loop instrument interface concepts. | **07** |
| | **(b)** | Explain role of virtual instrumentation in the field of Process and control with any example. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain role of virtual instrumentation in the field of biomedical signal analysis with any example. | **07** |
| | **(b)** | Draw and explain PCI architecture. Give features of PCI. | **07** |
| **Q.4** | **(a)** | Give short description of hardware requirements for image acquisition & necessary tool box function for processing. | **07** |
| | **(b)** | What is the need of USB? Give USB pin and signal descriptions. Give electrical specifications and speed related technical aspects. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain important aspects of Serial communication. | **07** |
| | **(b)** | Draw and explain Physical bus structure of GPIB. Enlist advantages of GPIB. | **07** |
| **Q.5** | **(a)** | Define virtual instrumentation. Explain role of Computer as Virtual instrumentation. | **07** |
| | **(b)** | Give short description of following words related to VI programming techniques:<br>• VIS & Sub VIS<br>• case & sequence structures | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Write a short note on Virtual Instrumentation Software Architecture (VISA). | **07** |
| | **(b)** | Give brief note on data flow techniques of virtual instrumentation. | **07** |

**********