Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014**

**Subject Code: 163405** **Date: 26-05-2014**

**Subject Name: Mechatronics**

**Time: 10:30 am - 01:00 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 open & closed control system with block diagram. | **07** |
| | **(b)** | Explain the design process of a Mechatronic system. | **07** |
| **Q.2** | **(a)** | Explain LVDT with neat sketch. | **07** |
| | **(b)** | Explain Strain Gauge Load Cell. | **07** |
| | | **OR** | |
| | **(b)** | Explain Thermocouple and Bimetallic strip. | **07** |
| **Q.3** | **(a)** | Name different types of control modes and explain two step mode. | **07** |
| | **(b)** | Explain Hydraulic mechanical system as system model. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain Brush type DC motor with field coils and its types. | **07** |
| | **(b)** | Explain Belt and Chain drives. | **07** |
| **Q.4** | **(a)** | Explain Proportional control mode in details with diagram. | **07** |
| | **(b)** | Explain Data handling in PLC. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain Derivative control mode in details with diagram. | **07** |
| | **(b)** | Explain Different logic functions used in PLC. | **07** |
| **Q.5** | **(a)** | Explain Timers and Counters in PLC. | **07** |
| | **(b)** | Short note on car engine management system. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain Basic PLC structure in details with figure. | **07** |
| | **(b)** | Pick and Place robot in details. | **07** |

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