

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VI EXAMINATION – WINTER 2015**

**Subject Code:163405****Date:10 /12/ 2015****Subject Name: Mechatronics****Time:2:30pm to 5:00pm****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) Which terms are used to define the performance of transducers and measurement system? Explain any six terms in detail. **07**  
(b) Write a short note on proximity switches and hall effect sensors. **07**
- Q.2** (a) Explain types of bearings. **07**  
(b) Explain brushless permanent magnet D.C. motor. **07**  
**OR**  
(b) Explain Resistance Temperature Detectors (RTDs) and Thermistors. **07**
- Q.3** (a) Explain fluid system building block. **07**  
(b) Explain rotational-translation system model. **07**  
**OR**
- Q.3** (a) Explain adaptive control with example. **07**  
(b) Explain PID controllers. **07**
- Q.4** (a) Explain basic PLC structure in details with figure. **07**  
(b) Explain Timers and Counters in PLC. **07**  
**OR**
- Q.4** (a) Explain different logic function used in PLC. **07**  
(b) Explain all selection criteria for PLC. **07**
- Q.5** (a) Short note on car engine management system. **07**  
(b) Explain various stages in mechatronics system design. **07**  
**OR**
- Q.5** (a) Explain pick and place robot in detail. **07**  
(b) Explain automatic car parking system. **07**

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