

Roll No. 

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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ME) (E-I 2011 Onwards) (Sem.-6)

**MECHATRONICS**

Subject Code : DE/ME-3.8

M.Code : 71270

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A****1. Answer briefly :**

- (a) What are the benefits of mechatronics systems to industries?
- (b) Distinguish between sensor and transducer.
- (c) What is the significance of using adaptive control systems?
- (d) Write the advantages of using a multiplexer?
- (e) Write advantages of hydraulic systems over pneumatic systems.
- (f) Why flow control valves are used?
- (g) What do you mean by actuation system?
- (h) What is the function of a microprocessor?
- (i) What is tri-state logic?
- (j) Write the names of various registers in 8085 microprocessor.

### SECTION-B

2. Explain the working of :
  - (a) Displacement sensor
  - (b) Velocity sensor with help of neat sketches.
3. What is a multiplexer? Explain the working of a multiplexer.
4. Explain how hydraulic system is used to amplify force with neat sketch.
5. Explain the constructional features of a DC motor with a neat sketch.
6. Write the function of a solenoid? Explain the factors to be considered for selecting solenoids.

### SECTION-C

7. What is a microprocessor? Draw a block diagram of micro computer and explain briefly three segments (ALU, register and control unit) of a microprocessor.
8.
  - (a) Write a short note on pulse modulation.
  - (b) Explain how Op Amp is used for signal conditioning.
9. Write short notes on the following :
  - (a) Definition and approach of mechatronics
  - (b) Embedding a microprocessor into a mechatronics system

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**