Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐          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.**