Code: EE6T6FE-H

III B.Tech-II Semester–Regular/Supplementary Examinations–March 2019

MECHATRONICS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer *all* the questions.   All questions carry equal marks

$$11x \; 2 = 22 \; M$$

1. a) Write few potential applications of mechatronic systems.

   b) Explain the principle of inductive sensor.

   c) What is a tactile sensor?

   d) Draw the symbolic representation of a check valve.

   e) What is a Thyristor?

   f) Write the basic building blocks of mechanical rotational system.

   g) What is a first order system?

   h) Explain derivative mode of control action.

   i) What is an Instruction Register (IR)?

   j) Name the Basic components of PLC.

   k) What is a Latching circuit?

PART – B

Answer any *THREE* questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) With the help of a block diagram, explain the basic elements of a closed loop system.   8 M

   b) What is the principle of Hall effect sensor? With a neat sketch explain any one application of such sensor for level measurement.   8 M

3. a) With a neat sketch explain the basic components of a hydraulic system.   8 M

   b) Explain the principle of operation of brushless DC permanent magnet motor.   8 M

4. a) Describe in detail the Usage of building blocks in building-up a model for a thermal system.   8 M

   b) What is Transfer function? Explain the natural response of a first order system.   8 M

5. a) What are the limitations of two step (ON/OFF) control and in what situation is such a control system commonly used?   8 M

   b) Distinguish between microprocessor & microcontroller.   8 M

6. a) What is a Parity bit generator? Discuss.   8 M

   b) Discuss in detail various data handling methods by a
      PLC.   8 M