**PVP 14**

Code: ME7T1

**IV B.Tech - I Semester – Regular Examinations – October 2017**

# MECHATRONICS
**(MECHANICAL ENGINEERING)**

Duration: 3 hours Max. Marks: 70

PART – A

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

11x 2 = 22 M

1. a) Define Mechatronics.
   b) What are the elements of control system?
   c) What is the difference between a sensor and a transducer?
   d) Give any two examples of linear actuator.
   e) What is the function of a diode.
   f) Name the basic building blocks of fluid and thermal systems.
   g) Give the formula for overall transfer function of a system in series.
   h) What is two step control mode?
   i) What is a microcontroller?
   j) List out the applications of logic gates.
   k) What is mnemonics?

## PART – B

Answer any ***THREE*** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) State the applications, advantages and disadvantages of Mechatronics system. 8 M

   b) Explain the working of piezoelectric sensors and vision sensors. 8 M

3. a) With the aid of line diagrams, explain any two types of rotary activators. 8 M

   b) Explain the working principle of variable reluctance stepper motor. 8 M

4. a) Explain the basic building blocks of mechanical system and their governing equations for linear system. 8 M

   b) Explain the first order and second order systems with suitable examples. 8 M

5. a) Briefly explain various types of control modes. 8 M

   b) Explain with a neat sketch the architecture of micro controller. 8 M

6. a) Explain the functioning of data conversion devices. 8 M

   b) Write a short note on Fuzzy logic applications in Mechatronics. 8 M