Eighth Semester B.Tech Degree Examination, April /May 2016

(2008 scheme)

Branch: Aeronautical Engineering

08.803 MECHATRONICS

Answer all questions from part-A and one full question from each module of Part-B.

Time-3hrs   max mark 100

PART A

(10x4=40 marks)

1. Distinguish between measurement system and control system.
2. List five mechatronics systems that you see every day, what are the various sensing and controlling elements in those systems?
3. What are the different types of sensors used in modern MPFI system of a vehicle?
4. Differentiate first order and second order system.
5. Explain the working of capacitive sensor.
6. What is transfer function?
7. Explain the working of ultrasonic range finder.
8. State the application of servomotor in mechatronics system.
9. How does PLC differ from microprocessor?
10. Explain the working of a tactile sensor.

(10x4=40 marks)

PART B

Module I

11. (i) Explain closed loop and open loop control system with suitable examples..
    (ii) Discuss the working of any two force sensors.

OR

12. (i) Explain the block diagram of a pneumatic system .what are it advantages over hydraulic system.

    (ii) What is the principle of piezoelectric sensor? State two applications of piezoelectric sensors

Module II

13. (i) Design a mechatronics system for automatic car parking.
    (ii) Explain various mechatronics elements in a CNC machine.

OR

14. (i) What is the need of adaptive control . Explain Gain scheduled adaptive control system.
    (ii) Explain Engine management system and its associated sensors

Module III

15. (i) explain about linear and rotational mechanical system building blocks.
(ii) Discuss the sensors used in a robot to locate an object.

OR

16. (i) Derive mathematical model of resistor inductor capacitor system

(ii). Explain the architecture of PLC. Discuss its applications.

(20x3=60marks)