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Question Paper Code : R 3782

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Seventh Semester

Mechanical Engineering

ME 433 — MECHATRONICS

(Regulation 2001)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Mechatronics.
2. Explain the difference between open loop and closed loop controllers.
3. Distinguish between a transducer and sensor.
4. How do you classify the sensors?
5. How does a microcontroller differ from a microprocessor?
6. What is address bus-data bus multiplexing?
7. Write any two single byte instructions to clear the Accumulator.
8. Name typical faults in microprocessors.
9. How does PLC differ from relay logic?
10. Distinguish between Traditional design approach and Mechatronics approach.

PART B — (5 × 16 = 80 marks)

11. (a) How was the discipline of Mechatronics evolved? Explain the evolution stages. (16)

Or

- (b) Explain open loop and closed loop system with neat sketches. (16)

12. (a) Explain with neat sketches the functioning of following sensors :

(i) Pyroelectric Sensors. (8)

(ii) Thermo diodes. (8)

Or

- (b) Explain the principle and applications of proximity and Light sensors. (16)

13. (a) With a neat sketch explain the architecture and pin configuration of a 8085 microprocessor. (16)

Or

- (b) Discuss the various requirements for development of interfaces in Mechatronics devices. (16)

14. (a) Explain the use of ladder programming. (16)

Or

- (b) With a neat sketch explain the architecture of PLC. (16)

15. (a) (i) Discuss the traditional and mechatronics design approaches with an example. (8)

(ii) How do you develop a simple electronic weighing machine? Explain. (8)

Or

- (b) Explain the design and implementation of Mechatronics case study for a Pick and place Robot. (16)