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B.E./B.TECH (FULL-TIME) ARREAR EXAMINATIONS - APRIL / MAY 2013
COMMON TO MECHANICAL AND MANUFACTURING ENGINEERING

18/4/13

VII SEMESTER

ME 9402 MECHATRONICS

REGULATIONS 2008

Time : 3 Hours

Max. Marks : 100

Answer ALL Questions

PART-A (10 x 2 = 20 Marks)

1. What are the key elements that are integrated in mechatronics system?
2. State any four mechatronic applications in Automotive Industry.
3. Distinguish between analog and digital sensors.
4. What is signal conditioning process?
5. What is the function of Actuators in mechatronic system?
6. What are the advantages of Servo system over stepper motor?
7. List any four applications of PLC system.
8. What is the role of internal relays in PLC?
9. What are the various stages in designing a mechatronics system?
10. Differentiate between traditional design and mechatronics design.

PART-B (5 X 16 = 80 Marks)

- 11.a) Explain the need for mechatronics technology? (12)
b) Explain the classification of mechatronics system? (4)
- 12.a) i) Describe the characteristic parameter of sensors. (6)
ii) Explain the working principle and applications of potentiometer sensor. (10)
(OR)
b) i) Explain the working principle involved in temperature measurement using bimetallic strip. (8)
ii) Explain the temperature measurement using thermocouple. (8)
13. a) i) Explain control of a double acting cylinder with a suitable pneumatic circuit. (7)
ii) Compare Hydraulic, Pneumatic and Electrical actuating systems. (9)
(OR)
b) i) Compare open and cross-belt drives. (8)
ii) What are anti-friction bearings and state their characteristics? (8)
14. a) i) Explain the architecture of PLC with a neat sketch. (10)
ii) Sketch and explain the logic functions used in series and parallel. (6)
(OR)
b) Explain the role of Timers and counters in mechatronics system with example.
15. Explain the mechatronics case study of
a) Pick and Place Robot (OR)
b) Engine Management System.