Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 37703

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Seventh Semester

Mechanical Engineering

01UME703 - MECHATRONICS

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Identify the different mechatronics systems used in automobiles.

2. List down the types of proximity sensor.

3. State the function of a control valve.

4. Elucidate the significance of Process control valves.

5. Define the term electromechanical systems.

6. How can adaptive controllers be defined?

7. What is main advantage of PLC?

8. Write about the relay?

9. Name the sensors used in car engine management system.

10. What is meant by duty cycle?

PART - B (5 x 16 = 80 Marks)

11. (a) Identify the various elements of a closed loop control system in an automatic water level controller and describe their functions. (16)

Or

(b) Explain the microprocessor based controller with suitable example. (16)

12. (a) Explain about the primary functions of mechanical actuation systems. (16)

Or

(b) Explain the following mechanical actuation system used in Mechatronics system (i) Cam (ii) Ratchet and pawl. (16)

13. (a) Compare the control system performance for a system with proportional control and a system with integral control. (16)

Or

(b) With a block diagram explain the velocity control with feedback system for the movement of a load using suitable controller. (16)

14. (a) (i) Explain the configuration of a PLC. (8)

(ii) What are the advantages of PLC over relay logic? (5)

(iii) Explain the basis of ladder programming used in PLC'S. (3)

Or

(b) Explain the factors considered for the selection of a PLC. (16)

15. (a) Discuss in detail, various design factors to be considered while designing a mobile robot? (16)

Or

(b) Discuss the possible design solutions for a pick and place robot? (16)

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