Reg. No. : | | | | | | | | | | |

Question Paper Code: 31773

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. Write down any four primary functions of mechanical actuation systems.
4. State the function of a control valve.
5. What are the classifications of composite mode electronic controllers?
6. Give an example for two-step mode control unit.
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) Explain the microprocessor based controller with suitable example. (16)

Or

(b) Discuss how displacement is sensed by LVDT. With neat sketch show how it can be made phase sensitive. (16)

12. (a) (i) Discuss why hydraulic pumps are used in hydraulic systems? (8)

(ii) Explain any two types of ball and roller bearings with suitable sketches. (8)

Or

(b) Explain the working principle of Brushless permanent magnet DC motor. (16)

13. (a) Discuss briefly model building block for automatic suspension system and electric motor. (16)

Or

(b) Explain in detail Gain- scheduled and self- turning adaptive control system with a suitable block diagram. (16)

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

(ii) What are the advantages of PLC over relay logic? (3)

(iii) Explain the basis of ladder programming used in PLC'S. (5)

Or

(b) (i) Explain in detail about jump control used in PLC using a ladder diagram. (10)

(ii) Draw the delay ON and OFF timer ladder diagrams. (6)

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

Or

(b) Discuss mechatronic design of an automatic car park system? (16)

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