Question Paper Code: 37073

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

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. What is a smart sensor? List out its functions.

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. Give an example for two-step mode control unit.

6. What is meant by adaptive control?

7. What is main advantage of PLC?

8. Write about the relay?

9. List down the applications of wireless surveillance balloon.

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

PART - B (5 x 16 = 80 Marks)

11. (a) Explain working principle of a force measuring transducer with a neat diagram.   (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 any two types of ball and roller bearings with suitable sketches. (16)

13. (a) Explain in detail Gain-scheduled and self- turning adaptive control system with a suitable block diagram. (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) Explain the factors considered for the selection of a PLC. (16)

Or

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