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

Question Paper Code : 51863

B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Seventh Semester

Mechanical Engineering

ME 2401/ME 71/ME 1402/10122 ME 702 – MECHATRONICS

(Common to Production Engineering)

(Regulations 2008/2010)

(Common to PTME 2401/10122 ME 702 – Mechatronics for B.E. (Part-Time) Fifth Semester, Mechanical Engineering – Regulations 2009/2010)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Differentiate between position and proximity sensor.
2. Brief on the working principle of Hall Effect sensor.
3. Distinguish between bipolar transistor and MOSFET.
4. Brief on four bar mechanism.
5. How to model hydraulic resistance ?
6. State the significance of thermal capacitance.
7. Brief on shift registers.
8. What are the advantages of master relay ?
9. Denote on two types of hot wire anemometer.
10. What are the uses of micro motors ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain about the model of a measurement and control system applicable to a critical engineering application. **(10)**

(ii) Discuss on various control systems with examples. **(6)**

OR

(b) Discuss on the static and dynamic characteristics of sensors in detail. **(16)**

12. (a) Explain about construction and working principle of DC and AC motors.

OR

(b) With neat sketches, discuss about the various hydraulic actuators and their control systems.

13. (a) (i) Explain the functions of microprocessor with an example. **(10)**

(ii) Discuss on PD control. **(6)**

OR

(b) (i) Explain the building blocks of electrical system with suitable examples. **(10)**

(ii) Discuss on adaptive control. **(6)**

14. (a) (i) Explain the architecture of a PLC. **(10)**

(ii) Discuss on input/output processing. **(6)**

OR

(b) (i) Discuss in detail about cylinder sequencing with PLC and its programming. **(10)**

(ii) Explain about PLC selection. **(6)**

15. (a) Design an engine management system.

OR

(b) Discuss in detail about design of Autonomous Mobile Robot.