

Reg. No. :

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Question Paper Code : 80671

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Mechanical Engineering

ME 6702 — MECHATRONICS

(Common to Manufacturing Engineering, Mechanical and Automation Engineering
and Production Engineering)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write about the Mechatronics approach in a micro-processor-controlled washing machine.
2. Write about the bimetallic strips. *WT-3*
3. What is the function of Arithmetic Logic Unit (ALU)? *WT-3*
4. What is difference between microprocessor and microcontroller? *~~RT-II~~, IAT (M)*
5. What is the function of Program Counter? *WT-5*
6. What is the function of Read/Write control logic in 8255PPI? *RT-II*
7. Why a LATCH circuit are used in PLC? *RT-II*
8. What is ladder programming? *Coaching class*
9. How does a car park barrier works? *Coaching class*
10. What is the difference between Traditional and Mechatronics Approach? *IAT-1, RT-1*

PART B — (5 × 16 = 80 marks)

11. (a) Explain the static and dynamic characteristics of transducers.

Or

(b) (i) Explain the principles and working of Hall Effect Sensor. (8)

(ii) What are the basic elements of a closed loop system? Explain. (8)

12. (a) Explain with neat sketch the architecture of 8085 microprocessor. ✓

Or

(b) Write short notes on :

(i) Addressing modes. ✓ (8)

(ii) Instruction set of 8085 microprocessor. ✓ (8)

13. (a) Explain with neat sketch microprocessor based temperature control system by using 8255PPI. //

Or

(b) Explain with neat sketch microprocessor based stepper motor control system by using 8255PPI.

14. (a) Explain the architecture of a PLC and explain about its elements.

Or

(b) Write short notes on PLC for the following :

(i) Data Movement

(ii) Data Comparison.

15. (a) What are the roles of sensors in car engine management system? Explain with a block diagram.

Or

(b) Design a robot to pick and place the object and comment on the various elements in the system.