C 3321

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Mechatronics Engineering

MH 1352 — MICROCONTROLLER AND PLC

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the alternate functions of port 3 pins in 8051?

2. Explain briefly the instructions : CJNE, DJNZ.

3. What are the types of memory access time?

4. What is timing subroutine?

5. Why mode-0 is not suitable for 8051 communication?

6. What do you mean by bounce in keyboard interfacing?

7. What are the hardware components of PLC?

8. What is the use of proximity switch?

9. Write notes on retentive timer.

10. List out the arithmetic instructions.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the interrupt structure of 8051 microcontroller in detail. (16)

Or

(b) (i) Write about the four modes of timer operations with the control registers used in 8051. (10)

(ii) List the addressing modes of 8051 with examples. (6)

12. (a) (i) Explain the I/O port expansion in 8051 with neat sketch. (8)

(ii) Explain about serial data transmission. (8)

Or

(b) (i) Explain the ROM test and RAM test. (8)

(ii) Explain briefly about look-up tables for the 8051. (8)

13. (a) Explain ADC and DAC interfacing with neat diagrams. (16)

Or

(b) What are the serial data communication modes of 8051? Explain them in detail. (16)

14. (a) Explain the principle of operation and components of PLC with block diagram. (16)

Or

(b) Explain about the various I/O devices used in PLC. (16)

15. (a) Write notes on :

(i) Program control instructions

(ii) Data manipulation instructions. (16)

Or

(b) Explain the application of PLC in motor control with a ladder diagram. (16)

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