

C 3198

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

Fifth Semester

Mechatronics

EC 1318 — MICROPROCESSORS AND APPLICATIONS

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is the data bus bidirectional and what is the function of the Accumulator?
2. If the clock frequency is 5 MHz, how much time is required to execute an instruction of 18 T-states.
3. What do you mean by foldback memory?
4. Define burst mode and cycle stealing.
5. What is the difference between a ICW and an OCW of 8259?
6. List the operating modes of 8253.
7. Define resolution of DAC.
8. Max. of how many 7-segment LED's can be connected with one 8279?
9. Mention any four automotive applications.
10. Why must thermocouples be cold-junction compensated in order to make accurate measurements? How can the non-linearity of a thermocouple be compensated for?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Classify the instruction set of 8085 and explain. (8)
(ii) Explain the pin configuration of 8085. (8)

Or

- (b) (i) Draw the timing diagram for STA 6568. (8)
(ii) Determine the execution time to execute the given program by 8085 microprocessor having the clock frequency of 3 MHz. (8)

LXI H, 5500

MOV A, M.

INX H

MOV B, M

ADD B

HLT.

12. (a) (i) Interface two numbers of 8 K × 8 ROM and 1 K × 8 RAM with 8085 μp . Identify the primary address range and the foldback address range of the memory. (8)
(ii) Briefly explain the following :
(1) Access Time Computations (4)
(2) Bus connection. (4)

Or

- (b) Write short notes on the following :
(i) RST instructions (4)
(ii) Vectored interrupts (8)
(iii) RIM and SIM instructions. (4)
13. (a) With neat functional block diagram, explain the operation of 8257. (16)

Or

- (b) Explain how a matrix key board and multiplexed display can be interfaced to a μp with neat block diagram of 8279. (16)

14. (a) With neat diagram, explain the design of digital transmission with modem and telephone lines using 8251 A. (16)

Or

- (b) With the help of circuit, explain how a DAC can be interfaced to a CPU. Also write an assembly language program, to generate saw tooth waveform. (16)
15. (a) (i) Describe how feedback helps hold the value of some variable, such as a motor speed constant. (8)
- (ii) With neat diagram explain the closed loop process control system. (8)

Or

- (b) With neat suitable diagram explain temperature monitoring system. (16)
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