

Register Number:

B.E. DEGREE EXAMINATIONS: NOV/DEC 2012

Fifth Semester

MECHATRONICS ENGINEERING

MCT108: Microprocessors and Microcontroller

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. In which T-state does the CPU sends the address to memory or I/O and the ALE signal for demultiplexing?
a) T1 b) T2 c) T3 d) T4
2. Which stack is used in 8085?
a) FIFO b) LIFO c) FILO d) FIFI
3. The no. of address lines required to address a memory of size 32 K is
a) 15 lines b) 16 lines c) 18 lines d) 14 lines
4. Which interrupt has the highest priority in 8085?
a) INTR b) TRAP c) RST6.5 d) RST7.5
5. When the 82C55 is reset, its I/O ports are all initializes as
a) output port using mode 0 b) Input port using mode 1
c) output port using mode 1 d) Input port using mode 0
6. Which microprocessor pins are used to request and acknowledge a DMA transfer?
a) reset and ready b) ready and wait c) HOLD and HLDA d) None o these
7. The internal RAM memory of the 8051 is:
a) 32 bytes b) 64 bytes c) 128 bytes d) 256 bytes
8. The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2 c) 3 d) 4
9. An alternate function of port pin P3.4 in the 8051 is:
a) Timer 0 b) Timer 1 c) Interrupt 0 d) Interrupt 1
10. When the 8051 is reset and the EA line is LOW, the program counter points to the first program instruction in the:
a) Internal code memory b) External code memory
c) Internal data memory d) External data memory

PART B (10 x 2 = 20 Marks)

11. Define Instruction cycle and Machine cycle.
12. What are the different addressing modes of 8085?
13. Define Memory mapped I/O?
14. Differentiate between software and hardware interrupts.
15. What is key debouncing?
16. What is USART?
17. What is Microcontroller?
18. List the features of 8051 microcontroller.
19. Write an ALP for 8 bit multiplication in 8051.
20. Write the vector address and priority sequence of 8051 interrupts.

PART C (5 x 14 = 70 Marks)

21. a) Describe the functional block diagram of 8085

(OR)

b) Explain the 8085 interrupt system in detail.

22. a) (i) Design a microprocessor system to interface an $8K \times 8$ EPROM and $8K \times 8$ RAM. (7)
(ii) With suitable examples explain how I/O devices are connected using memory mapped I/O and peripheral I/O. (7)

(OR)

b) Explain the different modes in DMA data transfer?

23. a) With neat diagram explain the ADC interface to microprocessor.

(OR)

b) With neat block diagram explain PPI, and explain operating modes of 8255 in detail.

24. a) (i) What are the differences between the Microprocessors and Microcontrollers? (7)
(ii) Explain the I/O port structure of 8051. (7)

(OR)

b) Describe the architecture of 8051 with neat diagram.

25. a) Explain the different modes of operation of timer in 8051?

(OR)

b) (i) Explain the interrupt structure of 8051 microcontroller and Explain how interrupts are prioritized. (7)
(ii) Explain the different serial communication modes in 8051. (7)
