

Name :

Roll No. :

Invigllator's Stgnature :

CS/B.Tech (ECE-NEW)/SEM-5/EC-502/2013-14

2013

MICROPROCESSOR & MICROCONTROLLER

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following : 10 × 1 = 10

i) If the crystal frequency of 8085 microprocessor is 2 MHz, the time required to execute an instruction of 20T states is

- | | |
|-------------|-------------|
| a) 20 μ sec | b) 10 μ sec |
| c) 40 μ sec | d) 5 μ sec. |

ii) The mode 3 operation of 8253 timer is

- a) square wave generator
- b) rate generator
- c) software triggered strobe
- d) hardware triggered strobe.

iii) The 8086 microprocessor addressing capacity is

- | | |
|----------|----------|
| a) 64 kB | b) 1 MB |
| c) 2 MB | d) 1 GB. |

5006 (N)

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- iv) The on-chip RAM size of 8051 microcontroller is
a) 1 kB
b) 512 bytes
c) 256 bytes
d) 128 bytes.
- v) The signal which has the highest priority is
a) TRAP
b) RST 7.5
c) RST 6.5
d) HOLD.
- vi) The number of programmable 8-bit registers of 8085 microprocessor is
a) 5
b) 6
c) 7
d) 8.
- vii) The interfacing device used with an output port is
a) buffer
b) priority encoder
c) latch
d) none of these.
- viii) Conversion of 8085 mnemonics into binary code is done by which of the following programs ?
a) Monitor program
b) Assembler
c) Compiler
d) Interpreter.
- ix) How many T-states would be required for the execution of CALL 2000 H instruction ?
a) 10
b) 13
c) 18
d) None of these.
- x) In 8085, subtraction process is carried out using
a) 1's complement scheme
b) 2's complement scheme
c) either (a) or (b)
d) neither (a) nor (b).
- xi) In 8085, the Stack works on which of the following principles ?
a) FIFO
b) FILO
c) LIFO
d) LILO.
- xii) In 8051 microcontroller, which of the following is the dedicated port ?
a) Port 0
b) Port 1
c) Port 2
d) Port 3.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What are Interfacing devices ? List the interfacing devices that used with Input and Output devices and briefly explain their functions.
3. List the externally initiated signals of 8085 microprocessor and explain their functions in brief.
4. For the following 8085 Assembly Language Program (ALP), explain how many times the loop will be executed and why ?
 - a) LXI B, 00FFH
Back : DCX B
JNZ Back
HLT
 - b) LXI H, 8050H
Back : MVI M, 06H
DCR M
JNZ Back
HLT
5. Explain the concept of memory segmentation in 8086 microprocessor.
6. List the 8086 addressing modes and briefly explain the same.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. List and explain the eight different steps involved in the 8085 interrupt process.
8. a) List and explain the various operating modes of 8255 Programmable Peripheral Interface (PPI).

- b) Write the 8255 PPI control word to configure all the ports as —
- input ports
 - output ports in simple I/O mode.
- c) Consider the 8253/8254 programmable interval timer. The device is expected to generate a square wave frequency of 1 kHz. Let the clock frequency is 1 MHz. Calculate the count to be loaded in the appropriate counter/timer register.
9. a) Write an 8085 ALP to implement the following function :
- $$y = mx + c$$
- Let (8000H to 8003H) = m , x , c and y .
- b) Consider the implementation of the time delay using software in 8085 microprocessor. Let the Loop delay = $T_L = 1.8$ msec, Loop T-states = 14 and Clock frequency = 2 MHz. Calculate the count in decimal (N_{10}) to be loaded in the counter/register.
10. Compare the 8085 memory mapped I/O and peripheral I/O techniques. Tabulate your answer, on the basis of different characteristic features.
11. Write short notes on any *three* of the following : 3 × 5
- Intel 8086 programming model.
 - Difference between Intel 8086 & 8088 processors.
 - DMA data transfer.
 - Primary features of programmable interrupt controller.
 - Features of 8051 microcontroller.
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