Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (ICE) (N)/SEM-5/IC-504C/2012-13

2012
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 : $10 \times 1 = 10$

   i) The contents of registers 'B' & 'C' are 25 & 45 respectively. What will be the contents of 'B' & 'C' after executing the instruction MOVB, C ?

   a) 45,45 b) 45,25

   c) 45,0 d) 00,45.

   ii) A single instruction to clear the lower order 4 bits of the accumulator in 8085 microprocessor is

   a) XRI 0F b) ANI F0H

   c) ANI 0FH d) XRI F0H.

   iii) When the instruction LHLD is executed, no. of T-state required are

   a) 10 b) 14

   c) 13 d) 16.

iv) The instruction register holds

a) Flag condition b) Op-Code

c) Instruction Address d) Hex Code.

v) A 3-byte instruction should have

a) op-code & one operand

b) op-code only

c) operand only

d) op-code & 2 operands.

vi) Whenever the PUSH instruction is executed, the stack pointer is

a) Decremented by 1 b) Decremented by 2

c) Incremented by 1 d) Incremented by 2.

vii) Machine cycles for IN instruction are

a) 6 b) 5

c) 4 d) 3.

viii) In order to enable TRAP interrupt, which of the following instructions is needed ?

a) El only b) SIM only

c) EI and SIM d) None of these.

ix) In 8085 microprocessor, the addressable memory is

a) 64 kB b) 1 MB

c) 4 kB d) 16 kB.

x) PSW is a/an ..... register.

a) 8 bits b) 16 bits

c) 20 bits d) 32 bits.

xi) What will be the content of the accumulator and status of Carry (CY) flag after RLC operation, if the content of the accumulator is BC H and CY is 0 ?

a) 79 H, 1 b) 78 H, 1

c) 5E H, 0 d) 5D H, 0.

xii) What is the addressable memory capacity of 8086 microprocessor in real mode ?

a) 64 kB b) 1 MB

c) 16 MB d) 4 GB.

xiii) In 8051 microcontroller, ... pin is used to select external ROM.

a) ALE b) $\overline{EA}$

c) $\overline{PSEN}$ d) RESET.

GROUP – B

(Short Answer Type Questions)

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

2. Explain the architecture of 8085.
3. How the lower order address byte of 8085 is demultiplexed ?
4. What do you mean by 8-bit microprocessor ? Explain the two pins of 8085 :

   RESET and HOLD $1 + 2 + 2$
5. Explain the function of DAA for 8085 microprocessor.
6. Explain subroutine and nested subroutine. $2 + 3$

GROUP – C

(Long Answer Type Questions)

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

7. a) What is the difference between microprocessor and microcontroller ?

   b) Discuss the memory organization of 8051 microcontroller.

c) Explain interrupts of 8051 controller.

d) Explain SFR of 8051 microcontroller. 4 + 3 + 4 + 4

8. a) What are the main functions of BIU and EU of 8086 microprocessor ?

b) Describe MIN/MAX mode operations of 8086 microprocessor.

c) Describe the different addressing modes of 8086 microprocessor.

d) How is pipelining achieved in 8086 microprocessor ?

3 + 4 + 4 + 4

9. a) Explain the hardware & software interrupts of 8085.

b) Explain the instruction : PUSH H, PCHL.

c) Explain the SID and SOD pins of 8085. 7 + 4 + 4

10. a) Explain the different modes of 8254 timer.

b) Draw & explain the block diagram of PIC 8259.

c) Describe 8255 Control word format for I/O mode.

5 + 5 + 5

11. Write short notes on any *three* of the following : 3 × 5

a) DMA Controller

b) Flags of 8085

c) I/O mapped I/O & memory mapped I/O

d) Read back command.