Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(ECE-NEW)/SEM-5/EC-502/2012-13

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 instruction MOV *A*, *B* belongs to

a) immediate addressing b) directing addressing

c) implied addressing d) register addressing.

ii) In 8085, TRAP is

a) always maskable

b) can't interrupt a service sub-routine

c) use for temporary power failure

d) lowest priority interrupt.

iii) How many hardware interrupt requests a single interrupt controller IC8259A can process ?

a) 8 b) 15

c) 16 d) 64.

iv) In DMA operation data transfer takes place between

a) Memory & CPU b) CPU & I/O

c) I/O & Memory d) Different CPUs.

v) The programmable interval timer is

a) 8253 b) 8251

c) 8250 d) 8275.

vi) How many flag registers are in 8051 ?

a) 9 b) 8

c) 6 d) 5.

vii) 8259 is

a) programmable DMA controller

b) programmable interval timer

c) programmable interrupt controller

d) none of these.

viii) The interrupt masks in 8085 can set or reset by the instruction

a) EI b) DI

c) RIM d) SIM.

ix) The vector address corresponding to software interrupt command RST7 in 8085 microprocessor is

a) 0017 H b) 0027 H

c) 0038 H d) 0700 H.

x) A microprocessor is said to be a 8 bit, 16 bit etc. depending on its

a) data bus b) address bus

c) ALU d) control bus.

xi) When subroutine is called the address of the instruction next to 'CALL' is save in

a) stack pointer register b) program counter

c) stack d) PSW.

xii) The number of register pairs of 8085 microprocessor are

a) 3 b) 4

c) 2 d) 5.

GROUP – B

(Short Answer Type Questions)

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

2. Draw the timing diagram of OUT instruction.

3. What do you mean by conditional & unconditional jump ? Give example.

4. What is the function of DAD instruction in 8085 processor ? Write the output if input is F0 :

```
LXI H, 2050
MOV A, M
CMA
ADI 01
STA 2060
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5. What is the difference between SIM & RIM instruction.

6. Explain the memory segmentation scheme with reference to 8086 microprocessor.

GROUP – C

(Long Answer Type Questions)

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

7. a) What are the different addressing modes of 8085 microprocessor ? Explain with at least two examples for each.

   b) Explain the function of RIM instructions.

   c) Write a program to enable RST 6·5 and disable RST 7·5, RST 5·5. 6 + 4 + 5

8. a) With respect to 8237 explain the DMA operation.

   b) What are the priorities of DMA request ? Enumerate them.

   c) What are the major components of 8259A interrupt controller ? Explain their functions. 5 + 4 + 6

9. a) Draw and explain the timing diagram of the instruction IN 00H.

   b) Write an ALP to find out the largest number from a given array of 10 numbers.

   c) Differentiate between peripheral mapped I/O and memory mapped I/O. 7 + 5 + 3

10. a) What do you mean by Mode 0, Mode 1 & Mode 2 ?

    b) Write down the control word for the following in Mode 0 :

    Port A = Input, Port B = Not used, Port C_U = Input, Port C_L = Output.

    c) Write a BSR control word subroutine to set bits PC_7 and PC_3 and reset them after 10 ms. Assume that a delay subroutine is available and Hex address of Port A = 80 H.

    d) Explain how bidirectional communication can be done between two computer using 8255 A. 3 + 4 + 4 + 4

11. a) What do you mean by pipelined architecture ? How is it implemented in 8086 ?

    b) Explain how 20-bit physical address is generated in 8086 microprocessor.

    c) Explain the operations of BIU and EU present in 8086 microprocessor. (2 + 3) + 4 + 6

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

a) Addressing modes of 8051 microcontroller

b) MAX mode and MIN mode

c) Memory organization of 8051 microcontroller

d) PIC microcontroller

e) Stack Memory.

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