Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (BME/EE(O))/SEM-6/EI-611/2010

2010

MICROPROCESSOR & APPLICATIONS

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 the following : 10 × 1 = 10

   i) A microprocessor is said to be 8 bit, 16 bit or 32 bit processor depending on its

      a) Register b) Data Bus

      c) Address Bus d) ALU.

   ii) The number of multiplexed address-data lines of 8085 is

      a) 12 b) 16

      c) 8 d) 20.

   iii) 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.

iv) When the 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.

v) The instruction MOV *A*, *B* belongs to

a) Immediate addressing b) Direct addressing

c) Implied addressing d) Register addressing.

vi) How much can a standard 8086 processor address in real mode ?

a) 64 kb b) 1 MB

c) 16 MB d) 4 GB.

vii) How many output device can be identified by the MPU using I/O mapped I/O ?

a) 256 b) 255

c) 1024 d) 128.

viii) How many hardware interrupt request a single interrupt controller IC 8259 can process ?

a) 8 b) 15

c) 16 d) 64.

ix) Flash Memory is

a) PROM b) EPROM

c) EEPROM d) ROM.

x) The number of programmable 8 bit register of 8085 microprocessor is

a) 5 b) 6

c) 7 d) 8.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What do you understand by sub-routine ? What is the use of stack pointer ? What do you understand by the term LIFO as applied to stack ? 2 + 1 + 2

3. What operation can be performed by using the instruction SUBB ? If *A* contains 17H and *B* contains 25H specify the status of zero and carry flag after the SUBB instruction. Write a program to add two hexadecimal no. 3 AH and 47H and to DISPLAY the answer at an output port 1. 1 + 2 + 2

4. What is *T*-State ? What is multiplexed address/data bus in 8085 microprocessor ? What is unconditional and conditional JUMP ? 1 + 2 + 2

5. What is the function of ALU ? Distinguish between 'software interrupts' and 'hardware interrupts' in 8085 microprocessor. 2 + 3

6. MVI *A*, 64H

   MVI *B*, 32H

   ADD *B*

   HLT

   Specify the register contents and the flag status after each instruction executed. Assume initially *A* = 00H, *B* = 00H, *S* = 0, *Z* = 1, *CY* = 0, *AC* = 0, *P* = 0.

   What do you mean by opcode and operand ? Explain with a suitable example. 3 + 2

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Write an assembly language programme to add first 10 natural numbers and store the result at memory location 2050H.

   b) The instruction code 01001111 (4FH) is stored in memory location 2050H. Explain the data flow and list sequence of events when the instruction code is fetched by the MPU.

   c) Discuss the operation performed by the PUSH and POP instruction. 6 + 5 + 4

8. a) What are high level language and low level language ?

   b) What is the function of ALE in 8085 microprocessor ?

   c) What are the functions of 'TRAP', 'RESET', 'INTR' pins 8085 microprocessor ?

   d) What are RAM and ROM ? 4 + 2 + 3 + 6

9. a) Draw the block diagram of a typical microprocessor based system and briefly discuss its different sections.

   b) What do you mean by word length of a microprocessor ?

   c) What is system bus ? 8 + 3 + 4

10. a) Draw the block diagram of 8255 and briefly discuss its different PORTS.

    b) What is Direct Memory Access ?

    c) What is DMA controller ?

    d) What is the function of 'HOLD' and 'HLDA' pins in 8085 microprocessor ? 6 + 4 + 3 + 2

11. Write short notes on any *three* of the following : 3 × 5
    a) MAX mode of 8086 microprocessor
    b) 8051 microcontroller
    c) Compiler
    d) Assembler
    e) Programmable peripheral interface.