MCA/IIS/204/13

MCA 2nd Semester Examination, 2013

MICROPROCESSOR BASED SYSTEM

PAPER—CS/MCA-204

Full Marks : 100

Time : 3 hours

Answer **Q. No. 1** and **five** from the rest

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

1. Answer any *five* : 2 × 5

(*a*) Why data bus is bidirectional in microprocessor ?

(*b*) How many types of instructions according to bytes are there in 8085 ? Give example of each.

(*c*) Why instruction queue is introduced in Intel 8086 ?

(*d*) How many T-states are required for CALL and RET instruction ?

(*e*) Why the PC and MAR of Intel 8085 is of 16 bits ?

(*f*) What do you mean by Minimum and Maximum mode of Intel-8086 ?

(*g*) Why XI and X2 pins are there in Intel 8085 ?

(*h*) What do you mean by conditional and unconditional jump ?

2. (*a*) Design the internal block diagram of Intel 8086 and write the functions of BIU and EU.

(*b*) What do you mean by fold back memory ?

(*c*) Write the difference between memory mapped I/O and I/O mapped I/O. 7 + 2 + 3

3. (*a*) Draw and describe the timing diagram of SHLD addr. (16 bits).

(*b*) Design an 8085 microprocessor based system where one 8 K RAM and two 2 K ROMs are used. Draw the circuit and specify the address space for RAM and ROMs. 6 + 6

4. (*a*) What do you mean by flags ? Why they are needed ?

(*b*) Discuss about the various control flags of Intel 8086.

(*c*) Specify the number of times the following loop is executed :

```
        MVI A, 17 H
loop :  RAL
        ORA A
        JNC   loop.
```

(*d*) What is vector interrupt ? How many vector interrupts are there in Intel 8085. Discuss.

2 + 5 + 2+ 3

5. (*a*) Write the functions of SIM instruction. Write a program code to enable RST 6·5 and disable RST 7·5 and RST 5·5.

(*b*) A block of 10 data are stored in the memory locations from XX50 H. Transfer the data to the location starting from XX90 H. Write an ALP to solve it.

(*c*) Write the functions of CMP M and DCR M.

(3 + 2) + 5 + 2

6. (*a*) Draw the block diagram of Intel 8259A : Programmable Interrupt controller and write its interrupt operations.

(*b*) Let the clock freq. of a system is 2 MHz. Calculate the delay time for the following subroutine.

```
        MVI  B, 38 H
loop 2 : MVI  C, FFH
loop 1 : DCR  C
        JNZ  loop 1
        DCR  B
        JNZ  loop 2
```

(*c*) Why Intel 8085 is known as an 8 bit micro-processor. 7 + 3 + 2

7. (*a*) Design and describe the block diagram of Intel 8254 : Programmable Interval Timer.

(*b*) What happend when the following code is executed.

```
LXI  SP,  2099H
LXI  H,   13C3 H
= = = = = =
PUSH   H
= = = = = =
POP   H
```

(*c*) What do you mean by implied mode of addressing? 6 + 4 + 2

8. (*a*) Write an ALP to shift a 16 bit number left by two bits.

(*b*) What is the function of IP ?

(*c*) How many segment registers are therein Intel 8086. Write their functions.

(*d*) Write the functions of DREQ 0–DREQ 3 and DACK 0–DACK 3 of Intel 8237. 4 + 1 + 4 + 3

[*Internal Assessment* : 30 Marks]