2015

MCA

2nd Semester Examination

MICROPROCESSOR BASED SYSTEM

PAPER—MCA-204

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

Answer any *seven* questions.

1. (a) What is the function of READY signal of 8085 microprocessor ?   2

   (b) What are the length and addressing modes of the following instructions ?   4

   (i) MOV M, A   (ii) LHI H, 2050H

(iii) ADD B   (iv) OUT 08H

(c) What is the difference between maskable and non-maskable interrupt ? What is the role of $\overline{\text{INTA}}$ signal of 8085 microprocessor ?   2+2

2. (a) If the system clock is 2MHz, find the time to execute the following code: 5

> MVI A, 5A
>
> MVI B, A7
>
> ADD B
>
> INR A
>
> XRA A
>
> RST 1

(b) Discuss the addressing modes of 8085 microprocessor.

       3

(c) What is the job of HOLD signal ?   2

3. (a) Explain the terms — instruction cycle, machine cycle and T-State.   3

(b) Differentiate between instructions STAX B and STA 2050.   2

(c) Draw and explain the timing diagram of MVI A, 45H instruction of 8085 microprocessor. 5

4. (a) Calculate the total delay of the following where microprocessor speed is 2MHz. 5

        MVI B, 10H

Loop 2: MVI C, FFH

Loop 1: DCR C

        JNZ Loop 1

        DCR B

        JNZ Loop 2

(b) Write an assembly language program for 8085 to clear memory locations from C400H to C4FFH. 5

5. (a) What is the purpose of ALE signal in 8085 ? 2

(b) Write an assembly language program for 8085 to reset the zero flag. 5

(c) What is subroutine ? Which instructions are used in 8085 microprocessor to implement subroutine ? 3

6. (a) What is the difference between MAX mode operation and MIN mode operation in 8085 ?   3

   (b) What is fold back memory space ? Explain with an example.   3

   (c) What are the differences between I/O mapped I/O and memory mapped I/O ?   3

   (d) How many address lines are required for a 16K memory ?   1

7. (a) Explain in details the following instruction and if the clock frequency is 2MHz, then calcuate the time delay at each instruction.   6

   (i) ADD M   (ii) SHLD 1050H

   (iii) LDAX D

   (b) Write an assembly language program for 8085 microprocessor to find the largest number from a set of 8 bit numbers.   4

8. (a) Explain the different modes of operation of 8255 in detail.   5

(b) Write an assembly language program to initialize an 8255, having control port A as I/P and port B as O/P. (Consider Mode 0 operation). 5

9. (a) Explain the different addressing modes supported by 8086 microprocesssor. 5

(b) Explain the different flag registers in 8086 microprocessor. 5

10. (a) How does 8085 microprocessor demultiplex $AD_7 - AD_0$? Explain. 3

(b) Explain with diagram to generate separate control signals for memory and I/O devices of 8085 microprocessor. 3

(c) Write an assembly language program for 8085 microprocessor to count the number if 1's in a data byte. 4

Internal Assessment — 30