Total No. of printed pages = 7

RETEST EXAMINATION - 2019

Semester : 5th

Subject Code : CAI-505

MICROPROCESSORS AND APPLICATIONS

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Instructions :

1. *All* questions of PART–A are compulsory.
2. Answer any *five* questions from PART–B.

PART – A

Marks – 25

1. Fill in the blanks : 1×10=10

   (a) A group of 4 bits is called _____.

   (b) _____ is a combination of letters to suggest the operation of an instruction.

[Turn over

(c) _____ is a 7 bit alphanumeric code with 128 combinations.

(d) The instruction ADD A will make the accumulator content _____.

(e) _____ is the largest possible integer that can be processed by 8085 at a time.

(f) _____ bus is bidirectional.

(g) Tristate device has the states : low, high and _____.

(h) _____ bytes make a word of 32 bits.

(i) _____ address lines are required to address 32KB memory.

(j) The numbers of registers and memory cells in a 2048 × 4 memory are _____ and _____.

2. Write true or false : 1×10=10

(a) SP and PC are the 16 bit registers of 8085.

(b) HLT and NOP are machine control instructions.

(c) Monitor program translate the hex input to decimal.

(d) Assembly language is independent of microprocessors.

(e) Bus is a group of connecting wires for communication of peripherals with processor.

(f) INR D is a two byte instruction.

(g) The term "Memory Map" is used to for entire address range of a memory chip.

(h) Data flow in both direction between the MPU and the memory and peripherals.

(i) Microprocessor can write into or read from memory.

(j) Parity flag is set when the result of an arithmetic or logical operation has odd numbers of 1's.

3. Choose the correct answer : 1×5=5

(i) The logic circuit that amplifies current or power is

(a) Buffer (b) Latch

(c) ROM (d) Line driver

(ii) The stack used in 8085 is

(a) FIFO (b) MIMO

(c) LIFO (d) FOFO

(iii) 8085 can perform arithmetic and logical operations using

(a) Stack Pointer (b) Program Counter

(c) Accumulator (d) None of these

(iv) In 8085, the first machine cycle of every instruction is

(a) I/O read (b) Memory write

(c) Memory read (d) Opcode fetch

(v) Which of the following is an example of arithmetic instruction ?

(a) STA 16-bit (b) ADD M

(c) RLC (d) RST 1

PART – B

Marks – 45

4. (a) Define the term Flag and explain how the different flags of 8085 are affected. 2+4=6

(b) Draw a block diagram of a computer with the microprocessor as CPU. 3

5. (a) Name the five major groups of 8085 instructions with examples. 5

(b) Specify the opcode, operand and meaning of the following instructions :

(i) MOV C, M

(ii) SUB C 4

6. (a) If the starting address of the following program is CFFFH, then assemble the program :

```
MVI A, 78H
OUT F5H
LDA E200H
MOV B, A
STA 7300H
RST1
```

5

(b) Write an ALP to add two bytes already stored in memory locations E051H and E052H. Location E051H holds A9H and location E052H holds the byte 20H. Store the answer in memory location F000H. 4

7. (a) The starting memory address of a 2K byte memory chip is given as F000H. Specify the last memory address of the chip. 3

(b) Explain the functions of SP and PC of 8085. 4

(c) If the 8085 has fetched the m/c code located at the memory location 2000H, specify the contents of program counter. 2

8. (a) Make a comparison between memory mapped I/O and I/O mapped I/O interfacing schemes. 6

(b) Identify the word sizes in the following instructions :

* CMA
* MVII 55H
* JMP E123H 3

9. (a) Design a 8-bit register (8 input lines and 8 output lines) to store 8 bits using flip flops. 5

(b) How does a microprocessor differentiate between an opcode and data ? 2

(c) Explain how many times the following loop will be executed ?

```
LXI B, 0009H

LOOP: DCX B

JNZ LOOP
```
2

10. (a) If 8085 subtracts 23H from 85H, specify the contents of accumulator and the status of sign, zero and carry flag. 4

(b) Draw the timing diagram of memory read machine cycle. 5

11. Draw a neat and clean functional block diagram of 8085 microprocessor. List the various internal units that make up 8085 architecture, and explain their functions in decoding and executing an instruction. 9