Total No. of printed pages = 7

END SEMESTER EXAMINATION – 2022

Semester : 5th (Old /New)

Subject Code : ET-502

MICROPROCESSOR

Full Marks – 70

Time – Three hours

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

Instruction :

- *All* questions of PART–A and PART–B are compulsory.

PART – A

Marks – 25

1. Choose the correct answers :   1×5=5

   (a) Which one of the following is not a vectored interrupt ?

   (i) TRAP   (ii) INTR

   (iii) RST 7.5   (iv) RST 3

[Turn over

(b) What is meant by ALU ?

(i) Arithmetic logic upgrade

(ii) Arithmetic and logic unit

(iii) Arithmetic logic unsigned

(iv) Arithmetic local unsigned

(c) In 8085, name of the 16 bit registers is

(i) Stack pointer

(ii) Register-B

(iii) Register-A

(iv) None of these circuit

(d) The five flags in 8085 are designated as

(i) Z, CY, S, P and AC

(ii) D, Z, S, P, and AC

(iii) Z, C, S, P, AC

(iv) Z,CY, S, D, AC

(e) The register which holds the information about the nature of results of arithmetic and logic operations is called as

(i) Accumulator

(ii) Condition code register

(iii) Flag register

(iv) Process status register.

2. Fill in the blanks : 1×5=5

    (a) An instruction has two parts : Opcode and the _____.

    (b) The technique of assigning a memory address to each I/O device in the computer system is called _____.

    (c) STA 2500H takes _____ T state machine cycles.

    (d) Address bus is unidirectional and data bus is _____ .

    (e) Ready signal is used in microprocessor to _____ with slow peripheral device.

3. State true or false : 1×5=5

    (a) The stack is a data storage area in RAM used by certain microprocessor operations.

    (b) A microprocessor with the necessary support circuits will include at least two memory ICs : ROM or EPROM, and a RAM.

(c) I/O-mapped systems identify their input and output devices by giving them an 8-bit port number.

(d) 8085 microprocessor operates on +5V.

(e) LDA addr and STA addr are Fortran language instructions stored in an external memory IC for a microprocessor.

4. Match the following : 1×5=5

(a)	What is the clock frequency for 8085 μP ?	(i)	64k.
(b)	Stack pointer register is used for accessing	(ii)	Program counter
(c)	The register used for sequencing the execution of instructions is	(iii)	Stack
(d)	Maximum memory which 8085 microprocessor can address	(iv)	3 MHz
(e)	When referring to instruction words, a mnemonic is	(v)	Short abbreviation for the operation to be performed.
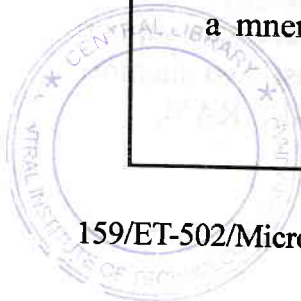
5. Answer the following questions in short :

                                                    1×5=5

    (a) How many interrupt lines found in 8085
         micro- processor ?

    (b) Name one 8-bit register of 8085 micro-
         processor.

    (c) What is the size of data bus for 8085 micro-
         processor ?

    (d) Which instruction is used to complement the
         content of the accumulator ?

    (e) How many T-states does an opcode fetch
         cycle take ?

PART – B
Marks – 45

6. Answer any *five* of the following questions :

                                                    3×5=15
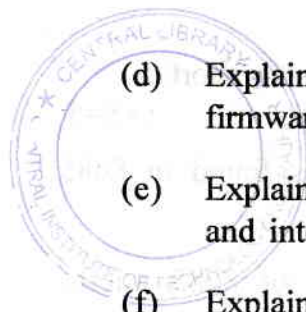
    (a) Explain with diagram the functions of each
         register of 8085 microprocessor.

    (b) Give description of different types of bus of
         8085 microprocessor with proper diagram.

    (c) Define machine language, assembly language,
         high level language.

(d) Explain the terms : hardware, software and firmware.

(e) Explain the functions of compiler, assembler and interpreter.

(f) Explain what subroutine is. What instruction is used to call a subroutine ? Give an example.

(g) Discuss the operating principles of a successive approximation type A/D converter.

7. Answer any *three* of the following questions :

$5 \times 3 = 15$

(a) Draw and explain the timing diagram for memory read operation.

(b) Classify the instruction set for 8085 microprocessor in various groups. Give examples of instructions for each group.

(c) Describe the de-multiplexing of AD_0-AD_7 bus with necessary diagrams.

(d) Explain the different operating modes of PPI 8255.

(e) What are the different types of keyboard ? Explain one of them.

8. Answer any two of the following questions :

$$7.5\times2=15$$

(a) Write an assembly language program to add two 8-bit numbers. The sum may be of 16 bits.

(b) Write an assembly language program to get the smallest number in a data array.

(c) Draw and explain the internal block diagram of 8085 microprocessor.

(d) With the help of an internal block diagram, describe the various registers of 8086 microprocessor.

(e) Explain with diagram, the direction of data flow in memory write operation.