B.TECH. / B.TECH. - M.TECH. (DUAL DEGREE)

SIXTH SEMESTER EXAMINATION, 2022-23

MICROPROCESSOR AND ITS APPLICATIONS

Time: **3:00 hrs.** Max. Marks: **40**

Note : **(i)** The question paper contains **Three** Sections.
(ii) Section-A is compulsory, Section-B and C contains internal choice.

SECTION-A

1. Attempt **ALL** parts of the following questions: **1 x 10 = 10**

(a) Which of the following addressing method does the instruction, MOV AX, [BX] represent? [BT-2, CO-2, PO-2]

(i) register indirect addressing mode

(ii) direct addressing mode

(iii) register addressing mode

(iv) register relative addressing mode

(b) What is the word length of an 8-bit microprocessor? [BT-2, CO-5, PO-1]

(i) 8-bits – 64 bits **(ii)** 4-bits – 32 bits

(iii) 8-bits – 16 bits **(iv)** 8-bits – 32 bits

(c) Which of the following is true about microprocessors? [BT-1, CO-1, PO-6]

(i) It has an internal memory

(ii) It has interfacing circuits

(iii) It contains ALU, CU, and registers

(iv) It uses Harvard architecture

(d) Which of the following is a special-purpose register of microprocessor? [BT-1, CO-1, PO-2]

(i) Program counter (ii) Instruction register

(iii) Accumulator (iv) Temporary register

(e) Which of the following is the correct sequence of operations in a microprocessor? [BT-1, CO-3, PO-6]

(i) Opcode fetch, memory read, memory write, I/O read, I/O write

(ii) Opcode fetch, memory write, memory read, I/O read, I/O write

(iii) I/O read, opcode fetch, memory read, memory write, I/O write

(iv) I/O read, opcode fetch, memory write, memory read, I/O write

(f) The intel 8086 microprocessor is a processor. [BT-2, CO-2, PO-1]

(i) 8 bit (ii) 16 bit

(iii) 32 bit (iv) 4 bit

(g) The microprocessor determines whether the specified condition exists or not by testing the. [BT-1, CO-4, PO-4]

(i) carry flag (ii) conditional flag

(iii) common flag (iv) sign flag

(h) In 8086 the overflow flag is set when. [BT-2, CO-5, PO-6]

(i) the sum is more than 16 bits.

(ii) signed numbers go out of their range after an arithmetic operation.

(iii) carry and sign flags are set.

(iv) subtraction

(i) Which microprocessor accepts the program written for 8086 without any changes? [BT-1, CO-2, PO-3]

(i) 8085 (ii) 8086

(iii) 8087 (iv) 8088

(j) The result of MOV AL, 65 is to store. [BT-2, CO-4, PO-3]

(i) store 0100 0010 in AL (ii) store 42H in AL

(iii) store 40H in AL (iv) store 0100 0001 in AL

SECTION-B

2. Attempt any **TWO** of the following questions: **5 x 2 = 10**

(a) Explain the different types of interrupts supported by the 8085 microprocessor. Also discuss about interrupt service routine, how it is executed in the 8085 microprocessor. [BT-4, CO-1, PO-6]

(b) Describe procedures and macros in assembly language programming? How do they differ from each other? [BT-3, CO-2, PO-2]

(c) Discuss the 8259 priority interrupt controller? Explain the different modes of operation of the 8259 controller. [BT-4, CO-3, PO-1]

(d) What is a timer? Explain the different modes of operation of the programmable interval timer/counter 8253/8254. [BT-3, CO-4, PO-3]

SECTION-C

3. Attempt any **ONE** of the following questions: **4 x 1 = 4**

(a) Discuss the different addressing modes supported by the 8085 microprocessor? Explain each mode in detail. [BT-5, CO-1, PO-1]

(b) Define the architecture of the 8085 microprocessor? Also draw and explain the pin diagram of the 8085 microprocessor. [BT-4, CO-1, PO-2]

4. Attempt any **ONE** of the following questions: **4 x 1 = 4**

(a) Explain timing diagram in the context of the 8086 microprocessor? Draw and explain the timing diagram of the 8086 microprocessor. [BT-5, CO-2, PO-3]

(b) How string operations performed in assembly language programming? Explain the different string manipulation instructions supported by the 8086 microprocessor. [BT-6, CO-2, PO-2]

5. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) What do you mean by DMA? Explain the architecture and working of the 8257 DMA controller. [BT-4, CO-3, PO-1]

(b) Write an assembly language program to read data from the keyboard using the 8279 keyboard-display controller and display it on a screen. [BT-6, CO-3, PO-6]

6. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) Explain the architecture and working of the 8253 timer. How is it interfaced with a microprocessor? [BT-4, CO-4, PO-7]

(b) How do you interface an ADC with a microprocessor? Explain the different interfacing techniques used in ADC interfacing. [BT-5, CO-4, PO-6]

7. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) Describe salient features and architecture of the Intel 80386 microprocessor? How is it different from its predecessors? [BT-5, CO-5, PO-7]

(b) Define an embedded system and its importance. Also explain the different components of an embedded system. [BT-4, CO-5, PO-6]