

B.TECH
(SEM IV) THEORY EXAMINATION 2018-19
INTRODUCTION TO MICROPROCESSOR

Time: 3 Hours**Total Marks: 70****Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.**SECTION A**

1. **Attempt all questions in brief.** **2 x 7 = 14**
- What are the functions of an accumulator?
 - Calculate the number of memory chips needed to design 128K-Byte memory if the Memory chip size is 2048 x 1.
 - Explain CALL & RET instructions used in 8085.
 - Explain the functions of the pins HOLD and HLDA in 8085 microprocessor.
 - What do you understand by logical address and physical address?
 - Draw the Flag register of 8086.
 - What do you mean by pipelining?

SECTION B

2. **Attempt any three of the following:** **7 x 3 = 21**
- Explain the evolution of microprocessor with its different generations in detail.
 - Write instructions to load two unsigned numbers in register B and register C, respectively. Subtract (C) from (B). If the result is in 2's complement, convert the result in absolute magnitude and display it at PORT1; otherwise, display the positive result. (Assume (B) = 42H and (C) = 69H).
 - What is the need of counters and time delays? Calculate the maximum time delay that can be produced by using a register pair.
 - Write an assembly language program for the addition of two BCD numbers stored at memory location starting from XX40H, store the result at memory locations starting from XX90H.
 - Explain the various modes of operation of 8254/53 with examples.

SECTION C

3. **Attempt any one part of the following:** **7 x 1 = 7**
- Connect 8k byte EPROM with microprocessor 8085. The IC available is 2k x 8 EPROM, also draw its address decoding table.
 - Draw and explain the architecture of 8085 microprocessor, also explain the programmer's model of 8085.
4. **Attempt any one part of the following:** **7 x 1 = 7**
- Draw and explain the timing diagram of opcode fetch machine cycle.
 - Define instruction and instruction cycle. Classify the instruction set of 8085 in different groups. Explain each group with two examples; also explain the functions of the examples.
5. **Attempt any one part of the following:** **7 x 1 = 7**
- What are interrupts? Give the classification of interrupts. Explain the hardware and software interrupts used in 8085.

- (b) Calculate the 16-bit count to be loaded in register DE to obtain the loop delay of two seconds in LOOP2 (assume the clock frequency of the system to be 2MHz)

```
        MVI B, 14H
LOOP2:  LXI D, COUNT
LOOP1:  DCX D
        MOV A, D
        ORA E
        JNZ  LOOP1
        DCR B
        JNZ  LOOP2
```

6. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Write an assembly language program to convert a binary number stored at memory location XX20H, into its equivalent ASCII-Hex code, store the codes at memory locations XX30H and XX31H.
- (b) Write an assembly language program to convert (56)_{BCD} to its equivalent binary number. The BCD number is stored at memory location XX50H, store the result in memory location XX60H.

7. Attempt any *one* part of the following:

7 x 1 = 7

- (a) Draw and explain the functional block diagram of 8259 PIC. Also explain its Initialization Command Words.
- (b) Draw and explain the architecture of 8086 microprocessor. Calculate the physical address if CS=9105H and IP=1724H.