

**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
- a. What are the functions of an accumulator?
  - b. Calculate the number of memory chips needed to design 128K-Byte memory if the Memory chip size is 2048 x 1.
  - c. Explain CALL & RET instructions used in 8085.
  - d. Explain the functions of the pins HOLD and HLDA in 8085 microprocessor.
  - e. What do you understand by logical address and physical address?
  - f. Draw the Flag register of 8086.
  - g. What do you mean by pipelining?

**SECTION B**

2. Attempt any *three* of the following: 7 x 3 = 21
- a. Explain the evolution of microprocessor with its different generations in detail.
  - b. 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).
  - c. What is the need of counters and time delays? Calculate the maximum time delay that can be produced by using a register pair.
  - d. 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.
  - e. 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
- (a) Connect 8k byte EPROM with microprocessor 8085. The IC available is 2k x 8 EPROM, also draw its address decoding table.
  - (b) 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
- (a) Draw and explain the timing diagram of opcode fetch machine cycle.
  - (b) 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
- (a) 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)<sub>BCD</sub> 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.

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