

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3160712****Date:26/11/2021****Subject Name:Microprocessor and Interfacing****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

- Q.1**
- |     |   |           |
|-----|---|-----------|
| (a) | Explain system bus of 8085 microprocessor.  | <b>03</b> |
| (b) | Explain following pins of an 8085 microprocessor in brief:<br>1. ALE 2. TRAP 3. READY 4. HLDA | <b>04</b> |
| (c) | Explain 8085 Programming Model and Flag Register.   | <b>07</b> |

- Q.2**
- |     |  |           |
|-----|--|-----------|
| (a) | Differentiate 8085 microprocessor with 8086 microprocessor.  | <b>03</b> |
| (b) | Draw the timing diagram of MOV M, D instruction of an 8085 microprocessor.   | <b>04</b> |
| (c) | Write an 8085 assembly language program to arrange the following numbers in <b>ascending</b> order: 29H, 47H, 06H, 03H, 17H. | <b>07</b> |

**OR**

- |     |   |           |
|-----|---|-----------|
| (c) | Write an 8085 assembly language program to arrange the following numbers in <b>descending</b> order: 29H, 47H, 06H, 03H, 17H. | <b>07</b> |
|-----|---|-----------|

- Q.3**
- |     |   |           |
|-----|---|-----------|
| (a) | Explain subroutine with suitable example.   | <b>03</b> |
| (b) | Explain following instructions with no. of bytes, machine cycles and T-states required for execution: 1. SHLD 2. RAL  | <b>04</b> |
| (c) | Ten 8-bit values are stored from memory location 5000H onwards. Write an 8085 assembly language program to add POSITIVE values on addresses starts from 5100H and NEGATIVE values on addresses starts from 5200H. | <b>07</b> |

**OR**

- Q.3**
- |     |  |           |
|-----|--|-----------|
| (a) | What is interrupt? List hardware interrupts of 8085.   | <b>03</b> |
| (b) | Explain following instructions with no. of bytes, machine cycles and T-states required for execution: 1. CALL 2. CPI   | <b>04</b> |
| (c) | Ten 8-bit values are stored from memory location 3000H onwards. Write an 8085 assembly language program to find the largest value and stored it on the location 4000H. | <b>07</b> |

- Q.4**
- |     |  |           |
|-----|--|-----------|
| (a) | What will be the value in accumulator, for the given 8085 program below? | <b>03</b> |
|-----|--|-----------|

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MVI C, 7FH
MVI B, 3EH
MOV A, B
RLC
RLC
ANI 7FH
HLT

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- |     |   |           |
|-----|---|-----------|
| (b) | Consider the following 8085 assembly language instructions:<br>LXI D, 1234H | <b>04</b> |
|-----|---|-----------|

NEXT: DCX D  
 MOV A, E  
 ORA D  
 JNZ NEXT

What amount of delay is generated if the crystal frequency is 4 MHz?

- (c) Explain various addressing modes of 8085 microprocessor. **07**
- OR**
- Q.4 (a)** What will be the value in accumulator, for the given 8085 program below? **03**
- MVI A, 07H  
 RLC  
 MOV B,A  
 RLC  
 RLC  
 RLC  
 ORA B  
 HLT
- (b) Write an 8085 assembly language program to convert a two-digit BCD number into its equivalent hexadecimal number. **04**
- (c) Define the followings: Machine Cycle, T-state, JC, CMP, RET, SBB, STC **07**
- Q.5 (a)** Explain format of the descriptor in 80386 with diagram. **03**
- (b) Draw block diagram of 80286 microprocessor. **04**
- (c) Draw and explain the block diagram of the programmable peripheral interface 8255A. **07**
- OR**
- Q.5 (a)** List and explain the segment registers of 8086 microprocessor. **03**
- (b) Draw block diagram of 80386 microprocessor. **04**
- (c) Draw and explain the block diagram of the programmable interrupt controller 8259A. **07**

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160712****Date:03/06/2022****Subject Name:Microprocessor and Interfacing****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

- |            |     |  |           |
|------------|-----|--|-----------|
| <b>Q.1</b> | (a) | Explain the flag register in 8085 microprocessor.  | <b>03</b> |
|            | (b) | Explain the following pins of 8085:<br>(1) INTR (2) HOLD (3) SOD (4) READY   | <b>04</b> |
|            | (c) | Draw the block diagram of internal architecture of 8085 and explain its working.   | <b>07</b> |
| <b>Q.2</b> | (a) | Explain the following instructions<br>1. LHL D 2. RAL 3. DAA   | <b>03</b> |
|            | (b) | Explain demultiplexing of data and address bus of 8085.  | <b>04</b> |
|            | (c) | Explain the timing diagram of the instruction MOV C,A (4FH) stored in location 2005H is being fetched. Define T-state, Machine cycle and Instruction cycle.  | <b>07</b> |
|            |     | <b>OR</b>  |           |
|            | (c) | Explain interfacing of 4KB EPROM with 8085 using decoder and gates as required. Assume starting address as 0000H.  | <b>07</b> |
| <b>Q.3</b> | (a) | Write a program to find 2's complement of a number stored at 2050H and store result at 2055H.  | <b>03</b> |
|            | (b) | Compare memory mapped I/O and I/O mapped I/O.  | <b>04</b> |
|            | (c) | What are interrupts? List and explain the interrupt available in microprocessor 8085?  | <b>07</b> |
|            |     | <b>OR</b>  |           |
| <b>Q.3</b> | (a) | Explain the concept of stack.  | <b>03</b> |
|            | (b) | Explain arithmetic instructions of 8085.   | <b>04</b> |
|            | (c) | Write an 8085 program to copy block of ten numbers starting from location 2050h to locations starting from 3050h.  | <b>07</b> |
| <b>Q.4</b> | (a) | State the difference between PUSH and POP instruction.   | <b>03</b> |
|            | (b) | Explain the generation of control signals in 8085.   | <b>04</b> |
|            | (c) | Draw the internal block diagram of 8259A and explain the functions of each block in detail.  | <b>07</b> |
|            |     | <b>OR</b>  |           |
| <b>Q.4</b> | (a) | Explain Machine level language and Assembly level language with examples.  | <b>03</b> |
|            | (b) | Explain 8085 bus organization.   | <b>04</b> |
|            | (c) | Write a program to count continuously in hexadecimal from FFH to 00H in a system with a clock period of 0.5 $\mu$ s. Use register C to set up 1 millisecond delay between each count and display the number at the output port1. | <b>07</b> |

- Q.5** (a) How many memory locations can be addressed by microprocessor with 14 address lines? Also specify how many address lines are required for 2KB memory. **03**
- (b) Load the hexadecimal numbers 56H and A9H in registers D and E respectively and add them. If sum is greater than FFH, display 01H at output PORT0; otherwise display sum. **04**
- (c) Draw the internal block diagram of 8255 and explain the functions of each block in details. **07**
- OR**
- Q.5** (a) Explain the given pins of 8086. **03**  
1. ALE 2. DEN 3. MN/MX
- (b) Explain the modes of operation of 8086 microprocessor. **04**
- (c) Explain the block diagram of 8086 microprocessor. **07**

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