

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020

**Subject Code:2150707**

**Date:03/02/2021**

**Subject Name:Microprocessor and Interfacing**

**Time:10:30 AM TO 12:30 PM**

**Total Marks: 56**

**Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

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|------------|---|-----------|
| <b>Q.1</b> | (a) Explain following pin functions of 8085: 1) ALE 2) READY 3) CLKOUT  | <b>03</b> |
|            | (b) List and explain 8085 addressing modes with suitable example.   | <b>04</b> |
|            | (c) Draw the internal architectural block diagram of 8085 microprocessor and explain working of each block of 8085 in brief.  | <b>07</b> |
| <b>Q.2</b> | (a) Answer the followings:  | <b>03</b> |
|            | 1. How many address lines are necessary on the chip of 2K byte memory?  |           |
|            | 2. The memory address of the last location of an 8K byte memory chip is FFFF H. Find the starting address.  |           |
|            | 3. Why program counter and stack pointer is a 16 bit register?  |           |
|            | (b) State the functions of the following instruction with no. of bytes occupied, no. of machine cycles, no. of T-states, addressing mode.   | <b>04</b> |
|            | 1) PUSH PSW 2) XCHG   |           |
|            | (c) Explain the execution of the instruction STA 2050H with neat timing diagram.  | <b>07</b> |
| <b>Q.3</b> | (a) Write an 8085 ALP to convert BCD number to binary hex number. $(49)_{BCD} = (31)_H$   | <b>03</b> |
|            | (b) Write an 8085 ALP to count positive and negative data bytes from 10 bytes stored on location 3001 onwards. Store count of positive data bytes in location 4001H and count of negative data bytes on location 5001H. | <b>04</b> |
|            | (c) What is Stack and Stack pointer register? Explain the working and use of stack in subroutine program.   | <b>07</b> |
| <b>Q.4</b> | (a) Five data bytes are stored on location starts from 6001H. Write an 8085 ALP to convert into 2's complement and store them on location 9001H.  | <b>03</b> |
|            | (b) 10 data bytes are stored in memory location 2051H onwards. Write an 8085 assembly language program to count number of 1's in each byte and store this count in corresponding memory locations D001H onwards.        | <b>04</b> |
|            | (c) What are interrupts? List and explain the interrupts available in microprocessor 8085?  | <b>07</b> |
| <b>Q.5</b> | (a) Explain the Page Table and Page Directory Entry in brief.   | <b>03</b> |
|            | (b) Compare memory mapped I/O with I/O mapped I/O.  | <b>04</b> |
|            | (c) Draw and explain programmable interrupt controller 8259A.   | <b>07</b> |
| <b>Q.6</b> | (a) Differentiate between GDT and LDT.  | <b>03</b> |
|            | (b) What are the control signals? How do we generate them? Give their importance.   | <b>04</b> |
|            | (c) Draw and explain programmable peripheral interface 8255A.   | <b>07</b> |
| <b>Q.7</b> | (a) List features of 80486 microprocessor.  | <b>03</b> |
|            | (b) Draw block diagram of SUN SPARC architecture.   | <b>04</b> |
|            | (c) Explain the architecture of the 8086 with a neat block diagram.   | <b>07</b> |

- Q.8** (a) Explain flag register of 8086 microprocessor. **03**  
(b) Draw logical block diagram of ARM 7 architecture. **04**  
(c) Describe the architecture of the 80386 with a neat block diagram. **07**  
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