Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2017

Subject code: 2150707 **Date: 01/05/2017**

Subject Name: Microprocessor and Interfacing

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 Answer the following questions:

i. Differentiate between *higher level language* and *assembly level language.* **01**

ii. What is the function of **ALE** pin? **01**

iii. Name different types of machine cycles executed by the 8085 microprocessor? **01**

iv. What will be done if **OUT 50h** instruction is executed? **01**

v. Write the set of 8085 assembly language instructions to store the contents of B and C registers on the stack. **01**

vi. Draw the structure of a flag register of the 8085 microprocessor. **01**

vii. How much time the 8085 microprocessor will take to execute the **MOV B, A** instruction, if the crystal frequency is 4MHz? **01**

viii. Explain the **STA** instruction of the 8085 microprocessor with example. **01**

ix. What is the difference between **ORA** and **ORI** instructions? **01**

x. Explain the use of $\overline{BHE} / S_7$ pin of the 8086 microprocessor. **01**

xi. Enlist various segment registers available in the 8086 microprocessor. **01**

xii. Draw the format of a flag register of the 8086 microprocessor. **01**

xiii. State various types of registers available in programmable interrupt controller (8259). **01**

xiv. What will be the physical address (PA), if CS and IP register contents of the 8086 microprocessor are 2000h and 20h, respectively? **01**

Q.2 **(a)** Explain **DAA** and **LDA** instructions of the 8085 microprocessor with examples. **03**

(b) Draw the timing diagram of **MVI A, 32H** instruction of an 8085 microprocessor. **04**

(c) An array of ten data bytes is stored on memory locations 2100H onwards. Write an 8085 assembly language program to find the *largest* number and store it on memory location 2200H. **07**

OR

(c) An array of twenty data bytes is stored on memory locations 2000H onwards. Write an 8085 assembly language program to count the number of zeros, odd numbers and even numbers and store them on memory locations 3000H, 3001H and 3002H, respectively. **07**

Q.3	**(a)**	Draw the interfacing of a 4K EPROM having a starting address 2000HH with 8085 microprocessor. Use demultiplexed address/data lines and 3-to-8 decoder (74LS138).	**03**
	(b)	Write a set of 8085 assembly language instructions to generate a 0.5 second delay, if the crystal frequency is 4 MHz.	**04**
	(c)	Write an 8085 assembly language program to count the number of bytes that are greater than 20_{10} and lesser than 40_{10} from an array of ten bytes stored on memory locations 2000H onwards. Store such numbers on memory locations 3000H onwards.	**07**

OR

Q.3	**(a)**	Describe various addressing modes of 8085 microprocessor with examples.	**03**
	(b)	Show all the necessary connections to interface eight LEDs using an output port with address 39H with 8085 microprocessor. Assume demultiplexed address/data lines.	**04**
	(c)	Write an 8085 assembly language program sort an array of twenty bytes stored on memory locations 2000H onwards in descending order.	**07**
Q.4	**(a)**	Enlist the sequence of steps occur when the interrupt request is placed on the INTR pin of the 8085 microprocessor.	**03**
	(b)	Define the concept of *subroutine.* Explain the **CALL** and **RET** instructions of the 8085 microprocessor with example.	**04**
	(c)	State the difference between the *vectored* and *non-vectored interrupts*. Explain *vectored interrupts* of the 8085 microprocessor.	**07**

OR

Q.4	**(a)**	What is the need of the programmable interrupt controller (8259A)? Draw and explain the block diagram of 8259A.	**03**
	(b)	Explain the **SIM** and **RIM** instructions of the 8085 microprocessor.	**04**
	(c)	Draw and explain the block diagram of the programmable peripheral interface (8255A).	**07**
Q.5	**(a)**	Describe the importance of bus interface unit (BIU) and execution unit (EU) the 8086 microprocessor.	**03**
	(b)	Differentiate between the *real mode* and *protected mode* of the 80286 microprocessor.	**04**
	(c)	Explain, in brief, various addressing modes of the 80286 microprocessor.	**07**

OR

Q.5	**(a)**	Explain the following pins of the 8086 microprocessor: $\overline{TEST}$, $\overline{LOCK}$	**03**
	(b)	Briefly explain the *virtual 8086 mode* of the 80386 microprocessor.	**04**
	(c)	What is a descriptor table? What is its use? Dedifferentiate between GDT and LDT.	**07**

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