Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2015

Subject Code:2141001 **Date: 28/05/2015**

Subject Name: MICROPROCESSOR AND INTERFACING

Time:10:30am-1.00pm **Total Marks: 70**

Instructions:

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

Q.1 **(a)** Do as directed **07**

(i) Justify 8085 microprocessor is 8 – bit microprocessor. **02**

(ii) What is the content of program counter after reset in 8085? **01**

(iii) Write a program in 8085 to obtain 1's complement of 50H data without using CMA instruction. **02**

(iv) How many memory locations can be addressed by a microprocessor with 12 address lines? **01**

(v) Specify the crystal frequency required for 8085 microprocessor to operate at 2 MHz. **01**

(b) List out the general purpose register available in 8085. Explain the flag register and flag bits of 8085 microprocessor. **07**

Q.2 **(a)** Define addressing modes? List out the various addressing modes supported by 8085 microprocessor – give examples of each addressing modes. **07**

(b) (i) Design a circuit to de-multiplex AD0 – AD7 address and data line in 8085. **03**

(ii) Explain the functions of following instructions of 8085 – state its number of bytes occupied, number of Machine cycle required and T-states. **04**

1. MOV A,M
2. LXI H,2500H
3. DAA
4. STA 9100H

OR

(b) (i) Design a circuit to generate control signal from RD', WR' & IO/M' **04**

(ii) Specify the content of registers and flag status after execution of each of the following instruction execution. **03**

	A	C	S	Z	CY
INITIAL VALUES	XX	XX	0	0	0

MVI A,5EH
ADI A2H
MOV C,A

Q.3 **(a)** Draw and explain the timing diagram of instruction MOV B,A which is written on memory location 2505H **07**

(b) Write a program in 8085 to perform multiplication of two 8-bit numbers. Assume numbers are available from 2500h and 2501h memory locations. Store the result on 2502h (lower byte) and 2503h (higher byte) memory locations. **07**

OR

Q.3 **(a)** Design a delay loop to provide a delay of 100msec. Assume clock frequency of 8085 is 1MHz. **07**

(b) Write a program in 8085 to arrange the five numbers in ascending order. Assume numbers are available from 9500h to 9504h. **07**

Q.4 **(a)** Develop 8085 based system to interface with following memory modules **07**
ROM of 4Kbytes starting address is 0000h
RAM of 4Kbytes starting address is 2000h. Use single decoder. (Assume de-multiplex address data lines and address lines available – no need to show buffers, latch)

(b) Broadly classify the interrupts in 8085 microprocessor. **07**

OR

Q.4 **(a)** Design a circuit to make INTR as vector interrupt for software restart sequence RST 5 having code EFh. **07**

(b) (i) Differentiate memory mapped I/O and peripheral mapped I/O **03**
(ii) Explain the working of instruction SIM showing importance of each bit. Write sequence of instruction to enable all the interrupts in 8085. **04**

Q.5 **(a)** Design 8085 based system to interface 8 DIP switches and 8 LEDs through Port-A and Port-B of 8255 respectively. Assume Port-A address of 8255 is 80H. **07**
Write a program to read DIP switches of Port-A and display on Port-B LEDs.

(b) Compare 8085 and 8086 microprocessor. **07**

OR

Q.5 **(a)** What is pipeline architecture? Discuss various modules of 8086 architecture. **07**

(b) What will be the content of accumulator after execution of program shown below? Show and explain the stack operation in detail for this program. **07**

```
Address  Mnemonics
2000H: LXI H,2030H          SUB1: POP H
     : MVI A,40H                  INR A
     : MVI B,50H                  SUI 30H
     : ADD B                      PCHL
     : CALL SUB1                  MVI A,20H
     : HLT                        PUSH H
                                  RET
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