

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- • EXAMINATION – SUMMER 2014****Subject Code: 162002****Date: 21-05-2014****Subject Name: Micro Processors and Microcontrollers****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.

- Q.1 (a)** Draw and explain the timing sequences of CALL DELAY instruction which is aligned at 3006H address and subroutine at 4000H address for 8085 microprocessor. (Hex Op-code for CALL instruction is CDH.) **07**
- (b)** Explain the architecture block diagram of 8085 microprocessor. **07**
- Q.2 (a)** Why the interrupt mechanism is required in microprocessor? Explain the interrupt priorities in 8085 microprocessor. **07**
- (b)** What is Memory mapped I/O interfacing? Differentiate between I/O mapped I/O and Memory mapped I/O interfacing. **07**
- OR**
- (b)** Explain the functions of the instructions STAX, DAA and LXI with suitable examples. **07**
- Q.3 (a)** Write an assembly language program to convert a two digit HEX number stored at 3050H to its equivalent packed BCD number and store at 3060H (Most Significant Digit) and 3061H (Least Significant Digit) using 8085 instruction set. **07**
- (b)** Write an assembly language program to find the smallest number in from an array of twenty elements stored at 4000H memory location and store your answer at 5000H location using 8085 instruction set. **07**
- OR**
- Q.3 (a)** Write an assembly language program to count from 00H to 20H with a delay of 100ms between each count and display the numbers on one of the port. After the count 20H, the counter should reset itself and repeat the sequence. Use register pair DE as count register. Show your calculations to setup the 100ms delay. (Assume the crystal frequency of 4MHz.) **07**
- (b)** Explain the functions of TMOD register of 8051 with example. **07**
- Q.4 (a)** Draw and explain the interfacing between 8031 microcontroller and an external memory configuration consisting of 16K of EPROM and 8K of static RAM. **07**
- (b)** What do you mean by assembler directives? Explain EQU, END and DB with example for 8051 microcontroller. **07**
- OR**
- Q.4 (a)** Write a program to perform the following: **07**
- (a) Keep monitoring the P1.2 bit until it becomes high
- (b) When P1.2 becomes high, write value 45H to port 0
- (c) Send a high-to-low (H-to-L) pulse to P2.3

- (b) Explain the Program Status Word register of 8051 microcontroller. **07**
- Q.5** (a) Write an assembly language program to find the sum of an array of ten elements in 8051 microcontroller. **07**
- (b) Explain the functionality of the instructions with suitable examples: **07**
- (1) XCHD A,@R1
 - (2) MOVC A,@A+DPTR
 - (3) MOVX A,@DPTR
 - (4) MOV A,#0F1H
- OR**
- Q.5** (a) Write an assembly language 8051 program to generate a square wave of 50 kHz frequency on pin P2.3; assume the crystal frequency is 11.0592 MHz. **07**
- (b) Draw and explain the internal structure of PORT 1 of 8051 microcontroller. **07**
