

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI • EXAMINATION – WINTER • 2014****Subject Code: 162002****Date: 28-11-2014****Subject Name: Micro Processors and Microcontrollers****Time: 02:30 pm - 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** (a) What is Microprocessor and Microcontroller? Differentiate Microprocessor and Microcontroller with their relevant parameters. List out their applications. **07**  
(b) With neat and clean diagram explain the architecture of 8085 Microprocessor. **07**
- Q.2** (a) What is Addressing mode? Enlist the Addressing modes and explain the addressing modes of 8085 Microprocessor with examples. **07**  
(b) With suitable examples explain polling based and interrupts based data transfer methods for 8085 Microprocessor. **07**
- OR**
- (b) Explain the functionality of HOLD, READY,  $\overline{\text{INTA}}$  and X1, X2 pins of 8085 Microprocessor. **07**
- Q.3** (a) Write an assembly language program to add two arrays of 16-bit numbers stored at 3000H and 4000H and store the summation at 5000H onwards using 8085 instruction set. Assume source arrays are of 10 elements. **07**  
(b) Write assembly language programs to multiply and divide two 8-bit numbers. **07**
- OR**
- Q.3** (a) Write an assembly language program to generate a time delay of 0.5 second (Assume the crystal frequency of 4 MHz) **07**  
(b) Write an assembly language program in 8051 to convert an 8-bit binary number stored in external memory to BCD number and store your answer to successive external memory location. **07**
- Q.4** (a) Explain SCON and PCON special function registers of 8051 Microcontroller. **07**  
(b) State and explain four instructions related with external memory data transfer of 8051 microcontroller. **07**
- OR**
- Q.4** (a) What is interrupt priority in 8051 Microcontroller? Explain interrupt priority register of 8051 **07**  
(b) Explain various Bit handling instructions with example of 8051 Microcontroller. **07**
- Q.5** (a) Explain the memory organization of 8051 microcontroller. **07**  
(b) Write a program for the 8051 to receive bytes of data serially, and put them in P1; set the baud rate at 4800. **07**
- OR**
- Q.5** (a) Draw the internal architecture of the 8051 Timer Sub-system. Explain the significance of the GATE0,  $\text{C}/\overline{\text{T}}_0$ ,  $\text{TR}_0$  and  $\text{TF}_0$  bits. **07**  
(b) Write a program to sort an array of ten bytes in ascending order for 8051 Microcontroller. **07**

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