

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VI EXAMINATION – WINTER 2015**

**Subject Code:162002****Date:17 /12/ 2015****Subject Name: Microprocessors and Microcontrollers****Time:2:30pm to 5:00pm****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) Sketch and describe software model of 8085 microprocessor. **07**  
 (b) Describe the features of 8051 Microcontroller. **07**
- Q.2** (a) Sketch and explain circuit diagram to de-multiplex the address/data bus and to generate separate control signals for memory and I/O devices in 8085 microprocessor. **07**  
 (b) Discuss the classification of instructions used by 8085 microprocessor based on their functional operations. **07**
- OR**
- (b) Discuss the addressing modes of 8051 microcontroller giving suitable examples. **07**
- Q.3** (a) Sketch and explain the circuit diagram to interface 8K ROM and 8K RAM with 8085 microprocessor using absolute address decoding. The starting address of ROM is 0000H followed by RAM Locations. **07**  
 (b) What is hardware and software Interrupt? List interrupts used by 8085 microprocessor with their priority and vector locations. **07**
- OR**
- Q.3** (a) Write an assembly language program for 8085 microprocessor to re-arrange the 10 bytes of data array stored at starting memory location C200H in ascending order. **07**  
 (b) Write an assembly language program for 8085 microprocessor with subroutine call to calculate factorial of a number between 0 to 8 stored at 2200H location in memory. Store the result below the number. **07**
- Q.4** (a) Explain the different timer modes available in 8051 microcontroller. **07**  
 (b) Explain the functions of each bit of TCON register of 8051 microcontroller. **07**
- OR**
- Q.4** (a) Write an assembly language program for 8051 microcontroller to exchange 16 bytes of data stored in external memory location starting at 9500H and 9550H **07**  
 (b) Write an assembly language program to toggle P1.5 pin of 8051 microcontroller every 1 second. Make use of timer 1 in mode 1 for time delay generation. Assume crystal frequency of 12 MHz. **07**
- Q.5** (a) Explain Interrupt Enable (IE) and Interrupt Priority (IP) SFR of 8051 microcontroller. **07**  
 (b) Sketch and explain the memory map of 8051 microcontroller. **07**
- OR**
- Q.5** (a) Compare the stack operation of 8085 microprocessor and 8051 microcontroller during subroutine executions. **07**  
 (b) Explain timing diagram of memory read operation of 8085 microprocessor. **07**

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