

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VI (OLD) • EXAMINATION – WINTER 2017**

**Subject Code: 162002****Date: 20-11-2017****Subject Name: Micro Processors and Microcontrollers****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** (a) 1. What is the internal RAM and ROM memory size of 8051 Microcontroller? **07**  
2. Which instruction can only do data transfer from I/O to external data memory of 8051 Microcontroller?  
3. What is the size of address and data bus of 8085 Microprocessor?  
(b) Explain the functionality of ALE, TRAP, SOD and X1 & X2 pin of 8085 Microprocessor. **07**
- Q.2** (a) What is the function of Accumulator? Explain the flag register of 8085 Microprocessor. **07**  
(b) Explain DAA, DAD, MVI and HLT instructions of 8085 Microprocessor with example. **07**
- OR**
- (b) List out the features of 8051 Microcontroller and discuss any embedded application with respect to your answer. **07**
- Q.3** (a) Write an 8085 assembly language program to multiply two 8-bit numbers stored at 3000H and 3001H and store the answer at 4000H onwards. **07**  
(b) Write an 8085 assembly language program to subtract an 8-bit number stored at 4151H from an 8-bit number stored at 4151H using 2's complement method, store the answer at 4153H onwards. **07**
- OR**
- Q.3** (a) Write an assembly language program for 8085 to generate a delay of 10ms (assume 0.333μs clock cycle). **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) When the microcontroller executes some arithmetical or logical operations, then the bits of which register are affected? Explain your answer with examples. **07**  
(b) Illustrate the internal RAM memory organization of 8051 Microcontroller. **07**
- OR**
- Q.4** (a) Explain the interrupts of 8051 Microcontroller. **07**  
(b) Explain CPL P1.1, CLR P1.2, ANL C, 1 and ORL A, Rn for 8051 Microcontroller. **07**
- Q.5** (a) What are Special Function Registers? Explain any three in detail. **07**  
(b) Store 01H, 02H, 03H and 04H in registers R0, R1, R2 and R3 respectively and exchange data stored in Reg. R0 with R1 and data in Reg. R2 with R3. **07**
- OR**
- Q.5** (a) Draw and explain the architecture of the 8051 Microcontroller. **07**  
(b) Write a program to toggle the PORT1 LEDs of 8051 Microcontroller. **07**

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