

# GUJARAT TECHNOLOGICAL UNIVERSITY

## BE SEM-IV Examination-Nov/Dec-2011

**Subject code: 140701**

**Date: 25/11/2011**

**Subject Name: Microprocessor & Interfacing**

**Time: 02.30 pm -5.00 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) Explain (i) ALU (ii) Program counter (iii) Instruction decoder **03**  
Explain addressing modes of 8085 microprocessor with example **04**
- (b) Draw and explain the block diagram of 8085 microprocessor architecture. **07**
- Q.2** (a) Explain (i) CMA (ii) RRC (iii) RET **03**  
Write a program to load two unsigned numbers 42H and 67H respectively in register B and register C. Subtract C from B. If the result is in 2's complement, convert the result in absolute magnitude and display it at PORT1. otherwise display the positive result. **04**
- (b) Design a memory interfacing circuit for a given 4k ROM chip. Use all 16 address line. Use any combination of inverter, Nand gate and 74LS138 decoder to generate the address. Determine the memory map of the design. **07**
- OR**
- (b) Explain need and list of branching instructions in 8085. Write a program to find whether the given number stored in memory location 8000H is positive, negative or zero. If number is positive place FFH, If number is negative place FEH and if number is zero place FDH in memory location 8050H **07**
- Q.3** (a) Explain (i) Ready (ii) INTR (iii) ALE **03**  
Draw and explain the timing diagram of instruction MVI A, 32H. Find execution time required, if clock frequency is 2MHz. **04**
- (b) Draw and explain the block diagram of 8255A programmable peripheral port. **07**
- OR**
- Q.3** (a) Explain (i) T-state (ii) RST 5.5 (iii) JNZ **03**  
Compare (i) Call and jump instruction (ii) serial and parallel data transfer. **04**
- (b) Draw and explain the block diagram of 8259A interrupt controller **07**
- Q.4** (a) Explain (i) CMP (ii) DAA (iii) LDA 2040H **03**  
Write a program to add any ten byte type hexadecimal numbers. Store FFH in memory location F080H when the sum exceeds eight bits, otherwise store the sum. **04**
- (b) What do you mean by direct memory transfer? Explain 8257 DMA controller with block diagram. **07**

**OR**

- Q.4** (a) Explain following terms (i) absolute decoding (ii) Write control signal (iii) handshake signal **03**  
Draw and explain timing diagram of OUT 01H **04**  
(b) What is subroutine? How it is called? State advantage of subroutine. Write a 20ms time delay subroutine using register pair BC. Clear the Z flag without affecting any other flags in the flag register and return to the main program. **07**
- Q.5** (a) Explain (i) conversion time (ii) PSW (iii) OP CODE **03**  
Explain various operating modes of 8255A. **04**  
(b) Explain with block diagram the function of 8254 programmable interval timer. **07**

**OR**

- Q.5** (a) Explain (i) LXI (ii) TRAP (iii) Machine cycle **03**  
Explain any one analog to digital conversion method. **04**  
(b) Write short note on (i) Serial I/O lines ,SOD and SID (ii) Comparison between memory map I/O and I/O map I/O **07**

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