

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Remedial Examination Nov/ Dec. 2010****Subject code: 140701****Subject Name: Microprocessor & Interfacing****Date: 01 / 12 / 2010****Time: 03.00 pm – 05.30 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 the functional block diagram of internal architecture of IC 8085 and explain its working. **07**
- (b) State the function of following instructions. **07**
- | | |
|-----------------|----------|
| (1) LHLD 16-bit | (5) XCHG |
| (2) PUSH PSW | (6) XTHL |
| (3) DAD H | (7) PCHL |
| (4) RIM | (8) STC |

- Q.2** (a) Explain the execution of the instruction STA 2050H with neat timing diagram. **07**
- (b) Discuss in detail memory mapped I/O and I/O mapped I/O. **07**

OR

- (b) What is stack and stack pointer? Explain working of PUSH and POP instruction with suitable example. **07**
- Q.3** (a) Write a program to multiply two unsigned numbers stored in register pair H and L, save the result. **07**
- (b) Design an interfacing circuit for one input port with eight DIP switches and one output port with eight LEDs, using the components as listed. **07**

- (1) 74LS138: 3-to-8 decoder.
- (2) 74LS244: tri-state buffer
- (3) 74LS373: octal latch
- (4) Two 2-input NAND gates

OR

- Q.3** (a) Answer following questions. **07**
- (1) How many address lines are necessary on the chip of 2K byte memory?
 - (2) If the memory chip size is 1024 X 4 bits, how many chips are required to make up 2K bytes of memory?
 - (3) The memory map of a 4K byte memory chip begins at the location 2000 H. Specify the address of the last location on the chip and the number of pages on the chip.
 - (4) The memory address of the last location of an 8K byte memory chip is FFFF H. Find the starting address.
- (b) Given the components as listed, design an interfacing circuit for the memory to meet the following specifications: **07**
- (1) 74LS138: 3-to-8 decoder
 - (2) 2732 (4K X 8): EPROM—address range should begin at 0000 H.
 - (3) 6116 (2K X 8): CMOS R/W memory.

Q.4 (a) A string of readings is stored in memory location starting at 2070 H, and the end of the string is indicated by the byte 0D H. Write a program to check each byte in the string and save the bytes in the range of 30H and 39H (both inclusive) in memory locations starting from 2090H. **07**

(b) Write a program to count continuously in hexadecimal from FFH to 00H in a system with a clock period of 0.5 μ s. Use register C to set up 1 millisecond delay between each count and display the number at the output port1. **07**

OR

Q.4 (a) Write a program for 8085 to generate a square wave with period of 400 μ s. Use bit D0 to output the square wave. The system clock period is 325ns. **07**

(b) An 8-bit binary number is stored in memory location 3050H. Write a program to convert the number into ASCII Hex code and save the result in memory locations 3060H and 3061H. **07**

Q.5 (a) Draw the functional block diagram of IC 8255A and answer following questions. **07**

- (1) List the operating modes of IC 8255A.
- (2) Discuss control word format.
- (3) Specify the handshake signals and their functions if port A is set up as an output port in mode 1.
- (4) Write initialization instructions for the 8255A to set up—

- Port A as I/P port in mode 0.
 - Port B as O/P port in mode 1.
 - Port C upper as an O/P in mode 0.
- Assume address of control word register as 83H.

(b) Write a detailed note on Interrupts of 8085. **07**

OR

Q.5 (a) Discuss in detail different working modes of IC 8254—Programmable interval timer. **07**

(b) With neat diagram discuss the working of IC 8259A---Programmable interrupt controller. **07**
