

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER 2013****Subject Code: 151001****Date: 14-05-2013****Subject Name: Microcontroller and Interfacing****Time: 10.30 am - 01.00 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 with block diagram, the 8051 architecture. **07**
 (b) Explain various modes of timers in 8051 and explain with assembly language programming auto reload mode. **07**

- Q.2** (a) List the addressing modes of 8051 and explain register indirect and indexed addressing mode in detail with assembly language example. **07**
 (b) Explain 8051 interrupts with related SFR. **07**

OR

- (b) Write a program to subtract 156F83H from 24759CH save the result In RAM location starting at 50H. **07**

- Q.3** (a) Write an assembly language program to convert 8 bit binary data to BCD equivalent. Example (FF) h = (0010)(0101)(0101) = 255 **07**
 (b) Write an assembly language program that find the position of the first high in an 8-bit data item. The data is scanned from D7 to D0. **07**

OR

- Q.3** (a) Write an assembly language program to generate square wave of 5 KHz frequency. **07**
 (b) Write an assembly language program to convert the following series of packed BCD numbers to ASCII. Assume that packed BCD is located in data ROM. 55H, 78H , 54H, 34H **07**

- Q.4** (a) Write an assembly language program to find the unknown frequency. **07**
 (b) Compare the following. **07**
 (1) Microprocessor and microcontroller
 (2) Edge Triggered Interrupt and Level Triggered Interrupt

OR

- Q.4** (a) Explain with necessary diagram, interfacing of 32K external ROM with 8051. **07**
Q.4 (b) Explain with interfacing diagram, 7 segment interfacing with 8051 and write a program to display data accordingly. **07**

- Q.5** (a) Explain with necessary sketch, interfacing the LCD with 8051 and write a program to Display 'GTU' in the second line and in centre of the 16X2 line display. **07**
Q.5 (b) Explain with diagram of interfacing, ADC 0804 in free running mode interfaced with 8051. **07**

OR

- Q.5 (a)** With necessary diagram, interface MAX232 with 8051 and send data "Hello World" to the serial port with 9600 baud rate, 8 bit data with 1 start and stop each respectively. **07**
- Q.5 (b)** Two switches (SW0 and SW1) are connected to pin P2.0 and P2.1 respectively. Write an assembly language program to monitor the status of SW and perform the following with diagram of interfacing. **07**
- (1) If SW0 is pressed, the stepper motor moves clockwise
 - (2) If SW1 is pressed, the stepper motor moves anticlockwise.
 - (3) If both switches are pressed simultaneously, motor stops.
