

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E SEM-VII Examination-Nov/Dec.-2011

Subject code: 172001**Date: 19/11/2011****Subject Name: Microcontrollers and Embedded Systems****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) Define the term embedded systems. Also explain the microcontroller based embedded system with the suitable example. **07**

(b) Explain the memory organization of PIC18F452. **07**

Q.2 (a) Interface LCD 16x2 with 8051 microcontroller and write a program to display "GTU-08" on LCD. **07**

(b) Explain the different types of stepper motor. Also explain Normal, Half step and Wave driven step sequence. **07**

OR

(b) Interface ADC0809 with 8051 microcontroller and write steps for converting analog signal to digital also draw timing diagram for that. **07**

Q.3 (a) Explain the difference between edge trigger and level trigger interrupt in 8051 microcontroller. **07**

(b) Write an 8051 C program to toggle only bit P1.5 continuously after every 50msec using timer1 in mode1. Crystal frequency =12MHz. **07**

OR

Q.3 (a) Explain the significance of SBUF Register and also find the baud rate for TH1 = -24, Crystal Frequency = 11.0592MHz and SMOD =1. **07**

(b) Write an 8051 C program to find out no of zeros in 8-bit data. **07**

Q.4 (a) Explain the programming model of PIC18F microcontroller. **07**

(b) Write a program to copy five data bytes stored in the program memory with the starting location 00050h to data memory starting from 0010h in PIC18F452. **07**

OR

Q.4 (a) Explain the Branching and Subroutine instructions of PIC18F microcontroller. **07**

(b) Write a program to add two 8 bit numbers stored at data memory locations 0040h and 0041h in PIC18F452 and store the LSB result (0040h) and MSB result (0041h). **07**

- Q.5 (a)** Explain the internal structure of PORTB in PIC18F452 with suitable block diagram. **07**
- (b)** Write a program to set up INT1 pin as a High priority interrupt input and design binary up counter. Increment the count at falling edge of INT1 in PIC18F452. **07**

OR

- Q.5 (a)** Explain the working of the TIMER0, 8-BIT Mode with suitable block diagram in PIC18F452. **07**
- (b)** Write a program to unpacked BCD number stored at 0030h data memory and display LSB on PORTB and MSB on PORTC. **07**
