GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-V[th] Examination December 2010
Subject code: 151001
Subject Name: Microcontroller and Interfacing

Date: 13 /12 /2010   Time: 03.00 pm - 05.30 pm

Instructions: Total Marks: 70

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** How Embedded Microcontrollers are differing than Embedding Microprocessor? **07**
Explain with technical justification and application.

(b) Explain RISC and CISC ? Which is most suited to Intel 51 Microcontroller? Why? **07**

Q.2 **(a)** What is Special Function register (SFR) of 51-Microcontroller? List all the SFR and **07**
explain SBUF, IP and PCON.

(b) Describe and Draw Architecture of intel-51, 8-bit Microcontroller **07**

OR

(b) Draw and Describe function of each pins of DIP-51 Intel 8-bit microcontroller **07**

Q.3 **(a)** Explain following Addressing Modes of 8031 Microcontroller **07**
1). MOV A,#20h   2). MOV A,30h   3). MOV A,@R0
4). MOVX A,@DPTR   5). MOVC A,@A+DPTR

(b) 1). Describe following pointers **07**
    (i) PC   (ii)   SP   (iii)   DPTR   (iv) R0 & R1
2) What is flag register? Explain 8051 Flag register and its practical implementation

OR

Q.3 **(a)** 1). Differentiate ADDC and SUBB instruction. List the precaution to be taken for **07**
both instructions during the program.
2). List the JUMP and CALL instruction. Describe Conditional JUMP Instruction

(b) 1). What is Pseudo Codes? Explain it. **07**
2). Define and describe the directives of 51 Microcontroller.

Q.4 **(a)** 1). Describe TMOD and TCON Special Function registers. **07**
2). Write an assembly program to generate 10Khz Square wave frequency with 60%
duty cycle.(take $T = 1.085 \times 10^{-6}$ sec)

(b) 1). How will you assign Counter to count an external event? Explain it with example **07**
2). Can We implement the interrupt to watch the TF bit of TCON Special Function
Register? Explain it.

OR

Q.4 **(a)** What is Serial Communication? How it will perform using 8051/52 Controller with **07**
PC? Explain it with program and diagram.

(b) Write an assembly as well as C program to transfer the message "ONE" serially at **07**
9600 buad, 8-bit data, 1 stop bit. Perform this program for 255 times.

Q.5 **(a)** 1). Explain the difference between the low- level and edge-triggered interrupts **07**
2). Explain which technique, Interrupt or Polling, avoids trying down the
Microcontroller.

(b) 1) How Liquid Crystal Display (LCD) is superior to conventional Display? Explain it. **07**
2). List and describe the LCD Instructions

OR

Q.5 **(a)** Draw and Explain 8051 connection to ADC 0804 with self checking mode. **07**

(b) Draw and explain 8051 connection to external RAM (8Kx8). Write a program to read **07**
100 bytes of data from P1 and save the data in external RAM starting at 5100H
Location.

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