Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: X 60902 **Date: 30-05-2014**

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) Draw and explain the functional block diagram of 8051 microcontroller (8)

(b) Is microcontroller superior or inferior to microprocessor? Justify your answer with valid arguments (6)

Q.2 (a) With the help of neat diagrams explain port structure of P0 and P1 ports of 8051 (7)

(b) Discuss the different types of conditional and unconditional jump instructions available with 8051 microcontroller (7)

OR

(b) What is IDE? Explain assembler, linker and debugger in brief (7)

Q.3 (a) Explain the following instructions giving suitable examples

(i) SUBB (ii) DIV AB (iii) SWAP A (6)

(b) Write an ALP to find the largest number from a block of 10 data which starts from M.L. 30H. Store the largest number in M.L. 50H (8)

OR

Q.3 (a) Give the format of PSW register and explain the meaning of each bit (6)

(b) Write an 8051 C program to toggle all the bits of P0, P1 and P2 continuously with a delay of your choice. Use sfr keyword to declare the port address. Assume that the port addresses of P0, P1 and P2 are 80H, 90H and A0H respectively (8)

Q.4 (a) Discuss the different types of modes in which 8051 timers can be operated (7)

(b) State the different types of interrupts available with 8051. Explain IE and IP special function register. (7)

OR

Q.4 (a) Assuming XTAL = 11.0592 MHz, write a program to generate a square wave of 2 kHZ on pin P1.6. Use timer 1 in mode 1 (7)

(b) Write a program for 8051 to transfer letter “Z” serially at 4800 baud continuously. Assume XTAL = 11.0592 MHz. (7)

Q.5 (a) Explain how you can connect ADC to 8051? Discuss the steps to program the ADC (7)

(b) Explain idle mode and power down mode of 8051. (7)

OR

Q.5 (a) With the help of neat diagram, explain how 7-segment LED’s can be interfaced with 8051 microcontroller. (7)

(b) Explain how DC motor can be interfaced with 8051? Discuss how the speed of the motor can be controlled using PWM technique. (7)

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