Seat No.: Enrolment No.
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## GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-III • EXAMINATION - WINTER • 2014

Subject Code: X31103 Date: 31-12-2014

**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) Give answer in short
  - 1) List two differences between 8051 and 8031 Microcontroller.
  - 2) Explain function of DPTR.
  - 3) What is the maximum size of external RAM or ROM can be interfaced with 8051 Microcontroller?
  - 4) List any four selection criteria to choose Microcontroller for a particular application.
  - 5) Explain function of MOVC A, @A+DPTR
  - 6) Explain function of MOVX @DPTR, A
  - 7) Explain significance of DB directive used for 8051 Microcontroller.
  - (b) Draw and explain interfacing of 1Kbytes ROM with 8051 Microcontroller. 07
- Q.2 (a) Write C language program to transfer block of 10 data from internal memory 07 to external memory.
  - (b) 1) List basic features of 8051 Microcontroller. 07
    - 2) Draw programming model of 8051 Microcontroller.

## OR

- (b) Write assembly language program to arrange block of 10 data stored in internal memory location started from 50H in descending order.
- Q.3 (a) Draw and explain pin configuration of each port of 8051 Microcontroller. 07
  - (b) Draw and explain RTC interfacing with 8051Microcontroller. Write program to get values of hour, minute and second from RTC to RAM location 50h, 51h and 52h respectively.

## OR

- Q.3 (a) Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR for 8051Microcontroller
  - (b) How Liquid Crystal Display (LCD) is superior to conventional Display? **07** List and describe the LCD Instructions.
- Q.4 (a) List programming steps to generate time delay using mode 2 for 8051 07 Microcontroller. Write a program to generate square wave of 2.5 KHz using timer 1 in mode 2 on pin 2.7.
  - (b) Draw and explain different timer modes for 8051 Microcontroller. 07

## OR

- Q.4 (a) Draw interfacing diagram of DAC with 8051 Microcontroller. Write a program to generate sine wave at the output of DAC.
  - (b) Draw and explain interfacing of 4x4 matrix keyboard with 8051 **07** Microcontroller. Write a program to read switch.

07

Q.5	(a)	Explain different mode for serial communication for 8051 Microcontroller.	07
_	<b>(b)</b>	Draw and explain interfacing of DC motor with 8051 Microcontroller.	07
		OR	
Q.5	(a)	Write a C program for 8051 Microcontroller to receive byte of data serially and	07
		put them in P1. Set baud rate 9600, 8-bit data, 1 stop bit.	
	<b>(b)</b>	Draw and explain interfacing of stepper motor with 8051Microcontroller. Write a program to rotate stepper motor in clockwise direction continuously in	07
		full step mode.	

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