

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 **07**
- 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 to external memory. **07**
- (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. **07**
- Q.3 (a)** Draw and explain pin configuration of each port of 8051 Microcontroller. **07**
- (b)** Draw and explain RTC interfacing with 8051 Microcontroller. Write program to get values of hour, minute and second from RTC to RAM location 50h, 51h and 52h respectively. **07**
- OR**
- Q.3 (a)** Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR for 8051 Microcontroller **07**
- (b)** How Liquid Crystal Display (LCD) is superior to conventional Display? List and describe the LCD Instructions. **07**
- Q.4 (a)** List programming steps to generate time delay using mode 2 for 8051 Microcontroller. Write a program to generate square wave of 2.5 KHz using timer 1 in mode 2 on pin 2.7. **07**
- (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. **07**
- (b)** Draw and explain interfacing of 4x4 matrix keyboard with 8051 Microcontroller. Write a program to read switch. **07**

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