GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER–III EXAMINATION – WINTER 2015

Subject Code:X31103   **Date:23/12/2015**
Subject Name: Microcontroller and Interfacing
Time: 10:30pm to 01:00pm   **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 internal circuit diagram of all ports of 8051 Microcontroller and explain in short.	**07**
	(b)	Explain Programming Model of 8051 Microcontroller.	**07**
Q.2	**(a)**	Explain different modes of Serial communication for 8051 Microcontroller.	**07**
	(b)	Draw and explain RTC interfacing with 8051Microcontroller. Write program to initialized (Write) RTC with Present Date and Time.	**07**

OR

	(b)	Write an Assembly/C Program to Display "BHARAT" centre of LCD using busy flag mode.	**07**
Q.3	**(a)**	Interface Stepper motor with 8051 and explain the working of it. Also explain 4-step and 8-step sequence. Discuss the step angle.	**07**
	(b)	Write an assembly language program for 8051 to transmit string "Microcontroller" at 9.6kbps. Crystal frequency =11.0592MHz.	**07**

OR

Q.3	**(a)**	Interface 4x4 matrix keypad with 8051. Discuss De-bouncing problem of key and its solution.	**07**
	(b)	Write an assembly language program to generate Clock signal with 70% duty cycle on P2.0 using Auto Reload mode. Crystal frequency =12MHz	**07**
Q.4	**(a)**	Write a program to perform the following. 1. Keep monitoring P1.2 until it becomes high. 2. When P1.2 becomes high write value 45H on P0. 3. Sent a high to low pulse to P2.3	**07**
	(b)	Design Firmware to interface Multichannel ADC with 8051.	**07**

OR

Q.4	**(a)**	A switch is connected to P1.7. Write a program to check the status of switch and perform the following. 1. if switch = 0, send letter "Y" to P2 2. if switch = 1, send letter "N" to P2.	**07**
	(b)	Draw & explain working of H-bridge circuit for DC motor interfacing with 8051.	**07**
Q.5	**(a)**	Write an 8051 C Program to toggle all the bits of P0 and P2 continuously with a delay use inverting operator.	**07**
	(b)	Describe TMOD and TCON Special Function registers.	**07**

OR

Q.5	**(a)**	Write an 8051 C Program to get a byte of data from P0. If it is less than 100, send it to P1; otherwise, send it to P2.	**07**
	(b)	Describe SCON, PCON and SBUF Special Function registers?	**07**

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