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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (OLD) EXAMINATION – WINTER 2018

Subject Code:162402   **Date: 04/12/2018**
Subject Name: Microcontrollers For Power Electronics
Time: 02:30 PM TO 05:00 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 the internal block diagram of 8051 and state the main features of 8051.	**07**
	(b)	State various functions of Port 0, Port 1, Port 2 and Port 3 in 8051.	**07**
Q.2	**(a)**	Explain different addressing modes of 8051 with example.	**07**
	(b)	Write an 8051 C program to toggle all the bits of P0 continuously at 100 ms delay. Assume crystal frequency of 12MHz.	**07**
		OR	
	(b)	State the similarities and differences between following instructions. 1. MOVX A, @R0 and MOV A, @R0 2. ADD A, @R1 and ADD A, R1	**07**
Q.3	**(a)**	Write an ALP to generate a square wave on pin 2.4 with 50% duty cycle.	**07**
	(b)	Explain subroutine with a suitable example.	**07**
		OR	
Q.3	**(a)**	Write an ALP to blink LEDs connected on P1.4 and P1.6 alternately.	**07**
	(b)	List different interrupts available in microcontroller 8051. Explain any one.	**07**
Q.4	**(a)**	Explain 4x4 matrix keyboard interfacing with 8051 microcontroller.	**07**
	(b)	Explain the interfacing of LCD with 8051 microcontroller.	**07**
		OR	
Q.4	**(a)**	Write a short note on serial data communication.	**07**
	(b)	Draw flowchart to identify the number pressed on keyboard and display it on seven segment display connected to 8051 microcontroller.	**07**
Q.5	**(a)**	Explain RS-232 communication protocol in detail	**07**
	(b)	Explain subroutine State the sequence of steps taken by the 8051 when an instruction for 'calling' a subroutine is executed.	**07**
		OR	
Q.5	**(a)**	Explain the following assembler directives of 8051: 1) DB 2) EQU 3) ORG 4) END	**08**
	(b)	Explain TMOD and TCON SFR	**06**

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