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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI(OLD) – EXAMINATION – SUMMER 2019

Subject Code:160903   **Date:10/05/2019**
Subject Name: Microcontroller
Time:10:30 AM TO 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)**	Distinguish between Microcontroller and Microprocessor. Also discuss various applications of different Microcontrollers.	**07**
	(b)	With suitable block diagram, explain the architecture of 8051 microcontroller.	**07**
Q.2	**(a)**	List out and explain purpose of various special function registers of 8051.	**07**
	(b)	Draw internal structure of port 3 of 8051 microcontroller. Also discuss about alternate pin functions of each pin of 8051.	**07**
		OR	
	(b)	Draw and explain internal RAM structure of 8051.	**07**
Q.3	**(a)**	What is the advantage of bit wise programming in 8051? Explain with suitable instructions.	**07**
	(b)	List out and explain various types of addressing modes available in 8051 microcontroller.	**07**
		OR	
Q.3	**(a)**	Explain the advantages of Integrated Development Environment software in Program development.	**07**
	(b)	Differentiate between following instruction of 8051. (1) SWAP and XCHG (2) MOVX and MOVC	**07**
Q.4	**(a)**	Write an assembly language program to count number of positive numbers in an array of ten numbers stored between external memory locations 2000H to 2009H.	**07**
	(b)	Explain various conditional jump instruction of 8051.	**07**
		OR	
Q.4	**(a)**	Explain various data types used in C Programming of 8051.	**07**
	(b)	Write c language program to toggle all bits of port0 continuously with a delay of 1 sec using timer 0 in mode1. Assume 12MHz crystal frequency.	**07**
Q.5	**(a)**	Distinguish between Mode 1 and Mode 2 of 8051. Draw TCON and TMOD register configuration.	**07**
	(b)	Explain interfacing of multiple seven segment display with 8051.	**07**
		OR	
Q.5	**(a)**	Draw and explain with block schematic diagram interfacing of unipolar stepper motor with 8051.	**07**
	(b)	Explain I2C, SPI serial communication protocols of advanced microcontrollers.	**07**

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