Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – WINTER 2015

Subject Code: 173203 **Date:07/12/2015**

Subject Name: Microprocessor & Microcontroller

Time: 10:30am to 1:00pm **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)**	Differentiate Microprocessor and Microcontroller describing minimum any seven major differences.	**07**
	(b)	Why bus demultiplexing is required in processors and controllers. Explain bus demultiplexing with neat sketch along with its benefits of it.	**07**
Q.2	**(a)**	Explain the various addressing modes available for usage in 8051 along with minimum one example of each mode.	**07**
	(b)	Explain bit addressability of Registers and RAM in 8051 providing suitable example and available instructions to be used for bit addressing.	**07**
		OR	
	(b)	Compare Interrupts with Polling, explain programmability of Interrupts in 8051.	**07**
Q.3	**(a)**	Explain the various ways and accessibility of storing data in internal RAM, External RAM/ROM and Code Space of 8051 with sample instructions used for accessing it.	**07**
	(b)	Write a program to convert the following series of packed BCD numbers to ASCII. Assume that the packed BCD is located in RAM. 34H, 23H, 85H, 59H	**07**
		OR	
Q.3	**(a)**	Write a brief note on IO Ports of 8051. Discuss multiplexed port pin functionalities.	**07**
	(b)	Write programs to accomplish following tasks 1. Generate a square wave of 50% duty cycle on lower nibble of port 1. 2. Generate a square wave of 33% duty cycle on upper nibble of port 1.	**07**
Q.4	**(a)**	Explain the organization and functioning of Stack for 8051 with neat sketch and proper examples. How the stack space can be managed for large programs so that it will not over write register space.	**07**
	(b)	Which way branching is useful in programming? Differentiate the Short, Long and Absolute Jump instructions with its sample use and possible length of jumping.	**07**
		OR	
Q.4	**(a)**	Why it becomes necessary to make different segments of one program? Explain the use of subroutines with suitable example.	**07**
	(b)	Write a program to blink all the LEDs connected to port P1 at a slow rate so that the blinking is clearly seen. Assume a frequency of 12 MHz and that the system is using the AT89C51. Use Crystal of frequency 12 MHz.	**07**
Q.5	**(a)**	Write a brief note on the timers and counters of 8051 along with its programmability in various modes.	**07**
	(b)	Write a brief note on possibility of Serial Communication using 8051.	**07**
		OR	

Q.5	**(a)**	Explain the technique of interfacing multiple keys using matrix key keyboard with its scanning technique and sample program flow.	**07**
	(b)	How sensors are interfaced with 8051? Explain the use of ADC and DAC while interfacing sensors with suitable example with neat block diagram and program flow.	**07**

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