

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2150907

Date: 01/05/2017

Subject Name: Microprocessor and Microcontroller Architecture and Interfacing

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.

			MARKS
Q.1		Short Questions	14
	1	Circuit which is used at the interface point of an output port and input port of 8051 is _____ respectively. (a) latch and decoder (b) buffer and latch (c) latch and buffer (d) buffer and decoder	
	2	Which stack is there in 8085? (a) FIFO (b) LIFO (c) FILO (d) LILO	
	3	When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the: _____ (a) internal code memory (b) external code memory (c) external data memory (d) internal data memory	
	4	An alternate function of port pin P3.4 in the 8051 is: (a) Timer 0 (b) Timer 1 (c) Interrupt 0 (d) Interrupt 1	
	5	After reset, SP register is initialized to _____ address. (a) 8H (b) 7H (c) 9H (d) 6H	
	6	In 8085, example for non maskable interrupts are (a) TRAP (b) RST 6.5 (c) INTR (d) RST 5.5	
	7	In 8051 which interrupt has highest priority? (a) IE1 (b) TF0 (c) IE0 (d) TF1	
	8	How is the status of the carry, auxiliary carry and parity flag affected if one writes 8051 instructions MOV A, #9C MOV A, #64H (a) CY=0, AC=0, P=0 (b) CY=1, AC=1, P=0 (c) CY=0, AC=1, P=0 (d) CY=1, AC=1, P=1	
	9	The register that provides control and status information about serial port in 8051 is _____ (a) IP (b) IE (c) TCON (d) PCON and SCON	
	10	The flags IE0 and IE1, are automatically cleared after the control is transferred to respective vector, if the interrupt in 8051 is (a) level-sensitive (b) edge-sensitive (c) in serial port (d) in parallel port	
	11	The serial port interrupt in 8051 is generated if (a) RI is set (b) RI and TI are set (c) either RI or TI is set (d) RI and TI are reset	
	12	The microcontroller 8051 enters into power down mode when (a) SMOD bit of PCON is set (b) GF1 bit of PCON is set (c) PD bit of PCON is set (d) GF2 bit of PCON is set	

	13	The absolute jump instruction is intended mainly for a jump within a memory space of _____ in 8051. (a) 2bytes (b) 2Kbytes (c) 2Mbytes (d) none	
	14	Which of the following is not an unconditional control transfer instruction in 8051 ? (a) JMP (b) RET (c) JNC (d) CALL	
Q.2	(a)	Draw logic diagram to generate control signals necessary for interfacing with memory chip.	03
	(b)	Explain how address/data lines AD0-AD7 are de-multiplexed in 8085?	04
	(c)	Explain the operations of following pins of 8085: Ready, S ₁ and S ₀ , HOLD, HLDA, TRAP, ALE	07
		OR	
	(c)	Define T-state, machine cycle and instruction cycle in 8085 microprocessor. Draw the timing diagram for the instruction OUT F2 h.	07
Q.3	(a)	Differentiate between following instructions of 8051 (i) SWAP and XCHG (ii) MOVX and MOVC	03
	(b)	Explain the direct and register indirect addressing modes of 8051 with suitable example	04
	(c)	Draw and explain the functional block diagram of 8051 Microcontroller.	07
		OR	
Q.3	(a)	Why does Port 0 of 8051 needs external pull up register?	03
	(b)	Explain the advantages of IDE in program development.	04
	(c)	Write an assembly language program to find number of negative numbers from an array of 10 numbers.	07
Q.4	(a)	Discuss about Mode 2 of serial communication.	03
	(b)	What are the advantages of bit wise programming in 8051?	04
	(c)	Write an assembly language program to generate square wave of 4 KHZ on port P1.2 using timer1 in mode 2.	07
		OR	
Q.4	(a)	How priorities of interrupts can be set in 8051?	03
	(b)	Write the format of SCON special function register. Also explain how baud rate can be doubled using PCON register?	04
	(c)	Write an 8051 assembly language program to receive data serially at a baud rate of 4800 and display the same on Port P ₀ . Use mode 1 of serial communication for the same and crystal frequency is 11.0592 MHZ.	07
Q.5	(a)	Mention the data types in C programming language for 8051.	03
	(b)	Draw and explain interfacing of two digit seven segment display with 8051 microcontroller.	04
	(c)	Draw and explain interfacing of 8051 with ADC 0808.	07
		OR	
Q.5	(a)	Write 8051 C program to get bit P1.0 and send it to P2.1 after inverting it.	03
	(b)	Interface a matrix keyboard with 8051.	04
	(c)	How opto isolator can be used for D.C motor control? Explain it with suitable diagram.	07

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