Model Question Paper-1 with effect from 2022-23 (CBCS Scheme)

USN

Fourth Semester B.E. Degree Examination
8051 Microcontroller

TIME: 03 Hours   **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	***Bloom's Taxonomy Level**	**Marks**
Q.01	a	Bring out the difference between Microprocessor and Microcontroller.	L1	05
	b	Differentiate between CISC and RISC.	L1	05
	c	With a neat architecture diagram explain the architectural features of 8051 microcontroller.	L2	10
OR				
Q.02	a	With neat diagram explain the internal memory structure and programming model of 8051 microcontroller.	L2	08
	b	Write an interfacing diagram 8051 microcontroller interfaced to 8k bytes of ROM and 8k bytes of RAM.	L2	08
	c	Write a short note on criteria for choosing a microcontroller.	L1	04
Module-2				
Q. 03	a	Explain 5 different addressing modes of 8051 with examples.	L2	08
	b	Write an assembly language program to multiply 16 bit number with 8 bit number and Store the result in memory.	L3	08
	c	Write an ALP to convert a packed BCD number into two ASCII numbers. Store the result in R5 and R6 respectively.	L3	04
OR				
Q.04	a	Write an assembly language program to add two 16 bit numbers loaded in R1R0 and R3R2. Store the result in R6, R5 and R4 from MSB to LSB.	L3	08
	b	Explain Rotate instructions with examples.	L2	04
	c	Explain the following instructions, also mention how many bytes it takes to store in ROM: 1. DJNZ Rn, R_ADDRESS 2. JNC R_ADDRESS 3. DA A 4. MOVX A, @A+	L2	08
Module-3				
Q. 05	a	Explain mod 2 operations of timers and explain steps involved in programming timer in mod 2	L2	08
	b	Analyze the structure of TMOD register	L2	08
	c	Explain RS232 standard and 9 pin DB connector	L1	04
OR				
Q. 06	a	Write a C program to transfer "YES" serially at 9600 baud rate, 8 bit data, 1 stop bit, do this continuously.	L3	08
	b	Analyze the structure of TCON register	L2	08
	c	Explain full duplex, half duplex and simplex in serial communication	L1	04
Module-4				
Q. 07	a	Explain the structure of Interrupt priority and interrupt enable register	L2	06
	b	Analyze Interrupt control used in 8051.	L2	08
	c	Explain how multiple interrupts are handled in 8051 microcontroller	L2	06
OR				
Q. 08	a	List the steps involved in executing an interrupt	L2	08

	b	Explain interrupt vector table of 8051 microcontroller	**L2**	**06**
	c	Explain the steps involved in Programming Serial Communication Interrupts	**L2**	**06**
		Module-5		
Q. 09	a	With neat diagram write an assembly language program to interface Stepper motor to 8051 microcontroller.	**L3**	**10**
	b	Explain the interfacing of DC motor using C programming	**L3**	**10**
		OR		
Q. 10	a	With neat diagram write an assembly language program to interface LCD to 8051 microcontroller.	**L3**	**10**
	b	Explain DAC interface with diagram and also write program to generate staircase waveform	**L3**	**10**

Model Question Paper-II with effect from 2023-24 (CBCS Scheme)

USN

Fourth Semester B.E. Degree Examination
8051 MICROCONTROLLER

TIME: 03 Hours   Max. Marks: 100

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	Marks
Q.01	a	With a neat architecture diagram explain the architectural features of 8051 microcontroller.	L2	8
	b	Bring out the difference between Microprocessor and Microcontroller.	L1	4
	c	With simple block diagram explain the features of 8051 microcontroller.	L2	8
		OR		
Q.02	a	Interface 4k bytes RAM and 8k bytes ROM to 8051 microcontroller in such a way that starting address of RAM is 1000H and ROM is C000H.	L2	8
	b	With function of each pin explain the pin layout of 8051 microcontroller	L2	8
	c	Define microcontroller, mention its applications.	L1	4
		Module-2		
Q. 03	a	Explain 5 different addressing modes with examples	L1	8
	b	Write an ALP to convert a packed BCD number into two ASCII numbers. Store the result in R5 and R6 respectively	L3	6
	c	List and explain bit level logical instructions in 8051.	L2	6
		OR		
Q.04	a	Define assembler directives. With example explain all the assembler directives supported by 8051 microcontroller.	L2	8
	b	Write an ALP to convert a Binary number to packed BCD number (hexadecimal to decimal). The binary number is stored at 40h location. Store the converted packed BCD number at 50h and 51h internal RAM location.	L3	6
	c	With neat diagram explain the range of JUMP instructions	L2	6
		Module-3		
Q. 05	a	Explain the bit contents of TCON and TMOD registers.	L1	8
	b	Write an assembly language program to transfer multi-byte data serially with 9600 baud rate.	L3	8
	c	Explain how timers are programmed in mode 1.	L2	4
		OR		
Q. 06	a	Explain the bit pattern of SCON register with diagram	L2	6
	b	Assuming XTAL frequency as 11.0592Mhz, write a program to generate 4Khz square wave on P2.1. Use timer 0 in model show all the calculations	L3	8
	c	Explain RS232 in serial communication using 8051 microcontroller	L2	6
		Module-4		
Q. 07	a	Explain how interrupt priority can be changed using IP register. Also explain the default priorities assigned to interrupts in 8051 microcontroller.	L2	8
	b	Explain how programming of external hardware interrupts is done in 8051 microcontrollers with a code.	L2	8
	c	Explain programming of timer interrupts.	L1	4
		OR		
Q. 08	a	Explain the bit contents of IE register.	L1	4
	b	Write a C program using interrupts to generate a square wave on port pin P1.2 of 1kHz using timer-0 in mode 2.	L3	8
	c	Explain programming of serial communication interrupts	L2	8
		Module-5		

Q. 09	a	With neat diagram write an assembly language program to interface DAC to 8051 microcontroller.	L3	**10**
	b	Write a program to display "HELLO WORLD" by interfacing LCD display to 8051 microcontroller	L3	**10**
OR				
Q. 10	a	With neat diagram write an assembly language program to interface ADC0804 to 8051 microcontroller.	L3	**10**
	b	With neat diagram explain the interfacing of stepper motor using 8051 microcontroller.	L3	**10**