

## Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

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### Fourth Semester B.E. Degree Examination Embedded Controllers

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

- Note: 01. Answer any **FIVE FULL QUESTIONS**, choosing at least **ONE QUESTION** from each **MODULE**.
02. .
03. .

#### Module -1

Q.01	a	Justify Harvard architecture is faster than Von – Neumann architecture and write its neat block diagram.	6
	b	Compare between RISC & CISC CPU Architecture	8
	c	Describe the internal and external memory organization of 8051 microcontroller.	6
OR			
Q.02	a	With neat block diagram, explain the architecture of 8051 microcontroller.	10
	b	What is stack? Illustrate PUSH and POP instructions	6
	c	Discuss the operation of the following pins. i) ALE ii) PORT0 iii) EA iv) PSEN	4
Module-2			
Q. 03	a	Illustrate any four addressing modes with an example	8
	b	Discuss the operation performed by the following instructions with an example. i) DA A ii) ACALL iii) CJNE destination, source, target iv) SJMP	8
	c	Describe the operation of following assembler directives. DB ii) EQU iii) ORG iv) END	4
OR			
Q.04	a	Write a program to find cube of an 8bit data	8
	b	Identify and correct the mistake in following instruction and identify the addressing mode. i) SWAP r0 ii) mov a, @DPTR iii) mov r0,r1 iv) add 30h,40h	8
	c	Write a program to find the average of 5 data stored from 30h - 34h Location	4
Module-3			

Q. 05	a	Mention different data types available in 8051C and its usage.	6
	b	Write a C program to toggle all bits of P0 & P2 continuously with 250ms delay. Use EX-OR operator.	6
	c	Write an 8051C program to convert BCD code to Hexa decimal code	8
		OR	
Q. 06	a	Interface an 8bit DAC to 8051 and write an assembly program to generate triangle wave.	10
	b	Interface a stepper motor using P2 and a switch using P1.6 to 8051 and write a C program to rotate the stepper motor in clockwise direction when switch is ON else anticlockwise direction.	10
		<b>Module-4</b>	
Q. 07	a	Write the bit pattern of TCON register and describe the function of each bit.	6
	b	A Switch is connected to pin P1.2. Write an 8051C program to monitor switch and create the following frequencies on pin P1.7. Use timer 0 in mode1 for both of them. Switch = 0 ; 500Hz Switch = 1 : 750 Hz.	8
	c	Assume that 1Hz external clock is being fed to pin T0 (P3.4). Write a C program for counter 0 in mode 1 to count the pulses and display the TH0 and TL0 register on P2 and P1 respectively.	6
		OR	
Q. 08	a	What are the importance of TI and RI flag bit	8
	b	Write an ALP in 8051 microcontroller to send the text string "I LOVE EMBEDDED CONTROLLERS" to Serial #1. Set the Baud at 9600, 8 data bit and 1 stop bit.	8
	c	Differentiate between interrupt and polling.	4
		<b>Module-5</b>	
Q. 09	a	With the neat block diagram of MSP430 microcontroller describe its architecture.	10
	b	Write the block diagram of clock module. Explain how the various clock signals are generated and what are the sources of these clocks?	10
		OR	
Q. 10	a	Illustrate the addressing modes of MSP430 Microcontroller.	10
	b	Describe the operation of the following instructions. i) incd.w dst    ii) swpb src    iii) JZ addr	6
	c	Discuss the use of the following. Editor    ii) Linker    iii) Debugger    iv) Assembler.	4