

CBCS SCHEME

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BEE403

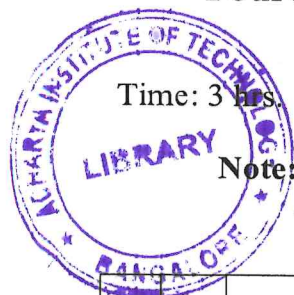
Fourth Semester B.E/B.Tech. Degree Examination, June/July 2026

Microcontrollers

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level, C: Course outcomes.



Module – 1			M	L	C
1	a.	Draw and explain the architecture of 8051 Microcontroller.	8	L2	CO1
	b.	Explain the internal RAM memory organization of 8051 Microcontroller.	6	L2	CO1
	c.	Explain with the help of neat diagram how to interface external ROM memory to 8051 Microcontroller.	6	L2	CO1
OR					
2	a.	List and explain the various types of special function registers of 8051 Microcontroller.	8	L3	CO1
	b.	Explain functions of the following pins of 8051 Microcontroller : i) $\overline{EA}$ ii) ALE iii) $\overline{PSEN}$ iv) RST.	8	L1	CO1
	c.	Explain the concept of stack memory with necessary instructions.	4	L2	CO1
Module – 2					
3	a.	Write an assembly language program to realize NOR operation.	6	L3	CO2
	b.	Write a program to copy a block of 10 bytes of data from RAM locations starting at 35 H to RAM locations starting at 60 H.	6	L3	CO2
	c.	Explain the arithmetic instructions of 8051 Microcontroller with examples.	8	L2	CO2
OR					
4	a.	Write a program that finds the number of 1's in a given byte.	6	L3	CO2
	b.	Write an assembly language program for finding largest number in an array.	6	L3	CO2
	c.	Explain the following instructions with examples : i) DJNZ R2, BACK ii) JNB bit, target iii) DA A iv) SWAP A.	8	L2	CO2

Module – 3

5	a.	Explain the bit structure of TCON register.	8	L1	CO3
	b.	Write an 8051C program to toggle all bits of port P2 and P3 continuously with 200 ms delay. Use the inverting operator.	6	L3	CO3
	c.	Write 8051C program to create a square wave of 50% duty cycle on P1.5 bit. Use Timer 0, Mode 1.	6	L3	CO3

OR

6	a.	Write a 8051C program to send out the value 44H serially one bit at a time via P2.0. The MSB should go out first.	6	L3	CO3
	b.	Explain Mode -1 programming of 8051 timer. Describe the different steps to program in Mode - 1.	8	L2	CO3
	c.	Write an 8051C program to convert packed BCD 0X29 to ASCII and display the bytes on P1 and P2.	6	L3	CO4

Module – 4

7	a.	Explain the bit contents of SCON register.	6	L1	CO4
	b.	Write an 8051C program to transfer the letter 'Y' serially at 4800 baud continuously. Use 8 bit data, 1 stop bit.	6	L3	CO4
	c.	Explain the six interrupts in the 8051 Microcontroller by using interrupt vector table.	8	L2	CO4

OR

8	a.	Explain the serial communication modes 0 and 1 of 8051 Microcontroller.	8	L2	CO4
	b.	Explain the connection diagram of MAX232 chip to 8051 Microcontroller.	6	L2	CO4
	c.	Write a 8051C program that continuously gets a single bit of data from P1.7 and sends it to P1.0, while simultaneously creating a square wave of 200 μ s period on P2.5. Use timer 0 to create the square wave. Assume XTAL = 11.0592 MHz.	6	L4	CO4

Module – 5

9	a.	Write 8051C program to rotate stepper motor in anti clockwise direction.	6	L3	CO5
	b.	Explain the interfacing of LCD to 8051 Microcontroller.	8	L2	CO5
	c.	Draw the interfacing diagram between 8051 Microcontroller and keyboard and explain.	6	L2	CO5
OR					
10	a.	Explain the steps to program the ADC 0808 along with timing diagram.	8	L2	CO5
	b.	Explain the interfacing of 8051 Microcontroller with DC motor through opto isolator.	6	L2	CO5
	c.	Explain the pin diagram of 8255 chip.	6	L1	CO5
