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

Microcontrollers and Applications



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
Q.1	a.	Explain the architecture of 8051 with neat block diagram.	10	L2	CO1
	b.	List out the difference between : (i) Harvard and Von-Neumann architecture (ii) RISC and CISC	10	L2	CO1
OR					
Q.2	a.	Explain the internal memory organization of 8051 with neat diagram.	10	L2	CO1
	b.	Explain the following pins of 8051 microcontroller : ALE, $\overline{EA}$, PSEN, RST	10	L2	CO1
Module – 2					
Q.3	a.	Define Addressing Mode. Explain different addressing modes with suitable examples.	10	L2	CO2
	b.	Explain the following instructions : (i) RLC A (ii) MOVX A, @DPTR (iii) MUL AB (iv) ADD A, B (v) DA A	10	L2	CO2
OR					
Q.4	a.	Explain the arithmetic instructions of 8051 microcontroller with examples.	10	L2	CO2
	b.	Explain different ranges of Jump and Call instructions with neat diagram.	10	L2	CO2
Module – 3					
Q.5	a.	Explain format of TMOD and TCON Registers.	10	L2	CO3
	b.	What are Data Types? Explain the different C data types for 8051 with their data size and data range.	10	L2	CO3
OR					
Q.6	a.	Explain the modes of operation of timer/counters of 8051 with diagram.	10	L2	CO3
	b.	Develop microcontroller 8051 program to timer0 to create a pulse width of 1 msecs on P _{2.3} .	10	L3	CO3
Module – 4					
Q.7	a.	Write an ALP to transfer message "VTU" serially at 9600 baud rate, 8 bit data and 1 stop bit.	10	L3	CO4
	b.	Discuss the different handshake signals of RS-232. Also explain the need of serial communication with a block diagram.	10	L2	CO4
OR					
Q.8	a.	Explain different interrupts of 8051 with the help of interrupt vector table.	12	L2	CO4
	b.	Mention the significance of RI and TI flag.	08	L2	CO4
Module – 5					
Q.9	a.	Explain different pins of LCD. Also write an ALP to display message 'Hello' on LCD.	10	L3	CO5
	b.	Explain the working of stepper motor in anticlockwise direction with the hardware schematic and C program.	10	L3	CO5
OR					
Q.10	a.	Explain DAC interfacing of 8051 with suitable diagram along with an example of program.	10	L3	CO5
	b.	Explain DC motor interfacing of 8051.	10	L3	CO5