



23ECOE312 MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
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Model Question Paper Fifth Semester BE Degree Examination Microcontrollers

Time: 3 Hours

Max. Marks: 100

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

Module -1			M	L	C
Q1	a.	With a neat diagram brief about the 8051 architecture.	07	L2	CO1
	b.	Explain Port 2 pin configuration with a neat diagram.	07	L2	CO1
	c.	Describe the content of PSW register after the execution of the following instruction. MOV A, #14h ADD A, #0F1h	06	L2	CO1
OR					
Q2	a.	With neat diagram explain the internal memory structure and programming model of 8051 microcontroller.	07	L2	CO1
	b.	Differentiate between CISC & RISC architectures, and between microcontrollers & microprocessors.	07	L2	CO1
	c.	Describe the functionality of the following 8051 microcontroller pins. i. ALE ii. EA iii. PSEN.	06	L2	CO1
Module- 2					
Q3	a.	Explain the instructions with an example. i) DA ii) MUL iii) DIV iv) MOVX	08	L2	CO2
	b.	With an example, discuss the logical instruction set. Also mention which flag registers are affected by each logical instruction.	06	L2	CO2
	c.	Write an 8051 assembly level program to transfer 4 bytes of data from source 1000h to destination 2050h using external memory location.	06	L3	CO2
OR					
Q4	a.	Explain different addressing modes of 8051 with examples.	08	L2	CO2
	b.	Briefly explain the PUSH and POP operations with an example.	06	L2	CO2
	c.	Write an ALP to convert a packed BCD number into two ASCII numbers. Store the result in R5 and R6 respectively.	06	L3	CO2
Module - 3					
Q5	a.	Describe the Mode-2 operation of timers and explain the procedure for programming a timer in Mode 2.	06	L2	CO2
	b.	Write an ALP program that display a value of 'Y' at port 0 and 'N' at port 2 and also generates a square wave of 10KHz, with Timer 0 in mode-2 at port pin P1.2. Assume XTAL=22MHz.	08	L3	CO3
	c.	Explain the structure of interrupt priority and interrupt enable register.	06	L2	CO1
OR					

Q6	a.	Show the instruction to i. Enable the serial interrupt, timer-0 interrupt, and external hardware interrupt-2. ii. Disable the timer-1 interrupt. iii. Show how to disable all the interrupts with a single instruction.	06	L2	CO2
	b.	Explain mode-1 programming. Assuming that XTAL=11.0952MHz, write an 8051 ALP to generate a square wave at P2 to create a pulse width of 5ms using timer-1 mode-1.	08	L3	CO3
	c.	Explain interrupt vector table of 8051 microcontroller.	06	L2	CO1
Module - 4					
Q7	a.	With neat diagram describe SCON register of 8051	06	L2	CO1
	b.	Write an 8051 ALP program to transfer "YES" serially at 9600 baud rate, 8-bit data, 1-stop bit, do this continuously.	08	L3	CO3
	c.	Explain RS232 & DB09 connector used for serial communication.	06	L2	CO1
OR					
Q8	a.	Explain full duplex, half duplex and simplex in serial communication.	06	L2	CO1
	b.	Write an 8051 ALP to transmit/receive data through serial port.	08	L3	CO3
	c.	Explain Max-232 driver used for serial communication.	06	L2	CO1
Module - 5					
Q9	a.	Explain the working of LCD along with the necessary commands. Write an assembly level code to interface LCD with 8051 microcontroller.	10	L3	CO4
	b.	Explain the interfacing of DC motor to 8051 and write an assembly level program to control the operation.	10	L3	CO4
OR					
Q10	a.	Explain the interfacing of stepper motor to 8051 and write an assembly level program to control the operation.	10	L3	CO4
	b.	Explain with a neat diagram, the interfacing of DAC and write an assembly level program to generate staircase waveform.	10	L3	CO4
