

U.S.N.								
--------	--	--	--	--	--	--	--	--

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

October 2023 Semester End Main Examinations

Programme: B.E.

Semester: IV

Branch: Electronics and Telecommunication Engineering

Duration: 3 hrs.

Course Code: 15ES4GCMCS

Max Marks: 100

Course: Microcontrollers

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit
 2. Missing data, if any, may be suitably assumed.

UNIT 1		
1a)	With a neat block diagram explain the internal RAM structure of 8051. Clearly indicate the address of each block	08
b)	Discuss the role of Program counter and Data pointer in 8051 with an example	06
c)	Discuss the use of four math flags in 8051 with an example	06
UNIT 2		
2a)	Explain any four addressing modes of 8051 microcontroller with example	08
b)	Write an ALP to swap the content of register r7 and r6 using register addressing mode	06
c)	Indicate whether the following instructions of 8051 are valid? If not, correct the instruction i) ADD R0, A ii) MOVX DPTR, #9000h iii) MOV A, @R4 iv) POP R6 v) MOVC @A+DPTR, A vi) MOV R1,R0	06
OR		
3a)	Explain the following instructions of 8051 with a suitable example in each case. (i) RL A if A=65h (ii) DA A if A =79h (ii) XCHD A, A=69h (iv) CJNE A, #05h	08
b)	Write the result after the execution of each instruction MOV 81 h,#30 h MOV R0, #0AC h PUSH 00 PUSH 00 POP 01 POP 80h MOV A,#0FF h XRL A,80 h	06

c)	With example program, differentiate between JUMP and CALL instructions	06
UNIT 3		
4a)	Write the steps to program timer 0 in mode 1 with an example program	08
b)	Write an 8051 C program to toggle only bit P2.4 continuously without disturbing the rest of the bits of P2.	06
c)	Analyze the following and identify the timer/counter modes, when TMOD is loaded with the following values. Also write the format of TMOD register. i) TMOD=12h ii) TMOD=51h iii) TMOD=42h iv) TMOD=62h	06
OR		
5a)	Write the steps in programming the 8051 to transfer data serially	08
b)	Write a program for the 8051 to transfer letter “A” serially at 4800 baud, continuously	06
c)	Write an 8051 ‘C’ program to monitor bit P1.5. If it is high, send 55H to P1, otherwise send AAH to P2.	06
UNIT 4		
6a)	Explain the different interrupts of 8051. Show how the priority can be altered by the programmer.	08
b)	Assuming that INT 1 pin is connected to a switch that is normally high, write an embedded C program to turn the LED whenever it goes low. The LED is connected to P1.3 and is normally off. As long as the switch is pressed low, the LED should be on.	06
c)	Explain the actions taken by the microcontroller when an interrupt occurs.	06
UNIT 5		
7a)	Explain with a neat diagram, LCD interfacing to 8051 and write a program to display “Hello World”	10
b)	Interface DAC808 to 8051 and write an embedded C program to generate triangular and square waveforms	10
