



SCAN ME



SCHOOL OF ELECTRONICS ENGINEERING (SENSE)

Winter Semester 2019 ~ 20

Continuous Assessment Test - I

B.Tech. (BIS,BML &BSW)

Course: ECE3031- Microcontroller and Embedded Systems

Max.Marks:50

Duration : 90 Minutes

Slot : C1

Answer all Questions

- ✓ 1. Show the content of PSW after performing $(FF)_{16} + (1F)_{16}$ (5)
- ✓ 2. Identify and mention the addressing modes of the following instructions (5)
 ✓ a) DIVAB ✓ b) MOV R0, 25h ✓ c) PUSH 0 ✓ d) ADD A,R2 ✓ e) MOV @R0,A
3. Write an 8051 assembly language program to add BCD numbers together and store the result in RAM locations 50H & 51H. The data are stored in the ROM space starting at 200H. Refer the following input data. (10)

```

      ORG 200H
      DB  43H, 54H, 76H, 87H, 25H, 33H
    
```
- ✓ 4. Assume a data is present in Accumulator. Check its MSB (Most Significant Bit) and if it is "1" then write an ALP to transfer the data present in ROM starting from 200H to 20FH to internal RAM starting from 40H to 4FH? (10)
- ✓ 5. Analyze and explain the objective of the following 8051 assembly language program. Specify the content of each register and also the content of Program Status Word (PSW) register after the execution of each instruction. (5)

	MOV A,#00H	A = ?? PSW = ??
	MOV R5,A	R5 = ??
	MOV R0,#0F4H	R0 = ??
	ADD A,#89H	A = ?? PSW = ??
	INC N_1	
	INC R5	
N_1	: ADD A,#0A5H	A = ?? PSW = ??
	INC N_2	
	INC R5	
N_2	: ADD A,#0E2H	
	JNC OVER	
	INC R5	R5 = ??
OVER	: MOV @R0,A	@R0 = ??
	END	

6. Refer to the following delay subroutine. Assume a clock frequency of 12MHz, Calculate:
Total time delay of the subroutine

(5)

Label	Mnemonics	Operand	Machine cycle
DELAY:	MOV	R0,#10H	1 ✓
L2:	MOV	R1,#25H	1 ✓
L1:	DJNZ	R1,L1 <i>R1: 0</i>	2 ✓
	NOP		1 ✓
	NOP		1 ✓
	DJNZ	R0,L2	2 ✓
	RET		1

7. Analyze the following program and specify the contents in the RAM register banks and stack pointer [SP] after execution of the following program.

(10)

ORG 000H

SETB PSW.3

SETB PSW.4

MOV R6, #0F5H

MOV R7, #22H

CLR PSW.4

MOV R5, #0A2H

MOV R3, #0CDH

PUSH 1EH

PUSH 0DH

→ Reset the Microcontroller at this point and execute the following program.

PUSH 15H

POP 0DH

POP 17H

END

RAM Memory

07h	
06h	
05h	
04h	
03h	
02h	
01h	
00h	

0Fh	
0Eh	
0Dh	
0Ch	
0Bh	
0Ah	
09h	
08h	

17h	
16h	
15h	
14h	
13h	
12h	
11h	
10h	

1Fh	
1Eh	
1Dh	
1Ch	
1Bh	
1Ah	
19h	
18h	

After the Execution: SP = ?