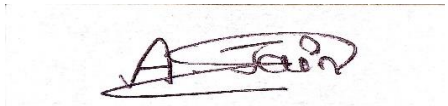
EE312 Theory Exam

Friday, November 06, 2020

Name	Roll Number
Ayush Jain	180108051
Signature	
	

1. Consider the two numbers **A = $(101.241)_{10}$** and **B = $(53.343)_{10}$**. Compute the Fixed Point Representations of A and B in Binary Number System. Here, **$(aI)_2$**, **$(bI)_2$** and **$(aF)_2$**, **$(bF)_2$** are the respective 8-bit integer and fractional parts of binary representations of **A** and **B**. **[10]**

   Let, **{ $(cI)_2$, $(cF)_2$ } = { $(aI)_2$, $(aF)_2$ } + { $(bI)_2$, $(bF)_2$ }**
   And, **{ $(dI)_2$, $(dF)_2$ } = { $(aI)_2$, $(aF)_2$ } - { $(bI)_2$, $(bF)_2$ }**

   Fill up the following table

$(aI)_2$	01100101	**$(aF)_2$**	00111101
$(bI)_2$	00110101	**$(bF)_2$**	01010111
$(cI)_2$	10011010	**$(cF)_2$**	10010100
$(dI)_2$	00101111	**$(dF)_2$**	11100110

2. Fill up the tables considering the execution of following subroutines.

Subroutine I			Subroutine II	
C000	LXI SP FF00		2000	LXI H 2050
C003	MVI A FF		2003	MOV B M
C005	OUT 00		2004	MVI C 00
C007	CALL C014		2006	INX H
C00A	MVI A 11		2007	MOV A M
C00C	OUT 00		2008	CMP B
C00E	CALL C014		2009	JC 2011
C011	JMP C003		200C	SUB B
C014	MVI B FF		200D	INR C
C016	MVI C FF		200E	JMP 2008
C018	DCR C		2011	STA 3050
C019	JNZ C018		2014	MOV A C
C01C	DCR B		2015	STA 3051
C01D	JNZ C016		2018	RET
C020	RET			
FF00	FF01		2050	2051
21H	20H		08H	04H

Subroutine-I [15]								
Register	**Content**							
A	31							
B	00							
C	00							
D	00							
E	00							
H	00							
L	20							
Flag	0	0	0	0	0	0	0	0
PC	FFFF							

Subroutine-II [10]	
Register	**Content**
A	04
B	09
C	00
D	00
E	00
H	20
L	51

Flag	0	0	0	0	0	1	0	1
PC	FFFF							

3. Consider the following program

2000	LXI SP 2100		DELAY:	2064	PUSH H
2003	LXI B 0000			2065	PUSH B
2006	PUSH B			2066	LXI B 80FF
2007	POP PSW		LOOP:	2069	DCX B
2008	LXI H 200B			206A	MOV A B
200B	CALL 2064			206B	ORA C
200E	OUT 01			206C	JNZ LOOP
2010	HLT			206F	POP B
				2070	RET

What is the status of the flags and the contents of the accumulator after the execution of the POP instruction located at 2007H? **[5]**

A	00H							
Flag	0	0	0	0	0	0	0	0

Specify the stack locations and their contents after the execution of the CALL instruction located at 200BH. **[10]**

STACK	
ADDRESS	VALUE
20FC	0B
20FD	20
20FE	0E
20FF	20

What are the contents of the stack pointer register and the program counter after the execution of the CALL instruction? **[5]**

SP	20FA	**PC**	200E

Specify the memory location where the program returns after the subroutine. **[5]**

PC = 200B