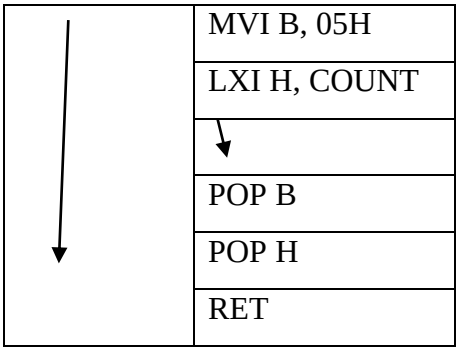
1) Read the following program and answer the questions below:

Line No.	**Mnemonics**
1	LXI SP, 0400H
2	LXI B, 2055H
3	LXI H, 2255H
4	LXI D, 2090H
5	PUSH H
6	PUSH B
7	MOV A,L
	↓
	↓
20	POP H

a. What is stored in the stack pointer register after the execution of line 1?
b. What is the memory location of the stack where the first data byte will be stored?
c. What is stored in the memory location 03FEH when line 5 is executed?
d. After the execution of line 6, what is the address in the stack pointer register and what is stored in stack memory location 03FDH?
e. Specify the contents of register pair HL after the execution of line 20.

2) The following program has a delay sub-routine located at location 2060H. Read the program and answer the questions given at the end of the program.

Memory Locations	**Mnemonics**
2000	LXI SP, 20CDH
2003	LXI H, 0008H
2006	MVI B, 0FH
2008	CALL 2060H
200B	OUT 01H
↓	DCR B
	↓
	CONTD
2060	PUSH H
2061	PUSH B



a) When the execution of the CALL instruction located 2008- 200AH is completed, list the contents stored at 20CCH and 20CBH, the contents of the Program Counter, and the contents of the stack pointer register.
b) List the stack locations and their contents after the execution of the instructions PUSH H and PUSH B in the sub-routine.
c) List the contents of the stack pointer register after the execution of the instruction PUSH B located at 2061H.
d) List the contents of stack pointer register after execution of instructions of RET in the sub-routine.

3) Write a program to meet the following specifications:
   a) Initialize the stack pointer register at XX99H.
   b) Clear the memory locations starting from XX90H to XX9FH.
   c) Load register pairs B, D and H with data 0237H, 1242H and 4087H respectively.
   d) Push the contents of the register pairs B, D and H on the stack.
   e) Execute the program and verify the memory locations from XX90H to XX9FH.
4) Write a program to clear the initial flags. Load data byte FFH into the accumulator and add 01H to the byte FFH by using instruction ADI. Mask all the flags except the CY flag and display the CY flag at PORT 0. (OR store the results on the stack.) Repeat the program by replacing the ADI instruction with the INR instruction and the byte 01H with the instructions NOP. Display the flag at PORT 1 (or store the results on the stack.). Explain the results.