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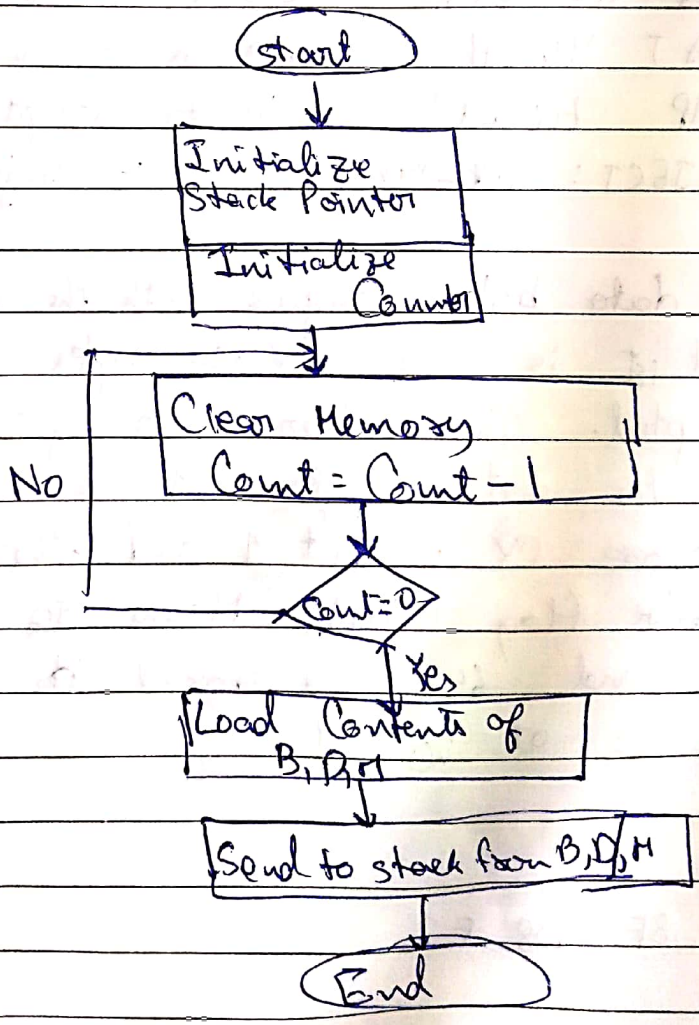
d)

```
LXI     SP, 0099H
MVI     A, DFH
LXI     H, XX90H
CLEAR:  MVI   M, 00H
        INX   H
        DCR   A
        INC   CLEAR
        LXI   B, 0237H
        LXI   D, 1242H
        LXI   H, 4087H
        PUSH  B
        PUSH  D
        PUSH  H
        HLT
```



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After the program is executed, memory locations XX90H and XX9FH are filled with 00H, but some address contents changed later.

XX92	00H	XX94	40H	XX96	12H	XX98	07H
XX93	87H	XX95	43H	XX97	97H	XX99	00H

c)

```
IN   PORT 1        ; A ← DATA
MVI  B, 20H        ; B ← 20
CMP  B             ; A ⟺ B   IF A<CY=1 OTHERS CY=0
 JC  REJECT        ; CY=1 → GO REJECT LINE
 JM  REJECT        ; S=1 → GO REJECT LINE
 SAT 4070H         ;Data in accumulator stored to 4070H
 JMP ACCEPT        ; Go to accept line (Data is accepted)
REJECT: JMPINVLD   ;Data is rejected
```

all data bytes compare with the data in register B what it is 20. Data bytes 20 and 64 are accepted. The other data bytes are rejected because of the data bytes 19 is smaller than 20 therefore CY is set 1 and other data bytes has negative flag (S=1). Means that only data bytes 20 and 64 are stored in the memory starting at 2070H.

i) 20, 64

ii) 19, 8F, D8, F2

H, 8000H pointer

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Ans 1) a) 3 bid binary → 12 bits to represent BCD (Lisa

```
LXI   SP, STACK          [STACK => xxxxH]
LXI   H, 2000H           [starting of input]
XCHG                     [starting of output]
LXI   H, 3000H
MVI   A, 0AH
MOV   C, A
LOOP: Call Power
      DCR C
      JNZ LOOP
      HLT
POWER: MVI  B, 64H
       CALL BIN TO BCD
       MVI  B, 0AH
       CALL BIN TO BCD
       MOV  M, A
       INX  H
       RET

BINTOBCD : MVI M, FFH
NEXT :     INR M
           SUB B
           INC NEXT
           ADD B
           INX H
           RET
```

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Eg (2SS)$_{10}$: 200H → BED — S 3000H
S 3002H

(1SS)$_{10}$: 2001H → BED — 1 3003H
S 3004H
S 3005H

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b)