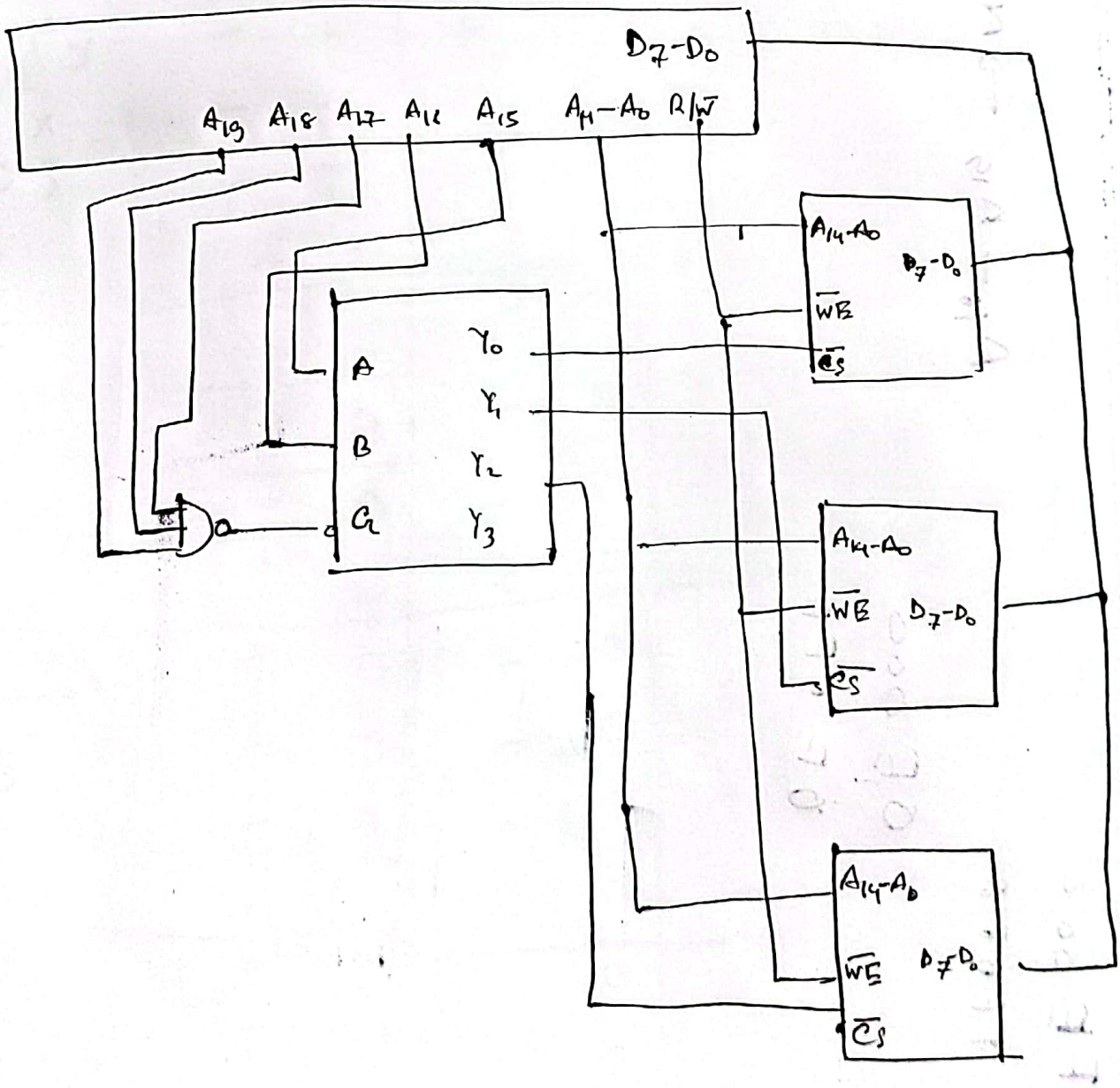
Question 1 (A)

Each RAM size = $2^{15} \times 1$ byte

= 32 KB

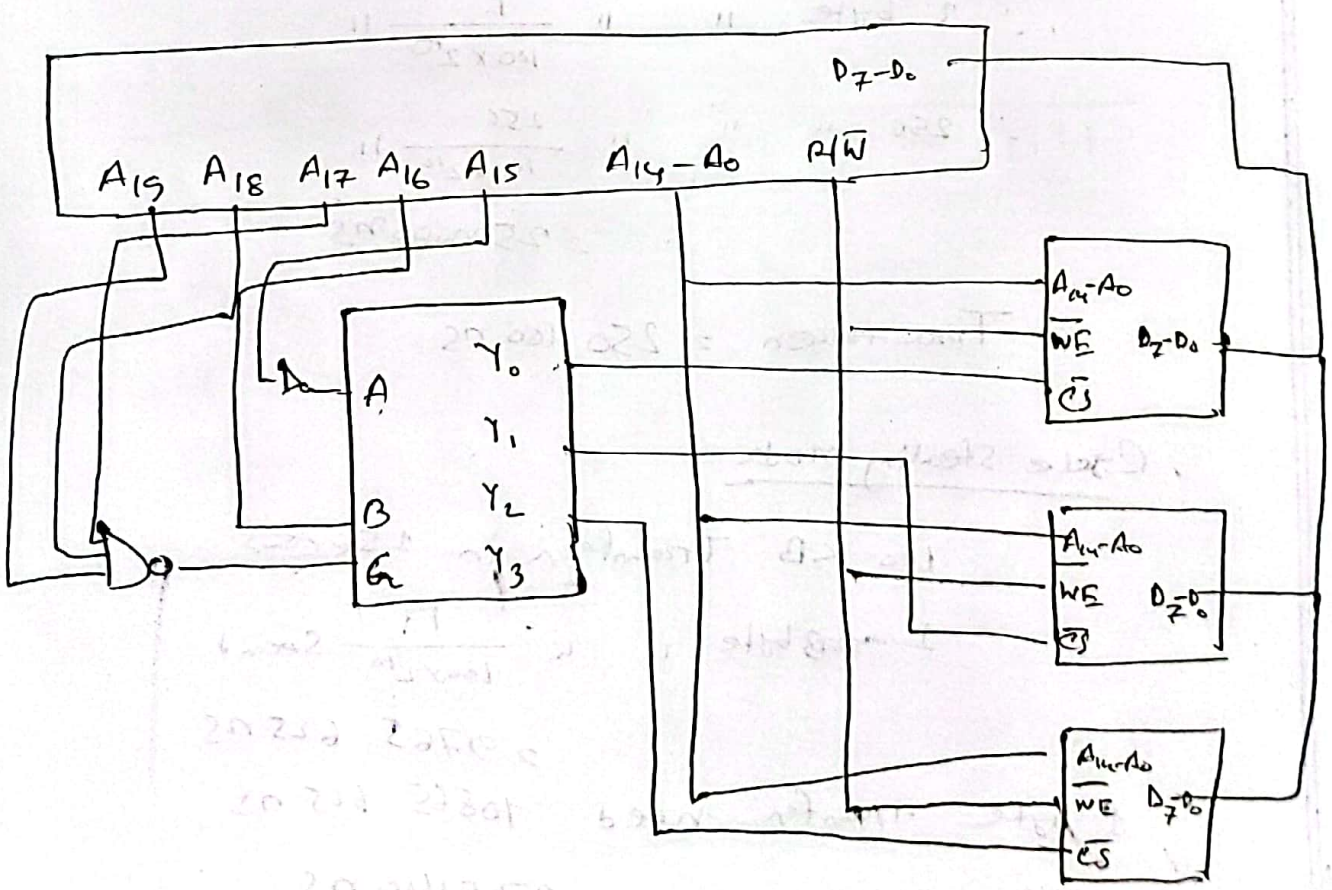
RAM Requires = $\frac{96\text{KB}}{32\text{KB}}$

= 3 ~~KB~~



$A_{19}-A_{16}$	$A_{15}-A_{12}$	$A_{11}-A_8$	A_7-A_4	A_3-A_0	
1 1 1 0	0 0 0 0	0	0	0	E 0 0 0 0
1 1 1 0	0 1 1 1	1	1	1	E 7 F F F
1 1 1 0	1 0 0 0	0	0	0	E 8 0 0 0
1 1 1 0	1 1 1 1	1	1	1	E F F F F
1 1 1 1	0 0 0 0	0	0	0	F 0 0 0 0
1 1 1 1	0 1 1 1	1	1	1	F 7 F F F

(b)



Question 2

(a)

DDRX 26 H

DDRX	7	6	5	4	3	2	1	0
	0	0	1	0	0	1	1	0

PIN 1, 2 & 5 of Port x is behaving like output & others are input.

(b)

Burst Mode

DMA to CPU & CPU to DMA needs total time = 1100 ns

BURST Mode

100 KB Transfer need 1 Second

∴ 1 byte " " $\frac{1}{100 \times 2^{10}}$ "

∴ 256 " " " $\frac{256}{100 \times 2^{10}}$ "

$= 2500000$ ns

Time taken = 2501100 ns

Cycle Stealing Mode

100 KB Transfer in 1 Second

1 ~~KB~~ byte " " $\frac{1}{100 \times 2^{10}}$ Second

$= 9765.625$ ns

1 byte transfer need 10865.625 ns

∴ 256 " " " 2781600 ns

∴ Total Time = (2781600 + 2501100) ns = 5282700 ns

Question 3

(a)

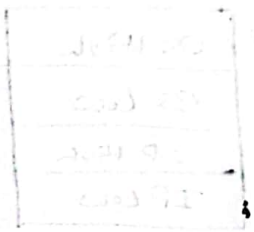
256KB × 8

= 2^8 × 1KB × 1 byte

= $2^8 \times 2^{10}$ byte

= 2^{18} byte

18 bit Address Bus



(b)

4FFFH → 0100 1111 1111 1111

4000H → 0100 0000 0000 0000

(+)

1000 1111 1111 1111

ZF = 0

SF = 1

PF = 1

OF = 1

Question 4

(a)

INT 7H

7H × 4H = 1CH

001FH	CS High
001EH	CS Low
001DH	IP High
001CH	IP Low

(b) PA = 95C1H × 10H + 0FE2H

= 96BF2H

(i) $CS = \frac{PA - IP}{10H}$

= 8C3CH

PA = 8C3C0H + A827H

= 96BE7H

[Doesn't Exist]

(ii) $CS = \frac{PA - IP}{10H}$

= 96A9H

PA = 96A9H × 10H + 0151H

= 96B126H

[Doesn't Exist]

(c) 8086 send 20-bit physical Address to the memory unit by Logical Address. 16 bit Register store 16 bit data of Logical 16 bit Segmentation. And In BIU there is a Dedicated Adder by which Logical Address convert into physical Address and connect ~~with~~ 20 bit Data bus with 16 bit Register.