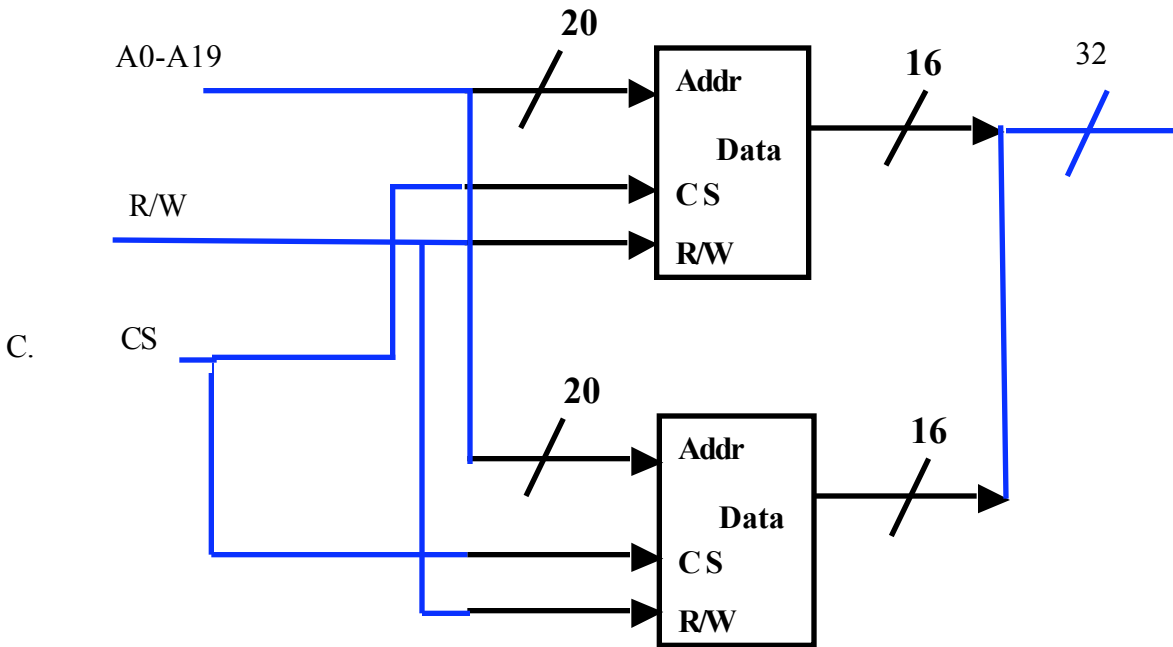Name _____ GT#_____

ECE2030b- HW-7 Due Wednesday Dec. 5, 2002 – Memory, Assembly

Memory.

A. Complete the table below. A "2M x 16" memory has 2M words of 16 bits.
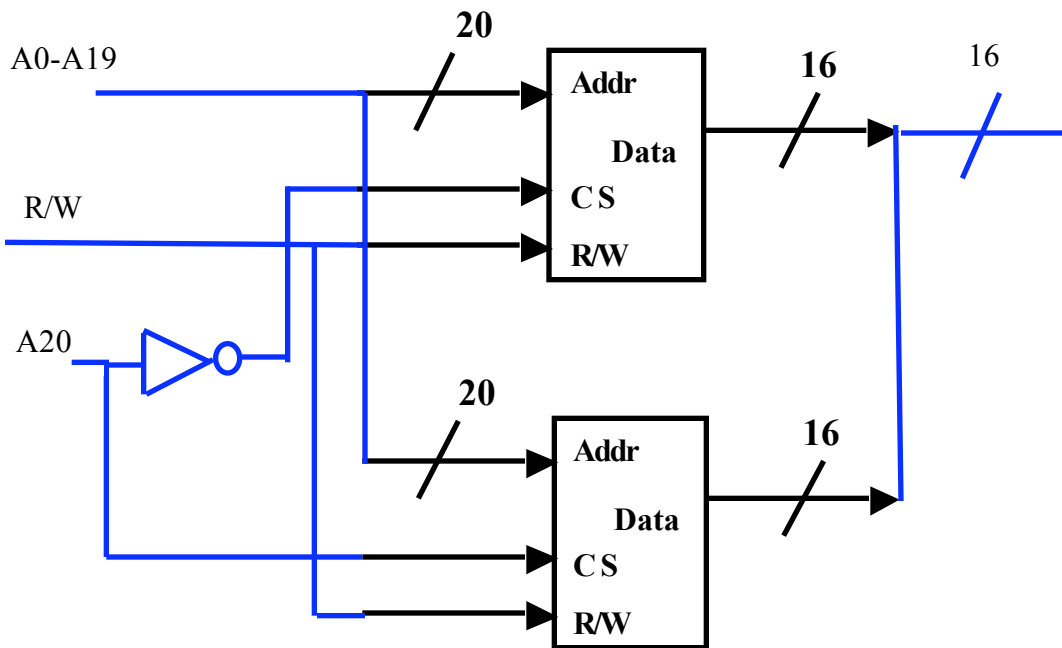
Memory	Total Bits	# of addresses	# of address lines	# of data lines
1M x 8	8M	1M	20	8
1K by 4	4K	1K	10	4
64K x 16	1M	64K	16	16
4M x 32	128M	4M	22	32

B.   Show how to connect these 1M x 16 chips to make a 1M by 32 memory.

C.

C. Show how to connect these 1M x 16 chips to make a 2M by 16 memory. The data outputs are ıree-state bus drivers.

R/W

20

A0-A19

Assembly. D. Write in R4000 assembly language the commands to do the following:

Compare two variables, X and Y. If X >= Y then do a non-relative jump to the instruction whose address is in register $5. Use the SLT instruction.

X is in memory address 0x00002800. Y is in memory address 0x00003900.

```
lw   $1, 0x00002800 ($0)    # X

lw   $2, 0x00003900 ($0)    # Y

slt  $3, $1, $2      # $4 =1 if  X < Y

bne  $3, $0, 4      #  branch if true ( X < Y )

j  $5   # jump to absolute address in $5

* * *
```

E. What is the offset address (in 19-bit hex) for the BEQ instruction below to branch back to label "loop"?

loop: add $2, $3, $2

       beq $2, $6, _____-8_____