CS-350: Computer Organization

Spring 2003: Quiz # 4 ANSWERS

(1) The main memory for a particular computer contains 12 megawords of memory, the addressable unit of memory consisting of a four-byte word. How many data lines need to be provided for reading from and writing to this memory?

Answer: 4 bytes = 4 x 8 bits = 32 bits. Therefore, **32 data lines** must be provided. *2 pts*

(2) How many address lines must be provided?

Answer: $\lceil \log_2(12 \text{ meg}) \rceil$ = **24 address lines.** *2 pts*

(3) The memory is to be assembled from modules of 256 k-words each. How many memory modules must be used?

Answer: 12 meg ÷ ¼ meg/module = **48 modules.** *2 pts*

(4) How many address lines go to each memory module?

Answer: To select a memory word within the module, $\log_2(256 \text{ k})$ = **18 address lines.** *2 pts*

(5) A decoder is provided, from which one output line goes out to the "Chip Select" line of each of the memory modules. How many address lines are connected to the input terminals of the decoder?

Answer: $\lceil \log_2(48) \rceil$ = **6 address lines.** *2 pts*

A	12
B	14
C	16
D	18
E	20
F	22
G	24
H	26
I	28
J	30
K	32
L	34
M	36
N	38
O	48
P	50
Q	none of the above

Question	Answer
1	**K**
2	**G**
3	**O**
4	**D**
5	**Q**