

Show your calculations. Underline or draw a box around your final answer.

1. A memory system uses 16-bit words. The addresses range from $0x0000$ to $0x8000$. How many bytes does this memory hold? How many words? Give two answers as decimal (base 10) numbers.
2. Each IC in a memory holds $0x2000$ words. What is the width, in bits, of each IC's address bus?
3. What type(s) of simulations – *timing* or *functional* or neither – could be done *before* a design was routed? Your answer should be zero, one or two words. Marks will be awarded/deducted for correct/incorrect choices.
4. A logic family has $V_{IL(max)} = 0.5$ V and $V_{IH(min)} = 1.2$ V. Compute V_{OL} and what V_{OH} that will provide a 0.2 V noise margin for high and low levels. Label each answer and state whether it is a maximum or minimum (e.g. $V_{OH(max)} = 5.2$ V)

Show your calculations. Underline or draw a box around your final answer.

1. A memory system uses 16-bit words. The addresses range from $0x0000$ to $0x4000$. How many bytes does this memory hold? How many words? Give two answers as decimal (base 10) numbers.
2. Each IC in a memory holds $0x1000$ words. What is the width, in bits, of each IC's address bus?
3. What type(s) of simulations – *timing* or *functional* or neither – could be done *before* a design was routed? Your answer should be zero, one or two words. Marks will be awarded/deducted for correct/incorrect choices.
4. A logic family has $V_{IL(max)} = 0.5$ V and $V_{IH(min)} = 1.2$ V. Compute V_{OL} and what V_{OH} that will provide a 0.3 V noise margin for high and low levels. Label each answer and state whether it is a maximum or minimum (e.g. $V_{OH(max)} = 5.2$ V)