4. How many different patterns could be stored in a 16-bit register? What is the largest value that could be stored as a (two's complement) signed integer in such a register? What is the smallest value? How about the largest and smallest values that could be stored as unsigned integers?

Signed integer = -32768 to 32767

Unsigned integer = 0 to 65535

5. Convert the following 16-bit binary numbers into hexadecimal and signed decimal numbers (no, you don't get to use a calculator!):

• 1001110011101110	-25362	9CEE
• 1111111111111111	-1	FFFF
• 0000000011111111	255	FF
• 0100100010000100	18564	4884
• 1111111100000000	-256	FF00
• 1100101011111110	-13570	CAFE

9. Using a standard ASCII table (check the Internet or appendix E), what 4 hexadecimal bytes would represent the string "Fred"?

0x46 0x72 0x65 0x64 or 0x46 72 65 64

10. What ASCII character string would correspond to the hexadecimal number 0x45617379?

Easy

12. Why won't executables created for aWindows Pentium IV run on a PowerPC-based Macintosh (without special software support)?

Because they have their own idiosyncratic instruction sets. Written in and work different for each different CPU and OS programs.

13. What is the most important advantage of a virtual machine over a chip-based architecture?

14. What is the most important disadvantage?

Performing speed