1. **WHAT** are the three major categories of hardware that computers typically have?
   (a) 
   (b) 
   (c) 

2. **WHAT** are the two categories of storage that computers typically have?
   (a) 
   (b) 

3. **WHAT** are the two categories of I/O devices that computers typically have?
   (a) 
   (b) 

4. **NAME AND DESCRIBE** each of the three components of a Central Processing Unit.
   (a) 
   (b) 
   (c) 

5. In the word **MULTICORE**, what does “core” refer to?

6. **NAME TWO DIFFERENCES** between primary storage and secondary storage.
   (a) 
   (b) 

7. **WHAT** are the two categories of primary storage that computers typically have?
   (a) 
   (b) 

8. **NAME TWO THINGS** that every main memory location has.
   (a) 
   (b)
9. **NAME TWO DIFFERENCES** between main memory and cache.

   (a) 

   (b) 

10. **WHY** do computers have cache storage?

11. When data and instructions reside in the following kinds of storage, **WHEN** are they expected to be used?

   (a) Registers

   (b) Cache

   (c) Main memory

   (d) Secondary storage

12. **NAME TWO DIFFERENCES** between magnetic media and optical media.

   (a) 

   (b) 

13. **WHY** are floppy disks so expensive per MB, compared to CD-RWs and DVD-RWs?

14. **NAME TWO EXAMPLES** of magnetic secondary storage media, and give an advantage and a disadvantage of each.

   (a) Advantage:

   Disadvantage:

   (b) Advantage:

   Disadvantage:
15. **NAME TWO EXAMPLES** of optical secondary storage media, and give an advantage and a disadvantage of each.

(a) Advantage:

Disadvantage:

(b) Advantage:

Disadvantage:

16. **WHAT** is the **SPEED** in MB/sec, the **MAXIMUM SIZE** in GB and the **PRICE** per MB of the following storage media on a current PC?

(a) cache

(b) RAM

(c) hard disk

(d) CD-RW

(e) DVD-RW

(f) floppy disk

17. **WHAT** does the term **I/O** stand for?

18. **WHAT IS THE DIFFERENCE** between an input device and an output device?

19. **NAME** three input devices (you are not limited to the ones listed in the lecture notes, but your choices must fit the definition).

(a) 

(b) 

(c)
20. **NAME** three output devices (you are not limited to the ones listed in the lecture notes, but your choices must fit the definition).

   (a)

   (b)

   (c)

21. **NAME** a device that does **BOTH** input and output (you are not limited to the ones listed in the lecture notes, but your choice must fit the definition).
22. The word “bit” is a contraction of **WHAT PHRASE**?

23. **HOW MANY** different possible values can an individual bit have?

24. **HOW MANY** different possible values can a set of 8 bits have?

25. **NAME TWO DIFFERENCES** between a bit and a byte.
   
   (a)

   (b)

26. **EXPRESS** the approximate number of bytes in each of these to the nearest power of 10 (that is, as $10^x$ for the appropriate value of $x$):
   
   (a) kilobyte

   (b) megabyte

   (c) gigabyte

   (d) terabyte

   (e) petabyte

   (f) exabyte

   (g) zettabyte

   (h) yottabyte

27. $2^{10}$ is approximately $10$ to **what power**?

28. $2^{20}$ is approximately $10$ to **what power**?

29. $2^{30}$ is approximately $10$ to **what power**?

30. $2^{40}$ is approximately $10$ to **what power**?
31. What does Moore’s Law tell us?

32. Based on Moore’s Law, and using 2 years as the doubling period, approximately HOW MUCH FASTER will computers be in 2078 than they are today?

33. Based on Moore’s Law, and using 2 years as the doubling period, approximately HOW MUCH FASTER will computers be in 2098 than they are today?
34. **Unix Questions**: Give the Unix commands to accomplish the following tasks.

(a) **CREATE A COPY** of an existing file named `whoopdedoo.txt` that is in your current working directory, so that the copy is named `tapioca.txt` and is also in your current working directory.

(b) **EDIT** an existing text file named `want_editing.txt` that is in your current working directory.

(c) **EDIT** a non-existent text file named `want_editing_too.txt` that will be in your current working directory.

(d) **MAKE** an executable named `my_program` from a C source file named `my_program.c` that are both in your current working directory. (Assume that an appropriate makefile entry is already in your makefile.)

(e) **EXECUTE** (that is, run) a program named `this_is_it` that is in your current working directory.

If you use **ANY** resources other than Dr. Neeman, the TAs (Badre, Borah, Lee, Sadri), the course textbook or the materials posted on the course webpage, you **MUST** reference them on the quiz. **THIS INCLUDES CLASSMATES, FRIENDS, PROFESSORS, ONLINE RESOURCES, ETC.**