You may take this test with you afterwards, but you must turn in your bubble form answer sheet.

This test has the following sections:
   I. True/False ...................... 70 points; (35 questions, 2 points each)
   II. Multiple Choice ................ 30 points; (10 questions, 3 points each)

100 points total

This test is worth 5% of your final grade. You must put your answers on the bubble form. This test is open book and open notes, however you may not use any electronic resources or confer with anyone else. For the multiple choice problems, select the best answer for each one and select the appropriate letter on your answer sheet. Be careful - more than one answer may seem to be correct. Some questions are tricky.

**True/False: (2 points each)** On your bubble form fill out A for true and B for false.

1. A computer hard drive is the same as computer memory.   **T**  F
2. A computer optical drive uses light to read and write information.   **T**  F
3. The relationship between the activity where we counted the number of students in the room and the Twizzler-cutting activity was that in both of them the outcomes were based on powers of two.   **T**  F
4. An algorithm is a set of precise steps to be used in solving a problem.   **T**  F
5. There is only a single correct algorithm for solving a problem.   **T**  F
6. In the class activity where we analyzed a picture of a room and all the objects in the room we had enough evidence to agree that the person shown in the room was female.   **T**  F
7. The main point of the Apple-Ranch sandwich activity in class was to show that there are many different ways to do the same thing.   **T**  F
8. The video clip shown in class of the game Jeopardy depicted human expert Jeopardy players playing against Watson, a computer opponent who beat the human experts on every single turn.   **T**  F
9. The paper-and-pencil computer (0/1 guessing) was developed in class by groups of ~4 students, and the "computer" managed to beat every group of students every time.   **T**  F
10. In the “magic” age-guessing game done in class using the 6 tables of numbers, the number in the upper-left hand corner of each box represents the group size for different place values of binary numbers.   **T**  F
11. Adding two small binary numbers can be implemented inside a computer by using AND and XOR   **T**  F
12. Consider the circuit shown below with a single XOR gate where one of its inputs is x and the other input is always a 1. This circuit is the same as a NOT gate with an input of x.

\[
\begin{array}{c}
X \ \ \ \ \ \ \ \ 0 \ \ \ \ \ \ \ \ 1 \\
\hline \\
\text{XOR} \ \ \ \ \ \ \ \ 1 \ \ \ \ \ \ \ \ 0 \\
\hline \\
\text{NOT} \ \ \ \ \ \ \ \ 0 \ \ \ \ \ \ \ \ 1 \\
\end{array}
\]

13. By using multiple XOR gates with some of the inputs possibly set to 1 (as in the previous problem) we can create a replacement for the logic gates OR and AND.

14. Recall the lab activity where we worked with chips, wires and LEDs all placed on a breadboard. Putting a chip in upside-down would have the effect of it getting very hot and melting the plastic.

The following questions refer to Chapter 1 of the book "Blown to Bits"

15. Tanya Rider died because of the computer malfunction described in Ch. 1

16. One of the Koans described is: "Technology causes an acceleration of living and requires choices to deliberate slow the pace of change." Moore's Law predicts that computer circuit density will double every couple of years.

17. In the example given of exponential growth applied to the spread of an epidemic, half the population gets infected on the second-to-last day.

18. A girl named Megan committed suicide in part because of social media (MySpace) comments made by Josh, who turned out to be a fictitious character.

The following questions to Chapter 2 of the book "Blown to Bits." As we did in class, for each of these choose A (for True) if the statement(example/topic was covered in the chapter, B (for False) if the statement/example/topic was not covered in the chapter.

19. The 2005 London suicide bombers would have been caught sooner except investigators were not allowed to use the many security cameras in downtown London.

20. Galeria Kaufhof in Germany uses RFID chips in the men's clothing department to inform customers of available sizes and colors when a garment is tried on in a dressing room.

21. After an accident New Jersey Governor John Corzine's limo was shown to be going 91 mph. This was proven using the event data recorder (i.e. the "black box") that are mandatory in cars as of 2011.

22. Many color printers secretly encode the printer serial number, date and time on every page printed.

23. Nationally, gender, zip code and date of birth are all it takes to identify 87% of the US population.
The following questions to Chapter 3 of the book "Blown to Bits." As we did in class, for each of these choose A (for True) if the statement/example/topic was covered in the chapter, B (for False) if the statement/example/topic was not covered in the chapter.

T  F   24. The mp3 file format is an example of a lossy compression method.
T  F   25. The text includes an image of a coffee mug, along with a caption reading "This is a Mug."
T  F   26. Massachusetts attempted to follow the lead of the European Union in adopting an open document format for government documents.

The following questions to Chapter 4 of the book "Blown to Bits." As we did in class, for each of these choose A (for True) if the statement/example/topic was covered in the chapter, B (for False) if the statement/example/topic was not covered in the chapter.

T  F   27. A fictitious search engine called Alex (as in “Ask Alex”) is used in the text to explain how search engines work.
T  F   28. The “Page Rank” algorithm is named after a person, Larry Page.
T  F   29. It is possible to target advertisements not just by search term but geographically.

The following questions refer to the short story "Light of Other Days".

T  F   30. Mr Garland, his wife Selina and their two children are on vacation in the Scottish countryside.
T  F   31. Hagan, the scenedow seller invites the Garland's children to play with his children.
T  F   32. The interaction with Hagan causes conflict between Mr. Garland and Selina once they leave.

The following questions refer to the short story "And Mimsey were the Borogoves".

T  F   33. The “cube” described in the story gave scenarios that kept changing.
T  F   34. The “abacus” described in the story would inflict pain when mistakes were made.
T  F   35. At the end of the story the children start to disappear but are brought back when their parents grab ahold of them.
33. Think back to the Twizzler-cutting activity done in class. Assume your group wrote down your instructions on what to do and passed it to a second group to replicate. If the second group is unable to replicate your instructions even when following them precisely, what is the most likely reason?
   a) Their Twizzler is different than what you used
   b) They don’t understand what it is to cut a Twizzler
   c) You did not accurately represent your algorithm
   d) The second group skips some steps because it is taking too long
   e) None of the above

34. What was the main point of using Powerpoint to animate the handshakes activity done in class?
   a) To see if you figured out the answer
   b) To see if you could use technology as a tool in visualizing an explanation
   c) To check your understanding of the resulting mathematical formula
   d) To understand and practice copying slides in Powerpoint
   e) None of the above

35. The Turing Test is:
   a) A computer skills competency test named after Alan Turing
   b) A conversational test to determine if a computer is indistinguishable from a human
   c) An IQ test for computer programs
   d) A set of minimum performance standards a computer must meet if it is to perform intelligently
   e) None of the above

36. Think back to the exercise in class where we counted how many students were in the class. Everyone started out as a number 1, then compared with another person standing. One person became the sum of the two numbers, and the other person sat down. If a set of such comparisons were all done one stage at a time, how many stages would be needed to count 1,000 people?
   a) 8
   b) 10
   c) 50
   d) 500
   e) None of the above

37. Binary Number 101 in decimal is:
   a) 7
   b) 11
   c) 13
   d) 17
   e) None of the above

38. Binary Number 11011 in decimal is:
   a) 21
   b) 31
   c) 43
   d) 53
   e) None of the above
39. Decimal Number 46 in binary is:
   a) 010011
   b) 011011
   c) 011101
   d) 101110
   e) None of the above

40. Decimal Number 52 in binary is:
   a) 011110
   b) 111010
   c) 110110
   d) 110101
   e) None of the above

41. Consider the following circuit. The outputs $c$ and $z$ can best be described as:
   a) The opposite of the inputs $(x,y)$
   b) $c$ is the result of adding $x$ and $y$, and $z$ is the carry
   c) $z$ is the result of adding $x$ and $y$, and $c$ is the carry
   d) The result when subtracting $y$ from $x$
   e) None of the above

42. Consider the following circuit. The output $f$ can best be described as:
   a) A 1 if all 3 inputs $(x, y, z)$ were 1
   b) The difference between the first 2 inputs $(x,y)$ and the third input $(z)$
   c) The sum of the first two $(x, y)$ plus the sum of the second two $(y,z)$
   d) A 1 if any two of the three inputs $(x,y,z)$ were 1
   e) None of the above