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 .......................... 60 points; (30 questions, 2 points each)
II. Multiple Choice.................. 40 points; (10 questions, 4 points each)

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100 points total

This test is worth 7.5% of your final grade. You must put your answers on the bubble form. This test is closed book and closed notes. 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.

T  F   1. Chapter 2 of the book “Blown to Bits” specifies that many color printers secretly encode the printer serial number, date and geographical location on every page printed.

T  F   2. Chapter 4 of the book “Blown to Bits” tells how Rosalie Polotsky found her cousins after a separation of 70 years.

T  F   3. Chapter 4 of the book “Blown to Bits” describes Web 2.0 as the portion of the web that runs on smart phones.

T  F   4. Chapter 4 of the book “Blown to Bits” describes how Kinderstart sued Google for having its page rank set to 0 on a scale of 0 to 10 simply because its site consisted mostly of links.


T  F   6. Chapter 5 of the book “Blown to Bits” describes how the “Caesar cipher” is a rotating encoding technique used to shift letters based on the letters C-a-e-s-a-r.

T  F   7. Chapter 5 of the book “Blown to Bits” describes how the Vigenere cipher is considered unbreakable so far.

T  F   8. In Microsoft Excel when sorting a range of data on first name within last name, it is necessary to first do one sort and then the other.

T  F   9. In Microsoft Excel when typing in numbers into the spreadsheet it is important to type in the right number of decimal places so that data is uniform and lines up correctly.

T  F  10. An algorithm is an estimate or approximation of the strategy to be used in solving a problem.

T  F  11. Adding two small binary numbers can be done inside a computer by using only AND and XOR
T  F   12. A parity bit is an extra bit added to a digital transmission used to detect an error.

T  F   13. A selection sort is generally faster than a bubble sort.

T  F   14. Binary search is generally slower than linear search.

T  F   15. Think back to the handshakes activity. The main point of this activity was to find the formula for the number of handshakes required.

T  F   16. 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.

\[ \begin{array}{c}
  x \\
  \downarrow \\
  \rightarrow \\
  \end{array} \]

T  F   17. 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.

T  F   18. Think back to the Muddy City problem represented using a graph. The solution set of paths can always be found by using a strategy of first selecting the paths that are shortest.

T  F   19. Think back to the Ice Cream Town problem represented using a graph, which is an example of a dominating set. The solution (smallest set of points covering the graph) can always be found by using a strategy of first selecting the nodes with the smallest number of connections.

T  F   20. The \(<h1>\) and \(<h2>\) tags in HTML allow you to create different length horizontal lines

T  F   21. The \(<hr>\) HTML tag creates a hard return

T  F   22. In Scratch it is possible to make a sprite glide to a different position, but the only way to do this is to write a loop that moves it in small increments with a very small pause in between movements.

T  F   23. In Scratch from what we have studied so far in class it is possible when writing a script for a sprite to give the instruction for a different sprite to say something.

T  F   24. 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.

T  F   25. Recall the tower building activity using Legos. To build a tower 113 stories high it would take 11 weeks.

T  F   26. Computers are fast enough that it doesn’t really make a difference which sorting technique is used.

T  F   27. In Roger Fenton’s photo “The Valley of the Shadow of Death” there were two pictures, one with cannon balls on the road and one without. The one without cannon balls on the road was taken second.

T  F   28. When creating a Scratch program to tell a Knock-knock joke, the easiest way to synchronize who’s turn it is to speak is to use the \textit{wait} command and time how many seconds each sprite
should wait before saying its next line.

T F 29. To make a ball “float” and respond to user input such as in the Marble Racer program, it is necessary to use variables.

T F 30. For the “Animating Letters” assignment in Scratch, the easiest way to make all the letters disappear at the same time and then reappear later is by broadcasting messages.

Multiple Choice (4 points each)

31. 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

32. Binary Number 1010 in decimal is:
   a) 6
   b) 10
   c) 13
   d) 21
   e) None of the above

33. Binary Number 1011 in decimal is:
   a) 6
   b) 11
   c) 13
   d) 21
   e) None of the above

34. Binary Number 101011 in decimal is:
   a) 28
   b) 30
   c) 55
   d) 59
   e) None of the above

35. Binary Number 110101 in decimal is:
   a) 28
   b) 30
   c) 53
   d) 55
   e) None of the above
36. Decimal Number 37 in binary is:
   a) 10011
   b) 11011
   c) 011101
   d) 100011
   e) None of the above

37. Decimal Number 53 in binary is:
   a) 11110
   b) 111010
   c) 110110
   d) 110101
   e) None of the above

38. If a transposition cipher is being used, what is the translation for the text:

   QTL JLOB

   a) THE BEST
   b) TWO MORE
   c) FOR REAL
   d) ONE TIME
   e) None of the above

39. Consider the following circuit. The outputs c and z can best be described as:

   ![Diagram](example.png)

   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

40. Consider the following circuit. The output f can best be described as:

   ![Diagram](example.png)

   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