1. A
   54: Since this number is positive the 2's complement is simply the binary representation of 54. This can be calculated using the following procedure:
   a) Let num = 54
   b) Record (num mod 2)
   c) num = integer part(num / 2)
   d) Goto step b until num = 0

   The digits you record in step b will be the digits of the binary representation.

   -24: Repeat the same procedure with +24. Invert each bit and then simply add 1 to the result to make it a negative 2's complement number. You will notice that if you add the 2's complement value representing 24 with the one representing -24 the result will be exactly zero.

2. B
   Ward Christensen and Randy Suess brought the first bulletin board system (BBS) online on February 16, 1978 in Chicago. It was called the Computerized Bulletin Board System (CBBS).

3. C
   While the first attempt at developing the UNIX operating system was multi-organizational and it is now a registered trademark of The Open Group, Bell Laboratories eventually made it a success.

4. B
   In 1952 A.S. Douglas wrote his thesis on the Human-Computer interaction, and illustrated it with a graphic Tic-Tac-Toe game displayed on a cathode ray tube. This is the earliest graphical computer game known to exist. The game was played against the machine, which used special algorithms to win whenever possible.

5. C
   There are 1024 megabytes in 1 gigabyte, 1024 kilobytes in 1 megabyte, 1024 bytes in 1 kilobyte, and 8 bits in 1 byte. So, there are 1024*1024*1024*8 bits in a gigabyte.

6. D
   The first important factor to note is that `value` will be incremented by a random integer between 1 and 10 a total of 5 times. This is because `count` will be incremented n/5=20 times for each of the outer loops. So, in order to find the probability I determined all of the sequences of 5 integers between 1 and 10 that add to less than 10. There are 11 in total and they are as follows:

1 1 1 1 1	1 1 1 1 4	1 1 1 2 3	1 1 2 2 2
1 1 1 1 2	1 1 1 1 5	1 1 1 2 4	1 1 2 2 3
1 1 1 1 3	1 1 1 2 2	1 1 1 3 3	

Each of these sequences has a specific number of unique arrangements. They are listed as follows in the corresponding order of the above sequences:

1	5	20	10
5	5	20	30
5	10	10	

Since each of the integers is generated independently, the probability of any specific sequence of 5 integers between 1 and 10 is $(1/10)^5$. The total number of possible sequences of integers between 1 and 10 that yield a sum of less than 10 is 121. Thus the total probability of observing any of the arrangements of any of the sequences is $121*(1/10)^5$.

7. A
   Since `count` is incremented in the inner loop, the outer loop will only run n times and thus the function will run in O(n) time.

8. E
   The expression is equivalent to $\sim A \wedge \sim B \wedge (A \vee \sim B) \wedge A$.

9. B
   This time `count` is not incremented in the inner loop. The inner loop will run n/5 times for each iteration of the outer loop. The outer loop will run n times. Thus the function will run in a total of $O(n^2/5)=O(n^2)$ time.

10. D
    Processors do operations on internal memory structures called registers. Cache is also a memory structure located internally on a processor, but it is used to store frequently used main memory data in a location that has faster access times.