Final Exam – Moore's Law and Exponential Growth

1. Moore's Law is gauged by _____.
    a. the number of capacitors on an integrated circuit
    b. the size of the chip
    c. the maximum number of transistors on a microprocessor or memory chip at any given point in time
    d. the amount of power consumed by the circuit

2. Moore's prediction meant that by 1975 the number of components per integrated circuit would be approximately _____.
    a. 65,000
    b. the same
    c. 100,000
    d. 10,000

3. The key building block of an integrated circuit such as a microprocessor is the _____.
    a. resistor
    b. capacitor
    c. diode
    d. transistor

4. The exponential growth referred to by futurist Ray Kurzweil as the "Law of Accelerating Returns" means that _____.
    a. more and more people will utilize technology
    b. the human population of the world will surpass 7 billion
    c. whenever technology approaches a barrier, new technologies will eventually overcome the barrier
    d. technology will reach a certain limit eventually level off

5. In the early 1960s SSI digital circuits contained only a few logic gates containing _____ of transistors per chip.
    a. one
    b. hundreds
    c. tens
    d. thousands

6. Moore's Law is a term used to describe _____.
    a. the increase in computing power over time
    b. the size of a microprocessor
    c. the power that a microprocessor draws
    d. the cost of a microprocessor

7. The _____ level of integration allowed for enough complexity for the first microprocessors and computer memory chips to be produced.
    a. LSI
    b. MSI
    c. VLSI
    d. SSI

8. The term "intelligence explosion" refers to the notion that _____.
    a. there will be an increase in college admissions
    b. Internet bandwidth will increase
    c. there will be an increase in cell phone usage
    d. an extremely intelligent machine could design better machines, improving on its own design and each successive generation will be an improvement upon the latter

9. Moore's Law states that the technology will allow on average the number of transistors on an integrated circuit to increase every 2 years by a factor of _____.
    a. 3
    b. 4
    c. 10
    d. 2

10. Kurzweil's Law of Accelerating Returns suggests that in the 21st century, we will not experience 100 years of progress, it will be more like _____ years of progress.
    a. 20,000
    b. 10
    c. 100
    d. 200

11. ULSI integration allows for _____ of transistors be placed on a single chip.
    a. tens
    b. hundreds
    c. thousands
    d. billions

12. The notion that the semiconductor industry has invested enormous amounts of time and money to attain the goal set by Moore's Law could be viewed as a _____.
    a. self-fulfilling prophecy
    b. good idea
    c. market trend
    d. bad idea

13. A technological singularity may be defined by _____.
    a. the theoretical emergence of greater-than-human super intelligence through technological means

b. the point in human existence beyond which life is unfathomable brought upon by some technological revolutionary event
c. the point in human history where life or even existence after the event based on technological progress is unpredictable or incomprehensible
d. all of the above

14. The futurist Vernor Vinge stated that in 1993 that within _____ years humans will have the technological means to create superhuman intelligence, and that "shortly after the human era will be ended."
    a. 100
    b. 30
    c. 5
    d. 1000

15. An intelligence explosion depends on several factors including _____.
    a. the overall intelligence of the people
    b. an accelerating factor, diminishing returns, and a hard upper limit
    c. college admissions
    d. test scores

16. Moore's prediction has proven accurate for about _____.
    a. 10 years
    b. 20 years
    c. 50 years
    d. 100 years