1. In four bits, the two’s complement representation for -1 is …
   1. 0111
   2. 1110
   3. 1111
   4. 0001
2. All patterns of bits represent legal floating point values
   1. True
   2. False
3. As there are \_\_\_\_\_ machine architectures in general use, there are \_\_\_\_machine language
   1. Very few ///// very many
   2. Very many ///// very few
   3. Very many //// very few
   4. Very few ///// very few
4. IEEE 754 is a standard operations
   1. Record-based operations
   2. Integer operations
   3. String operations
   4. Floating point operations
5. Compilers try to keep as much as possible in registers because
   1. Registers are much faster than other types of memory
   2. Formal language semantics require it.
   3. There is an unlimited supply of registers to use
   4. Register-to-register operations can more easily use peripherals
6. Different implementations of the same architecture will all have identical machine languages
   1. True
   2. False
7. The fastest access memory available to the processor is
   1. Registers
   2. Main memory
   3. Cache
   4. SSD storage
8. Big-endian and little-endian are different
   1. Orders for storing multiple-byte values in memory
   2. Representations for language-independent characters.
   3. Methods for computing arithmetic functions
   4. Philosophies of constructing regular expression parsers
9. Values stored in memory have no particular
   1. Type, but a definite format and size
   2. Format or type, only a size.
   3. Format, but a definite type and size
   4. Size, but a definite format and type
10. The slowest access memory available to the processor is
    1. Tape storage
    2. HDD storage
    3. Off-chip cache
    4. Flash memory
11. Example of processor functional units include
    1. Fiber optic linkage
    2. L1 memory cache
    3. Registers
    4. A and C
    5. B and C
12. Many common processor (ARM, 1A-64, MIPS, PowerPC, SPARC) are
    1. Little-endian
    2. Either little or big-endian
    3. Big-endian
    4. Neither little nor big-endian
13. In two’s complement the four-bit representation of zero is
    1. 0111
    2. 0000
    3. 1111
    4. 1000
14. Recently, increases in machine performance have been because of
    1. Increases in the number of functional units/cores
    2. Increases in processor speed
    3. Decreases in the total memory that has to be provided
    4. Decreases in the total number of transistors
15. Integer numbers can be
    1. Unsigned
    2. Signed
    3. 2,4,6 or 16 bytes in length
    4. Two’s complement
    5. A, b, c and d
16. The fetch-execute cyle is the process of fetching
    1. Data from peripherals, performing arithmetic computation, and executing a store cycle
    2. Bits from memory, decoding them as an instruction, and executing it.
    3. Condition codes from the ALU, determining the required parity, and executing a standard operation
    4. Microcode from external SRAM, decrypting it efficiently, and executing a completion code.
17. Tape storage is useful because it is
    1. Non-volatile and faster than off-chip caches
    2. Volatile and easy to encrypt.
    3. Volatile and extremely fast.
    4. Non-volatile and essentially unlimited in capacity
18. Most network protocol (IPv4, IPv6, TCP, UDP) express data in \_\_\_\_ form
    1. Little-endian
    2. Either little or big-endian
    3. Big-endian
    4. neither little nor big-endian
19. A C/C++ float usually has about how many decimal digits of precision?
    1. About 16
    2. About 7
    3. About 34
    4. About 71
20. In four bits, the two’s complement value 1000 represents
    1. zero
    2. seven
    3. minus eight
    4. minus one
21. Values stored in memory have no particular
    1. Size, but a definite format and type
    2. Type, but a definite format and size
    3. Format or type, only a size
    4. Format, but a definite type and size
22. Fundamental data types include
    1. Unsigned integer only
    2. Signed and unsigned integers as well as floating point numbers
    3. Signed integers only
    4. Floating point numbers only
23. Most of time, the processor is
    1. Waiting for the user to do something
    2. Running the null job
    3. Performing useful work
    4. A and B
    5. A and c
24. Values have a type only in how
    1. They are encrypted
    2. They are used
    3. They are stored
    4. They are sorted
25. There are many, many machine architectures in general use
    1. True
    2. False
26. Floating point operations are generally executed in
    1. Hardware
    2. Neither; external mechanisms are used
    3. Software
27. Examples of processor functional units include
    1. Instruction decode
    2. ALU operation
    3. Instruction fetch
    4. A and C
    5. A, B and C
28. The x86 architecture is
    1. Either little or big-endian
    2. Big-endian
    3. Neither little nor big-endian
    4. Little endian
29. In two’s complement, the negation of a number is formed by
    1. Adding one and inverting the bits only if there is an overflow
    2. Subtracting one and inverting the bits only if there is no overflow
    3. Inverting the bits and adding one, ignoring any overflow
    4. Inverting the bits and subtracting one, ignoring any overflow
30. Recently processor speeds have \_\_\_\_\_\_ because of \_\_\_\_\_\_
    1. Plateaued ////// difficulties in dissipating heat
    2. Decreased ////// more efficient compilation technologies
    3. Increased ////// increases in fabrication efficiency
31. In two’s complement representation there …
    1. Is one more negative number than positive numbers
    2. Is one more positive number than negative number
    3. Are the same number of positive and negative number
32. The same bits in memory might form both a legal integer and a legal floating-point number
    1. FALSE
    2. TRUE
33. In two’s complement, a positive number’s highest bit is
    1. The same as the lowest bit
    2. 0
    3. Either 0 or 1; it depends on the number
    4. 1
34. Floating point numbers are represented as
    1. A sign, an exponent and a significand
    2. A sign, a bias fraction and a mantissa
    3. A sign, an implicit bit, and a hidden fraction
    4. A sign, a mantissa, and a significand
35. A machine’s macro architecture is
    1. How it is fabricated on a polysilicon substrate
    2. How its clock distribution network is synchronized
    3. How many levels of caching it supports
    4. How it is structed as collection of discrete units
36. Floating point numbers are generally
    1. 16 or 32 bytes in length
    2. 4 or 8 bytes in length
    3. 64 or 128 bytes in length
    4. A, b, and c
    5. None of the above
37. Floating point representation has how many representations for 0?
    1. Three, +0, 0 and -0
    2. Two, +0 and -0 (two, +infinity and -infinity)
    3. Just one, 0
    4. None, in floating point, zero is not explicitly represented
38. In two’s complement, a negative number’s highest bit is
    1. 1
    2. 0
    3. Either 0 or 1; it depends on the number
    4. The same as the lowest bit
39. In two’s complement, a positive number’s highest bit is
    1. Either 0 or 1 it depends on the number
    2. 1
    3. 0
    4. The same as the lowest bit
40. An implementation of a machine’s architecture is
    1. An abstract definition of the generic parts of the machine
    2. How the architecture is realized as a specific machine
    3. The synthetic mockup version used for power grading studies
    4. A formal mathematical description of the clock cycle cost of each condition code
41. Scientific notation includes
    1. A sign, a set of hexadecimal digits and a logarithm
    2. A sign, a compound number and a base
    3. A sign a mantissa, and an exponent
    4. A sign a decimal point and a binary fraction
42. The most important device in a machine’s macro architecture is its
    1. Processor
    2. Timing distribution network
    3. Clock
    4. Block structure coordinator
43. Historically, the \_\_\_\_ increased faster than the \_\_\_\_\_
    1. Size of the cache ///// width of the memory bus
    2. Processor’s speed ///// memory’s speed
    3. Rate of instruction dispatch //// number of peripheral ports
    4. Number of registers ///// number of instructions
44. As there are \_\_\_\_ machine architectures in general use, there are \_\_\_\_\_machine languages
    1. Very few ///// very few
    2. Very many ///// very few
    3. Very many //// very few
    4. Very few //// very many
45. Floating point numbers are generally
    1. 64 or 128 bytes in length
    2. 4 or 8 bytes in length
    3. 16 or 32 bytes in length
    4. A b and c
    5. None of the above
46. Generally only \_\_\_\_ have to care about machine language
    1. Users
    2. Editors
    3. Compilers (and interpreters)
    4. Linkers
47. A processor is able to determine the type of data in memory by examining it
    1. True
    2. False
48. A compiler might generate different machine code for different implementations of the same architecture
    1. True
    2. False
49. Machine languages tend to be
    1. Expressed in abse-5 symbolism
    2. Very different from each other
    3. Formal and abstract mathematical notations
    4. Very similar to each other
50. Many common processors (ARM, IA-64, M1PS, PowerPC, SPARC) are
    1. Either little-or big-endian
    2. Little-endian
    3. Big-endian
    4. Neither little-nor big-endian
51. Programmers generally can distinguish -\_\_\_ at the functional level
    1. Registers from main memory from peripherals
    2. Main memory from cache
    3. Different levels of cache
    4. None of the above
52. Any bits retrieved from memory may be decoded as a legal instruction
    1. TRUE
    2. FASLE
53. A machine’s architecture is the \_\_\_\_ of the \_\_\_\_ of the machine in the abstract
    1. Interconnection /// data paths
    2. Construction /// functional units
    3. Collection //// technical reports
    4. Formal specification //// capabilities and operation
54. Almost all modern machines at the macro level are
    1. Programmed in assembly language exclusively
    2. A collection of devices connected by a bus
    3. Connected by fiber-optic linkages
    4. A network of completely independent processors