Sample Paper 1

16. The three types of operations used to construct algorithms are sequential, _____, and iterative.
ANSWER: conditional

17. One of the most fundamentally important virtues of a(n) _____ is that if we can specify one to solve a problem, then we can automate the solution.
ANSWER: algorithm

18. Unlike the _____, Leibniz's Wheel could carry out addition, subtraction, multiplication, and division.
ANSWER: Pascaline

19. Charles Babbage gave up on his second _____ because the current technology could not support his project.
ANSWER: Difference Engine

20. Ultra-large-scale integrated circuits are _____-generation innovation in computing.
ANSWER: fifth

21. In ____ computer science, researchers study the logical and mathematical properties of problems and their solutions.
a. theoretical
b. scientific
c. practical
d. logical

ANSWER: a

22. In computer science, it is not simply the construction of a high-quality _____ that is important but also the methods it embodies.
a. processor
b. program
c. memory module
d. storage device

ANSWER: b

23. Designing programming languages and translating algorithms into these languages is known as ____ realization.
a. programming language
b. compiler
c. linguistic
d. interpreter

ANSWER: c

Sample Paper 1

24. _____ operations are the “looping” instructions of an algorithm.
    a. Sequential
    b. Looping
    c. Iterative
    d. Hierarchal

ANSWER: b

25. In computer science terminology, the machine, robot, person, or thing carrying out the steps of the algorithm is called a(n) ____.
    a. computing agent
    b. algorithmic agent
    c. computing representative
    d. algorithmic representative

ANSWER: a

26. An algorithm may be too ____ to be of any use.
    a. difficult to read
    b. inefficient
    c. difficult to create
    d. offensive

ANSWER: b

27. An algorithm is a ____ collection of unambiguous and effectively computable operations that, when executed, produces a result and halts in a finite amount of time.
    a. sequential
    b. computing agent
    c. mechanical calculator
    d. well-ordered

ANSWER: d

28. An operation that is ____ is called a primitive operation of the computing agent carrying out the algorithm.
    a. primary
    b. complementary
    c. basic
    d. unambiguous

ANSWER: d

29. What is wrong with the following algorithm?
1. Set X to be 1
2. Increment X
3. Print X
4. If X > 0, repeat from 2

a. It does not produce a result.
b. It is ambiguous.
c. It does not halt in a finite amount of time.
d. It is not well ordered.

ANSWER: c

30. The ____ revolution enabled us to implement algorithms that automated the drudgery of repetitive mental tasks.
a. industrial
b. technological
c. computer
d. designer

ANSWER: c

31. The history of ____ begins 3,000 years ago.
a. computer science
b. logarithms
c. the Pascaline
d. mathematics

ANSWER: d
POINTS: 1

32. In 1672, a French philosopher and mathematician designed and built one of the first mechanical calculators named the ____ that could do addition and subtraction.
a. Pascaline
b. Leibniz Wheel
c. Abacus
d. TI-85

ANSWER: a

33. The first slide rule appeared around ____.
a. 1183
b. 1622
c. 1882
d. 1945

ANSWER: b

Sample Paper 1

34. In 1614, John Napier invented ____ as a way to simplify difficult mathematical computations.
    a. algorithms
    b. logarithms
    c. electronic computers
    d. mechanical calculators

ANSWER: b

35. Jacquard's Loom was considered the first "computing device" because it was ____ and had memory where information was stored in a machine-readable form.
    a. compact
    b. electric
    c. mathematically efficient
    d. programmable

ANSWER: d

36. In Babbage's Analytical Engine, a mill was most like the ____ of modern-day computers.
    a. RAM
    b. processor
    c. logic unit
    d. input/output

ANSWER: c

37. The ____ was the first fully electronic, general-purpose, programmable computer.
    a. EDVAC
    b. EDSAC
    c. ENIAC
    d. Mark I

ANSWER: c

38. John Von Neumann's stored program computer lay the groundwork for modern-day computing by allowing the computer to store instructions in ____ alongside the data.
    a. binary values
    b. external displays
    c. vacuum tubes
    d. data cylinders

ANSWER: a

Sample Paper 1

39. Integrated circuits, built on silicon chips, were introduced during the ____ generation of computing.
    a. first
    b. second
    c. third
    d. fourth

ANSWER: c

40. During the ____ generation of computing, the desktop machine shrunk to the size of a typewriter.
    a. second
    b. third
    c. fourth
    d. fifth

ANSWER: c

16. ____ is the algorithmic equivalence of miles per gallon or use of space in cars.
    a. Efficiency
    b. Elegance
    c. Aesthetics
    d. Complexity

ANSWER: a

17. ____ involves the fixing of errors that are uncovered through repeated usage with different input values.
    a. Program maintenance
    b. Recycling
    c. Data cleanup
    d. Garbage collection

ANSWER: a

18. ____ are useful for rating one machine against another and for rating how sensitive a particular algorithm is with respect to variations in input on one particular machine.
    a. Time trials
    b. Benchmarks
    c. Comparison times
    d. Intensive tests

ANSWER: b

19. The study of the _____ of algorithms is called the analysis of algorithms.
    a. design
    b. efficiency
    c. implementation
    d. complexity

ANSWER: b

20. In the sequential search algorithm, the minimum amount of work is done if the value being searched for is the ____ value in the list.
    a. first
    b. second
    c. middle
    d. last

ANSWER: a

21. The ____ case of an algorithm requires the least work.
    a. best
    b. worst
    c. smallest
    d. largest

ANSWER: a

22. In the _____ search algorithm, the worst case occurs when the value being searched for is the last value in the list.
    a. binary
    b. bubble
    c. shuffle
    d. sequential

ANSWER: d

23. Placing a list of items into alphabetical or numerical order is called ____.
    a. simplifying
    b. searching
    c. sorting
    d. pattern matching

ANSWER: c

24. The selection sort algorithm performs the task of sorting a list by growing a sorted subsection of the list from the _____ to the _____.
    a. front / back
    b. top / bottom
    c. back / front
    d. lowest / highest

ANSWER: c

25. _____ sort is an $\Theta(n^2)$ algorithm in all cases.
    a. Selection
    b. Shuffle
    c. Sequential

d. Shuffle-left

ANSWER: a

26. Sequential search is an ____ algorithm in the worst case.
   a. $\Theta(1)$
   b. $\Theta(n)$
   c. $\Theta(2n)$
   d. $\Theta(n^2)$

ANSWER: b

27. Part of the job of program ____ is to make clear any assumptions or restrictions about the input size the program was designed to handle.
   a. design
   b. implementation
   c. documentation
   d. maintenance

ANSWER: c

28. The shuffle-left algorithm is an ____ algorithm in the worst case.
   a. $\Theta(1)$
   b. $\Theta(n)$
   c. $\Theta(2n)$
   d. $\Theta(n^2)$

ANSWER: d

29. The copy-over algorithm is ____ in time efficiency in the worst case.
   a. $\Theta(1)$
   b. $\Theta(n)$
   c. $\Theta(2n)$
   d. $\Theta(n^2)$

ANSWER: b

30. The worst case in binary search occurs ____.
   a. when the object to be searched is in the middle of the list
   b. when the object to be searched is at the end of the list
   c. when the object to be searched is at the beginning of the list
   d. when the object to be searched is not in the list

ANSWER: d

31. Binary search does ____ comparisons in the worst case.
   a. $\Theta(1)$
   b. $\Theta(\lg n)$

c. $\Theta(n)$

d. $\Theta(n^2)$

ANSWER: b

32. $\Theta(\lg n)$, $\Theta(n)$, and $\Theta(n^2)$ are ____ in the amount of work they do as n increases.

a. restricted

b. useful

c. polynomially bounded

d. exponential

ANSWER: c

33. An ____ algorithm is called an exponential algorithm.

a. $\Theta(\lg n)$

b. $\Theta(n)$

c. $\Theta(n^2)$

d. $\Theta(2^n)$

ANSWER: d

34. Problems for which no known polynomial solution algorithm exists are sometimes approached via ____ algorithms.

a. alternative

b. intractable

c. polynomial

d. approximation

ANSWER: d

35. A surprising number of problems fall into the "____" category.

a. suspected intractable

b. approximation algorithm

c. bin-packing

d. declared intractable

ANSWER: a

36. _____ is the term used to describe an algorithm's careful use of resources.

ANSWER: Efficiency

37. The number of comparisons done by the selection sort algorithm does not grow at the same rate as the problem size n, instead it grows at approximately the _____ of that rate.

ANSWER: square

38. The converging-pointers algorithm is $\Theta(n)$ in the _____ case.

ANSWER: worst

Sample Paper 1

39. A Hamiltonian circuit is a path through a graph that begins and ends at the same node and goes through all other nodes exactly _____.
ANSWER: once

40. _____ problems are solvable, but the solution algorithms all require so much work as to be virtually useless.
ANSWER: Intractable

21. To understand how computers process information, we must study computers as collections of ____ that perform tasks such as instruction processing, information storage, computation, and data transfer.
a. data types
b. functional units
c. hardware
d. memory units
ANSWER: b

22. The acronym ____ is frequently used to refer to the memory unit of a computer.
a. ROM
b. CD
c. MDR
d. RAM
ANSWER: d

23. There are 2^{30} bytes in a _____.
a. kilobyte
b. petabyte
c. gigabyte
d. terabyte
ANSWER: c

24. In a ____, the original contents of the memory cell are unchanged.
a. nondestructive fetch
b. destructive store
c. random access memory
d. volatile storage
ANSWER: a

25. To solve the difficulty of scaling memory organization, memories are physically organized into a ____-dimensional organization.
a. one
b. two
c. three

d. multi

ANSWER: b

26. A cache is typically ____ times faster than RAM but possesses less storage capacity.
a. 5 to 10
b. 15 to 20
c. 20 to 30
d. 25 to 30

ANSWER: a

27. The ____ are the devices that allow a computer system to communicate and interact with the outside world as well as store information.
a. registers
b. arithmetic/logic units
c. control units
d. input/output units

ANSWER: d

28. The ____ of a disk is the time needed to position the read/write head over the correct track.
a. latency
b. frequency
c. transfer speed
d. seek time

ANSWER: d

29. The ____ of a disk is the time for the beginning of the desired sector to rotate under the read/write head.
a. latency
b. transfer time
c. frequency
d. seek time

ANSWER: a

30. A(n) ____ handles the details of input/output and compensates for any speed differences between I/O devices and other parts of the computer.
a. cache
b. I/O register
c. decoder circuit
d. I/O controller

ANSWER: d

31. To alert the computer that an input/output operation is done, a(n) ____ is transmitted to the processor.
a. condition code
b. interrupt signal

c. broadcast
d. execution instruction

ANSWER: b

32. A(n) ____ is a storage cell that holds the operands of an arithmetic operation and that, when the operation is complete, holds its result.
a. decoder
b. register
c. I/O controller
d. cache

ANSWER: b

33. If a computer has a maximum of 2^N memory cells, then each address field in a machine language instruction must be ____ bits wide to enable us to address every cell.
a. N
b. $2N$
c. N^2
d. 2^N

ANSWER: a

34. ____ machines are designed to directly provide a wide range of powerful features so that finished programs for these processors are shorter.
a. MISC
b. SICC
c. SISC
d. CISC

ANSWER: d

35. The ____ operation in Von Neumann machines uses a special set of bits known as condition codes.
a. compare
b. addition
c. control
d. looping

ANSWER: a

36. The branch machine language instructions alter the normal _____ flow of control.
a. binary
b. bi-directional
c. sequential
d. MIMD

ANSWER: c

37. It is the task of the ____ to fetch and execute instructions.

a. arithmetic/logic unit (ALU)
b. I/O controllers
c. memory
d. control unit

ANSWER: d

38. The ____ holds the address of the next instruction to be executed.
a. status register
b. program counter
c. condition register
d. instruction register

ANSWER: b

39. During the ____ phase, the control unit circuitry generates the necessary sequence of control signals and data transfer signals to the other units of the computer to carry out the instruction.
a. fetch
b. execution
c. store
d. decode

ANSWER: b

40. Cluster computing is an example of _____ parallel computing.
a. MIMD
b. quantum
c. SIMD
d. mainframe

ANSWER: a

11. Assemblers, _____, and interpreters are all examples of language services.
ANSWER: compilers

12. _____ addresses increase the maintainability of a program.
ANSWER: Symbolic

13. A(n) _____ character is displayed on screen to indicate that command language operating system is waiting for input.
ANSWER: prompt

14. It is the responsibility of the _____ to safeguard the password file that stores all valid user name/password combinations.
ANSWER: OS
operating system
OS (operating system)
operating system (OS)

15. Typically, all requests to a(n) _____ operating system are prioritized.

ANSWER: real time
real-time

21. A Von Neumann computer without any helpful user-oriented features is called a(n) ____ machine.
    a. distributed
    b. virtual
    c. assembler
    d. naked

ANSWER: d

22. The ____ hides from the user the messy details of the underlying hardware.
    a. interface
    b. operating system
    c. system software
    d. machine code

ANSWER: a

23. System software acts as a(n) ____ between the users and the hardware.
    a. translator
    b. intermediary
    c. tester
    d. security agent

ANSWER: b

24. The set of services and resources created by the system software and seen by the user is called a(n) ____ machine.
    a. naked
    b. virtual
    c. assembler
    d. Von Neumann

ANSWER: b

25. ____, such as text editors, are sometimes organized into collections called program libraries.
    a. Programming tools
    b. Office tools
    c. Packages
    d. Utilities

ANSWER: d

26. In ____, a single instruction provides multiple instructions in _____.
    a. assembly language, high-level programing

b. machine language, low-level programing
c. low-level programming, assembly language
d. high-level programming, machine language

ANSWER: d

27. C++ and Java are examples of ____ languages.
a. low-level programming
b. high-level programming
c. machine
d. assembly

ANSWER: b

28. A program written in assembly language is called the ____ program.
a. virtual
b. object
c. data
d. source

ANSWER: d

29. A machine language program is called the ____ program.
a. source
b. object
c. data
d. virtual

ANSWER: b

30. Translators for ____ are called compilers.
a. assembly language
b. machine language
c. low-level languages
d. high-level languages

ANSWER: d

31. In assembly language, a(n) ____ is a name, followed by a colon, placed at the beginning of an instruction.
a. op code mnemonic
b. comment
c. address field
d. label

ANSWER: d

32. A(n) ____ invokes a service of the assembler.
a. compiler

b. pseudo-op
c. loader
d. operation

ANSWER: b

33. A(n) ____ operation involves the comparison of values and the subsequent use of the outcome to decide what to do next.
a. iterative
b. conditional
c. sequential
d. transformer

ANSWER: b

34. The ____ problem-solving cycle involves inputting code to an assembler, translating it to machine language, loading it into a Von Neumann computer, and executing to produce answers to the problem.
a. Von Neumann
b. modern
c. algorithmic
d. conditional

ANSWER: c

35. The conversion of symbolic op codes such as LOAD, ADD, and SUBTRACT to binary makes use of a structure called the ____.
a. op code table
b. assembler
c. loader
d. library

ANSWER: a

36. If the op code table is sorted alphabetically, the ____ search algorithm is used to find an op code.
a. sequential
b. binary
c. op code
d. table

ANSWER: b

37. After all the fields of an assembly language instruction have been translated into binary, the newly built machine language instruction and the address of where it is to be loaded are written out to a file called the ____ file.
a. table
b. source
c. data
d. object

ANSWER: d

Sample Paper 1

38. Icons displayed on the screen are selected with a mouse and a button using a technique called ____.
    a. windows interface
    b. point-and-click
    c. panel interface
    d. command line

ANSWER: b

39. ____ operation codes are restricted to be used in the operating system or other system software.
    a. Privileged
    b. User
    c. Specialized
    d. System

ANSWER: a

40. A ____-generation operating system will typically be a parallel processing operating system that can efficiently manage computer systems containing tens, hundreds, or even thousands of processors.
    a. second
    b. third
    c. fourth
    d. fifth

ANSWER: d

16. The individual computers on the network are referred to as _____.

ANSWER: nodes
node
hosts
host

17. In the _____ topology all nodes are connected to a single, shared communication line.

ANSWER: bus

18. A(n) _____ is a "smarter" device that has knowledge about the nodes located on each separate network.

ANSWER: bridge

19. A(n) _____ is an information block with a fixed maximum size that is transmitted through the network as a single unit.

ANSWER: packet

20. _____ has been the single most popular application of networks for the last 35 years.

ANSWER: Electronic mail
E-mail
Email
Electronic mail (e-mail)
E-mail (electronic mail)

Sample Paper 1

21. A(n) ____ is a set of independent computer systems connected by telecommunication links for the purpose of sharing information and resources.
    a. computer group
    b. computer network
    c. internetwork
    d. router

ANSWER: b

22. In the early days of networking, the most common way to transmit data was via ____, dial-up telephone lines.
    a. directly-connected
    b. shared
    c. linked
    d. switched

ANSWER: d

23. The voice-oriented dial-up telephone network was originally a(n) ____ medium.
    a. digital
    b. electrical
    c. analog
    d. mechanical

ANSWER: c

24. A modem modulates a standard analog signal called a ____ wave so that it encodes binary information.
    a. carrier
    b. baseband
    c. broadband
    d. barrier

ANSWER: a

25. A ____ uses the same wires that carry regular telephone signals into your home.
    a. digital subscriber line
    b. digital subscription link
    c. digital standard line
    d. digital standard link

ANSWER: a

26. In the commercial and office environment, the most widely used broadband technology is ____.
    a. ATM
    b. token-ring
    c. Ethernet
    d. SONET

ANSWER: c

27. One of the most widely used standards for wireless local access is called ____.
    a. Hi-Fi
    b. 802.1x
    c. 802.11ax
    d. Wi-Fi

ANSWER: d

28. ____ is a low-power wireless standard used to communicate between devices located quite close to each other.
    a. Bluetooth
    b. Wi-Fi
    c. Bluenote
    d. Redtooth

ANSWER: a

29. A ____ connects hardware devices such as computers, printers, and storage devices that are all in close proximity.
    a. metro area network
    b. local area network
    c. wide area network
    d. proximity network

ANSWER: b

30. TCP requires that the two programs at the source and destination node initially establish a(n) ____.
    a. link
    b. connection
    c. interface
    d. duplex

ANSWER: b

31. Bulletin board systems evolved into modern-day _____.
    a. internet forums
    b. topology layers
    c. communication standards
    d. websites

ANSWER: a

32. ____ are systems that create communities of users who share common interests and activities and which provide multiple methods of online interaction.
    a. Bulletin boards
    b. Newsgroups
    c. Chat rooms

d. Social networks

ANSWER: d

33. ____ is the ability to share physical resources, such as a printer or storage device, as well as logical resources, such as software and information.

a. Access sharing
b. Resource sharing
c. Resource planning
d. Access planning

ANSWER: b

34. A ____ contains massive amounts of information that can be electronically searched for specific facts or documents.

a. data warehouse
b. data cube
c. data plant
d. data wholesaler

ANSWER: a

35. ____ is a general term applied to any use of computers and networking to support the paperless exchange of goods, information, and services in the commercial sector.

a. Electronic exchange
b. Commerce exchange
c. Electronic commerce
d. Commercial networking

ANSWER: c

36. A ____ makes internetwork connections and provides routing between different WANs.

a. gateway
b. switch
c. bridge
d. repeater

ANSWER: a

37. ____ is the term for the separation of a service from the entity (or entities) providing that service.

a. Visualization
b. Distributed computing
c. Virtualization
d. Topological change

ANSWER: c

38. ____ behaves much like the client/server model, except that the servers no longer need to be local to the client population.

a. Cloud computing

b. The network layer
c. TCP/IP
d. SSH

ANSWER: a

39. ____ is a collection of documents interconnected by pointers.
a. Hyperpage
b. Hypertext
c. HyperURL
d. Hypercard

ANSWER: b

40. A(n) ____ is the worldwide identification of a webpage located on a specific host computer on the Internet.
a. NRL
b. IRL
c. IRI
d. URL

ANSWER: d