

5. A byte addressable computer has a memory capacity of 2^{12} bytes and can perform 1024 operations. An instruction involving 2 operands and one operator needs a maximum of
- (A) 22 (B) 21
(C) 24 (D) 34
6. A memory system has total of 16 memory chips, each with 12 address lines and 8 data lines. The total size of the memory system is
- (A) 64 KB (B) 48 KB
(C) 32 KB (D) 16 KB
7. The multiplexing of address and data buses is used in microprocessor
- (A) To reduce the memory access time (B) To reduce the number of pins on IC
(C) To reduce the hardware complexity (D) To reduce the processing time
8. Ready pin of a microprocessor is used
- (A) To indicate that the microprocessor is ready to receive inputs
(B) To indicate that the microprocessor is ready to receive outputs
(C) To introduce wait states
(D) To provide direct memory access
9. The type of microcontroller which does not have program memory on the chip is known as
- (A) External memory microcontroller (B) Embedded memory microcontroller
(C) CISC (D) RISC
10. The protocol standards that have the primary function of transferring data between the host system and mass storage devices
- (A) PCI (B) SCSI
(C) USB (D) SATA
11. Which of the following is true?
- (A) Process control block contains a boot strap program
(B) The entry of all the Process control block of the current processes is in Process Register
(C) Program control block represent each process in the operating system
(D) Process control block is a process type variable

18. At initialization, a java application needs to load 25 libraries. Each library takes one disc access to load. The disc seek time to a random location is specified as 20 ms. The disc rotates at a rate of 3000 rpm. How long will it take to load all 25 libraries if they are loaded from random locations on the disc? (The time it takes to transmit data from a disc block once the head is positioned at the beginning of the block can be ignored.)
- (A) 0.5 sec (B) 0.75 sec
(C) 1 sec (D) 1.5 sec
19. Match the following
- | | |
|--|-------|
| (i) Redirect the output of one command into another command | a. > |
| (ii) Redirect output of a command into a new file. If the file already exists, over-write it | b. |
| (iii) Redirect the output of a command onto the end of an existing file | c. < |
| (iv) Redirect a file as input to a program | d. >> |
- (A) (i): (b), (ii):c, (iii): d, (iv) :a (B) (i): (b), (ii): a, (iii): d, (iv) :c
(C) (i): (c), (ii):d, (iii): a, (iv): b (D) (i): c, (ii): a, (iii): b, (iv): d
20. For the page reference string 2, 3, 0, 1, 5, 4, 0, 1, 2, 5, 4, 3, 4, 2, 3, 5 compute the number of page faults following a LRU page replacement policy with 3 memory frames (initially empty)
- (A) 10 (B) 12
(C) 14 (D) 16
21. Let R (a,b,c) and S (d,e,f,) be two relations in which d is the foreign key of S that refers to the primary key of R. Consider the following four operations on R and S
- (i) Insert into R
(ii) Insert into S
(iii) Delete from R
(iv) Delete from S
- Which of the following statements is true about the referential integrity constraint above?
- (A) None of (i), (ii), (iii) or (iv) can cause its violation
(B) All of (i), (ii), (iii), and (iv) can cause its violation
(C) Both (i) and (iv) can cause its violation
(D) Both (ii) and (iii) can cause its violation

22. Which of the following is false?
- (A) Ensuring durability is the responsibility of recovery management component
 - (B) Ensuring Isolation is the responsibility of concurrency management
 - (C) Ensuring atomicity and consistency is the responsibility of recovery management component
 - (D) None of the above
23. SQL Server allows for Transact-SQL stored procedures, triggers, and batches to refer to tables that don't exist at compile time. This ability is called
- (A) Deferred Name Resolution
 - (B) Deferred Name Permissions
 - (C) Indeferred Name Resolution
 - (D) Indeferred Name Permissions
24. Which-one of the following statements about normal forms is FALSE?
- (A) BCNF is a stronger form of normalization than 3NF
 - (B) Loss less, dependency – preserving decomposition into BCNF is always possible
 - (C) Lossless, dependency – preserving decomposition into 3 NF is always possible
 - (D) Any relation with two attributes is BCNF
25. Which of the following is false?
- (A) B + tree is used to store data in secondary memory
 - (B) B + tree is having the same performance as that of indexed sequential file
 - (C) B + tree allows rapid random access as well as rapid sequential access
 - (D) B + tree is a balanced tree
26. Which of the following statements are True
- (i) GIS deals with spatial data spatial data
 - (ii) Barometric pressure is a geographic field
 - (iii) Ramanujan space is related to GIS
 - (iv) Tessellations partition the study space into cells and assign a value to each cell
- (A) (i), (ii) and (iii)
 - (B) (ii), (iii) and (iv)
 - (C) (i), (iii) and (iv)
 - (D) (i), (ii) and (iv)
27. CAP theorem in NoSQL stands for
- (A) Consistency, Availability, Partition tolerance
 - (B) Concurrency, Availability, Partition
 - (C) Consistency, Accuracy, Precision
 - (D) Concurrency, Atomicity, Partition tolerance

28. On which of the following is not related semantic web?
- (A) SPARQL (B) SKOS
(C) OWL (D) None of above
29. Which of the following statements are False about big data?
- (i) The main components of Big data are map reduce, HDFS and YARN
(ii) Big data processing utilize outside intelligence while taking decision
(iii) Apache Pytarch is a Big Data Technology
(iv) Hadoop is named after the sound Cutting's laptop made during Hadoop development
- (A) (i), (ii), (iii) and (iv) (B) (ii), (iii) and (iv)
(C) (iii) and (iv) (D) (iv) only
30. A bank offers its account holders 9% interest if their balance is above Rs.20,000, else 5%. To achieve this, each of the following SQL statements is executed as separate transactions t1 and t2
- t1: update account set balance = balance *1.5 where balance <=20,000
t2: update account set balance set balance = balance * 1.9 where balance > 20,000 Then t1 and t2
- (A) t1 executed first followed by t2 (B) t2 executed first followed by t1
(C) Can be executed in any order (D) Can be executed concurrently
31. Which is not true?
- (A) article tag is available in HTML5 (B) hr tag does not have an end tag
(C) hgroup tag is for hiding something (D) metatags are available in HTML5
32. Which is true?
- (A) XHTML comes with a much stricter error handling than HTML.
(B) In XHTML, element names are case insensitive
(C) XHTML Attribute Values need not be Quoted
(D) XHTML Empty Elements need not be Closed
33. URL is a subset of
- (A) Uniform Resource Indicator (B) Uniform Resource Name
(C) Protocol (D) Domain

34. Which is true?

- (A) JavaScript does support automatic type conversion
- (B) Negative Infinity is a number and present in JavaScript
- (C) === is an operator present in javascript
- (D) All are true

35. Check whether the following terms are related to Web scraping.

- 1. Web crawler
- 2. Spider
- 3. Bots
- 4. Degauss

Which of the following is true?

- (A) 1 is related
- (B) 1, 3 and 4 are related
- (C) 1, 2, 3 and 4 are related
- (D) 1, 2 and 3 are related

36. Following are a few statements are about XML.

- 1. XSLT is a popular XML technology
- 2. SVG has no relation with XML
- 3. SMIL can be used in XML for multimedia purpose
- 4. SOAP uses XML

Which is true?

- (A) 1, 2 and 3 are true
- (B) 1 and 4 are true
- (C) 1, 3 and 4 are true
- (D) 1, 2, 3 and 4 are true

37. Following are statements are about CSS

- 1. There are physical tags and logical tags
- 2. Icon is an attribute of font
- 3. DispCss is a media type used
- 4. CSS box model is related to layout and design of elements

Which is true?

- (A) 1,2 and 3 are true
- (B) 1 and 4 are true
- (C) 1,2 and 4 are true
- (D) 1,2, 3 and 4 are true

38. _____ contains all types of PHP code snippets and libraries.

- (A) PEAR
- (B) PHPBox
- (C) PHPColl
- (D) PHPpool

44. Which of the following is not true?
- (A) SONET is an optical transmission interface
 - (B) Synchronous digital hierarchy is a compatible version of SONET
 - (C) The basic SONET building block consists of 810 octets
 - (D) DataRate corresponding to SONET STS-3 is 622.08 Mbps.
45. Which is NOT true?
- (A) Code Division Multiplexing (CDM) uses spread spectrum communication
 - (B) In CDMA, the codes assigned to the stations are carefully generated codes called chip sequences
 - (C) In CDMA, it constricts bandwidth's digital signals or frequencies
 - (D) Walsh Codes are most commonly used in the orthogonal codes of CDMA applications
46. _____ is a loss of power of a satellite downLink signal due to earth's atmosphere.
- (A) Geo-energy loss
 - (B) Path loss
 - (C) Wave strength loss
 - (D) Frequency loss
47. Which is not a valid statement?
- (A) Because of its large wavelength, radio waves can penetrate through walls and similar structures.
 - (B) Radio waves can have wavelength from 1 mm – 100,000 km.
 - (C) Radio frequencies are sub-divided into six bands.
 - (D) Radio waves of high frequencies are never absorbed by rain or similar obstacles
48. The common characteristic properties of the laser radiation are given as
1. Monochromaticity
 2. Directionality
 3. Coherence
 4. High brightness
- Choose the correct from the below.
- (A) 1, 2, 3 and 4 are true
 - (B) Only 3, 4 are true
 - (C) 1, 3 and 4 are true
 - (D) Only 2, 3 and 4 are true
49. Moon bounce matches with
- (A) Earth-moon-earth communication
 - (B) Radio communication
 - (C) Radio amateurs
 - (D) All of the above

50. Which is not true about statistical Time Division Multiplexing?
- (A) It is less efficient than a synchronous TDM
 - (B) It allocates time slots dynamically on demands
 - (C) Facilitated by means of packet-mode or packet-oriented communication
 - (D) Communication channel is split into a random range of variable bit-rate data streams or digital channels
51. The IEEE _____ standard uses Distributed Queue Dual Bus network form.
- (A) 802.6
 - (B) 802.9
 - (C) 802.14
 - (D) 802.17
52. In OSI model, the _____ layer is responsible for the flow control between the originating node and the destination node of a message.
- (A) Application
 - (B) Data Link
 - (C) Network
 - (D) Transport
53. The _____ hexadecimal digits of an ethernet address is an Organizationally Unique Identifier.
- (A) First 2
 - (B) First 4
 - (C) First 6
 - (D) Last 4
54. A network switch has 15 computers connected to it. If no VLANs are present, how many broadcast and collision domains are there, respectively?
- (A) 1,1
 - (B) 1,15
 - (C) 15,1
 - (D) 15,15
55. What is the broadcast address on the LAN with the router interface 192.168.16.40/29?
- (A) 192.168.16.41
 - (B) 192.168.16.47
 - (C) 192.168.16.55
 - (D) 192.168.16.63
56. The type of cable required for a router-to-switch connection is _____ and for a host-to-switch connection is _____
- (A) Crossover, crossover
 - (B) Crossover, straight-through
 - (C) Straight-through, crossover
 - (D) Straight-through, straight - through

57. _____ is a technique used by distance vector protocols to prevent routing loops.
- (A) Count-to-infinity (B) Flooding
(C) Split horizon (D) Time-to-live
58. If a 10 Mbps LAN needs a minimum frame size of 56 bytes (for collision detection), the minimum frame size required for a 100 Mbps LAN is _____ bytes.
- (A) 5.6 (B) 56
(C) 64 (D) 560
59. The bandwidth of a communication link is 256 Mbps. If the byte sequence number is of size 32 bits, what is the wrap-around time for sequence numbers?
- (A) 128s (B) 256s
(C) 512s (D) 1024s
60. Which OFDMA-based IEEE wireless standard is also known as Wi-Fi 6?
- (A) 802.11ac (B) 802.11ax
(C) 802.11be (D) 802.11g
61. The ICMP message generated when the TTL field of a datagram becomes 0 (thereby causing the datagram to be discarded) is
- (A) Destination Unreachable (B) Network Unreachable for ToS
(C) Source Quench (D) Time Exceeded
62. In DNS, _____ records are used to point a domain or subdomain to another hostname.
- (A) A (B) AAAA
(C) CNAME (D) MX
63. _____ is an example of a path vector routing protocol.
- (A) BGP (B) EIGRP
(C) IGMP (D) IS-IS
64. After a manual MAC address change, _____ ARP may be used to inform other nodes about the new MAC address and the IP to MAC Mapping.
- (A) Gratuitous (B) Proxy
(C) Refresh (D) Reverse

65. The _____ is the result of a lack of synchronization between the sender and receiver regarding capacity of the flow of data or the size of the packet.
- (A) Leaky Bucket Situation (B) Poison Reverse Situation
(C) Silly Window Syndrome (D) Sorcerer's Apprentice Syndrome
66. Which among the following algorithms is used for TCP roundtrip time and time-out estimation?
- (A) Bellman-Ford algorithm (B) Ford-Fulkerson algorithm
(C) Jacobson's algorithm (D) Nagle's algorithm
67. Which among the following fields is not a pad of UDP pseudo header in IPv4?
- (A) Destination IP (B) Destination Port
(C) Protocol field for UDP (D) UDP length
68. If the hold timer between two BGP routers is set to 120 seconds, then KEEPALIVE messages will be exchanged every _____ seconds.
- (A) 12 (B) 24
(C) 40 (D) 60
69. The MIME type audio/mpeg denotes a file with extension
- (A) .mpg (B) .mp3
(C) .mp4 (D) .3gp
70. The IP multicast address range _____ denotes a local sub network.
- (A) 224.0.0.0 – 224.0.0.255 (B) 224.0.1.0 – 224.0.1.255
(C) 224.1.0.0 – 224.1.255.255 (D) 224.3.0.0 – 224.4.255.255
71. Which among the following is the correct sequence of DHCP messages?
- (A) DHCPDISCOVER, DHCPOFFER, DHCPREQUEST
(B) DHCPDISCOVER, DHCPREQUEST, DHCPOFFER
(C) DHCPREQUEST, DHCPDISCOVER, DHCPOFFER
(D) DHCPREQUEST, DHCPOFFER, DHCPDISCOVER

72. Two switches are connected together with two crossover cables for redundancy. If Spanning Tree Protocol is disabled, then
- (A) The MAC forwarding tables will not get updated
 - (B) The routing tables will not get updated
 - (C) There will be automatic load-balancing between the links
 - (D) There will be broadcast storms in the network
73. In a Cisco router, which among the following access lists will prevent hosts in the range 172.16.160.0 to 172.16.191.0?
- (A) access-list 10 deny 172.16.160.0 0.0.31.255
 - (B) access-list 10 deny 172.16.160.0 0.0.191.255
 - (C) access-list 10 deny 172.16.160.0 0.0.255.255
 - (D) access-list 10 deny 172.16.160.0 255.255.192.0
74. Which among the following wildcard masks ensure that the exact address will have to be matched on all 4 octets of the address?
- (A) 0.0.0.0
 - (B) 1.1.1.1
 - (C) 8.8.8.8
 - (D) 255.255.255.255
75. In order to avoid rogue DHCP servers and remove malformed DHCP traffic, _____ feature can be configured on switches.
- (A) DHCP lease
 - (B) DHCP proxy
 - (C) DHCP snooping
 - (D) DHCP time-out
76. When a router sets the metric for an unreachable link to infinity in the routing table, it is an example of
- (A) Half-open connection
 - (B) Heartbeat timer
 - (C) Route Holddown
 - (D) Route Poisoning
77. The default port for SSH client connections is
- (A) 22
 - (B) 43
 - (C) 443
 - (D) 3306
78. What part of DNS is flushed by the command **ipconfig /flushdns**?
- (A) Domain records
 - (B) Forward lookup zones
 - (C) Resolver cache
 - (D) TLD nameservers

79. A router has three different routes to the same network in its routing table – static, RIP and EIGRP. The default route to the network would be
- (A) EIGRP
 - (B) RIP
 - (C) Static
 - (D) Chosen randomly
80. When a DNS query message is created, a 1-bit _____ flag is used to indicate the action to be taken in case the DNS server does not have the required record.
- (A) Authoritative DNS answer
 - (B) Message not truncated
 - (C) Recursion not available
 - (D) Recursion-desired
81. Assurance that the sender of information is provided with proof of delivery and the recipient is provided with proof of the sender's identity, so neither can later deny having processed the information is called
- (A) Authentication
 - (B) Integrity
 - (C) Non repudiation
 - (D) Availability
82. Two forms of risk assessment are:
- (A) Analytical and assessment
 - (B) Technical and procedural
 - (C) Qualitative and quantitative
 - (D) Subjective and objective
83. An audit log is an example of what type of control?
- (A) Containment
 - (B) Preventive
 - (C) Recovery
 - (D) Detection
84. What is the default port id of https port
- (A) 80
 - (B) 43
 - (C) 443
 - (D) 8433
85. A packet filter firewall operates in the
- (A) Application layer
 - (B) Network or transport layer
 - (C) Physical layer
 - (D) Data link layer

86. Which of the following attacks will be protected by a firewall?
- (A) Denial of service (B) Phishing
(C) Shoulder surfing (D) Dumpster diving
87. Which of the following is telnet port id
- (A) 21 (B) 22
(C) 23 (D) 7
88. Which of the statements are not true to classify VPN systems?
- (A) Protocols used for tunneling the traffic
(B) Securing the network from bots and malwares
(C) Whether VPNs are providing site-to-site or remote access connection
(D) Levels of security provided for sending and receiving data privately
89. Site-to-site VPNs are also known as
- (A) Switch-to-switch VPNs (B) Peer-to-Peer VPNs
(C) Point-to-point VPNs (D) Router-to-router VPNs
90. Remote access VPNs rely on _____ and _____ for secure connection
- (A) IPSec, SSL (B) L2TP, SSL
(C) IPSec, SSH (D) SSH, SSL
91. How many layers are there is the TCP/IP protocol architecture
- (A) 7 (B) 6
(C) 4 (D) 5
92. _____ is used between a network management console and network devices (routers, bridges, intelligent hubs) to collect and exchange network management information.
- (A) VLC (B) SNMP
(C) DNS (D) RIP
93. 150.51.30.40 is a class _____ IP address
- (A) A (B) B
(C) C (D) D

94. The following is not a remote administration tool
- (A) ssh (B) telnet
(C) rsh (D) csh
95. The Active Directory domain database file _____ contains all domain data including password hashes for users, computers, trusts, etc.
- (A) NTDS.dit (B) IDS.dit
(C) DNS.dit (D) DC.dit
96. _____ is a challenge-response authenticate protocol used to authenticate a client to resource on an Active Directory domain?
- (A) LMS (B) NTLM
(C) AD (D) DMZ
97. In an Active Directory Environment _____ is used for centralized management of computers in the domain
- (A) Local account (B) NTLM
(C) DHCP (D) Group policy
98. Which of the following is not a major component of an active directory?
- (A) Tree (B) Forest
(C) Domain (D) Schema
99. What is the file system for Active Directory?
- (A) FAT (B) EXT
(C) NTFS (D) XFS
100. Which of the following is not a third party tool to audit, manage, monitor, secure, and report on Active Directory?
- (A) Lepide (B) Netwrix
(C) Ossisto (D) Monitor
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