Chapter 5 The Link Layer and Local Area Network

1. A ( ) protocol is used to move a datagram over an individual link.

A application-layer

B transport-layer

C network-layer

D link-layer

2. The units of data exchanged by a link-layer protocol are called ( ).

A datagrams

B frames

C segments

D messages

3. Which of the following protocols is not a link-layer protocol? ( )

A Ethernet

B PPP

C HDLC

D IP

4. In the following four descriptions, which one is not correct? ( )

A link-layer protocol has the node-to-node job of moving network-layer datagrams over a single link in the path.

B The services provided by the link-layer protocols may be different.

C A datagram must be handled by the same link-layer protocols on the different links in the path.

D The actions taken by a link-layer protocol when sending and receiving frames include error detection, flow control and random access.

5. Which of the following services can not offered by a link-layer protocol? ( )

A congestion control

B Link Access

C Error control

D Framing

6. ( ) protocol serves to coordinate the frame transmissions of the many nodes when multiple nodes share a single broadcast link.

A ARP

B MAC

C ICMP

D DNS

7. In the following four descriptions about the adapter, which one is not correct? ( )

A The adapter is also called as NIC.

B The adapter is a semi-autonomous unit.半自动

C The main components of an adapter are bus interface and the link interface.

D The adapter can provide all the link-layer services.

8. Consider CRC error checking approach, the four bit generator G is 1011, and suppose that the data D is 10101010, then the value of R is( ).

A 010

9. In the following four descriptions about random access protocol, which one is not correct? ( )

A In slotted ALOHA, nodes can transmit at random time.

B In pure ALOHA, if a frame experiences a collision, the node will immediately retransmit it with probability p.

C The maximum efficiency of a slotted ALOHA is higher than a pure ALOHA.

D In CSMA/CD, one node listens to the channel before transmitting.

10. In the following descriptions about MAC address, which one is not correct? ( )

A The MAC address is the address of one node's adapter.

B No two adapters have the same MAC address.

C The MAC address doesn't change no matter where the adapter goes.

D MAC address has a hierarchical structure.

11. The ARP protocol can translate ( ) into ( ). ( )

A host name, IP address

B host name, MAC address

C IP address, MAC address

D broadcast address, IP address

12. The value of Preamble field in Ethernet frame structure is ( )

A 10101010 10101010……10101010 11111111

B 10101011 10101011……10101011 10101011

C 10101010 10101010……10101010 10101011

D 10101010 10101010……10101010 10101010

13. There are four steps in DHCP, the DHCP server can complete ( ).

A DHCP server discovery

B DHCP server offers

C DHCP request

D DHCP response

14. In CSMA/CD, the adapter waits some time and then returns to sensing the channel. In the following four times, which one is impossible? ( )

A 0 bit times

B 512 bit times

C 1024 bit times

D 1028 bit times

15. The most common Ethernet technologies are 10BaseT and 100BaseT. "10" and "100" indicate( ).

A the maximum length between two adapters

B the minimum length between two adapters

C the transmission rate of the channel

D the transmission rate of the node

16. The principal components of PPP include but not( ).

A framing

B physical-control protocol

C link-layer protocol

D network-layer protocol

17. In the following four options, which service can not be provided by switch? ( )
A filtering
B self-learning
C forwarding
D optimal routing
18. In the following four services, which one was not be required in PPP? ( )
A packet framing
B error detection
C error correction
D multiple types of link
19. The ability to determine the interfaces to which a frame should be directed, and then directing the frame to those interfaces is( ).
A filtering
B forwarding
C self-learning
D optimal routing
20. In ( ) transmission(s), the nodes at both ends of a link may transmit packets at the same time.
A full-duplex
B half-duplex
C single-duplex
D both full-duplex and half-duplex
21. Consider the data D is 01110010001, if use even parity checking approach, the parity bit is(①), if use odd parity checking approach, the parity bit is(②). ( )
A ①0 ②1
B ①0 ②0
C ①1 ②1
D ①1 ②0
22. In the following four descriptions about parity checks, which one is correct? ( )
A Single-bit parity can detect all errors.
B Single-bit parity can correct one errors.
C Two-dimensional parity not only can detect a single bit error, but also can correct that error.
D Two-dimensional parity not only can detect any combination of two errors, but also can correct them.
23. MAC address is ( ) bits long.
A 32
B 48
C 128
D 64
//24. Wireless LAN using protocol ( ).
A IEEE 802.3
B IEEE 802.4
C IEEE 802.5

D IEEE 802.11

25. The following protocols are belonging to multiple access protocols except for ( ).

A channel partitioning protocols 信道划分协议

B routing protocols

C random access protocols

D taking-turns protocols

26. Which of the following is not belonging to channel partitioning protocols? ( )

A CSMA

B FDM

C CDMA

D TDM

27. In the following four descriptions about CSMA/CD, which one is not correct? ( )

A A node listens to the channel before transmitting.

B If someone else begins talking at the same time, stop talking.

C A transmitting node listens to the channel while it is transmitting.

D With CSMA/CD, the collisions can be avoided completely.

28. ( ) provides a mechanism for nodes to translate IP addresses to link-layer address.

A IP

B ARP

C RARP

D DNS

29. A MAC address is a ( )address.

A physical-layer

B application-layer

C link-layer

D network-layer

30. Which of the following is correct? ( )

A No two adapters have the same MAC address.

B MAC broadcast address is FF-FF-FF-FF-FF-FF.

C A portable 可移植的 computer with an Ethernet card always has the same MAC address, no matter where the computer goes.

D All of the above

31. In the following four descriptions, which one is not correct? ( )

A ARP resolves an IP address to a MAC address.

B DNS resolves hostnames to IP addresses.

C DNS resolves hostnames for hosts anywhere in the Internet.

D ARP resolves IP addresses for nodes anywhere in the Internet.

//. In the LAN, ( )protocol dynamically assign IP addresses to hosts.

A DNS

B ARP

C DHCP

D IP

//33． DHCP protocol is a four-step process: ①DHCP request. ②DHCP ACK. ③DHCP server discovery. ④DHCP server offer(s). The correct sequence is ( )

A ①②③④

B ③②①④

C ③④①②

D ①④③②

34. In the Ethernet frame structure, the CRC field is ( )bytes.

A 2

B 4

C 8

D 32

35. In the Ethernet frame structure, the Data field carries the ( ).

A IP datagram

B segment

C frame

D message

36. In the following four descriptions, which one is not correct? ( )

A Ethernet uses baseband transmission 基带传输.

B All of the Ethernet technologies provide connection-oriented reliable service to the network layer.

C The Ethernet 10Base2 technology uses a thin coaxial cable for the bus 总线使用细同轴电缆.

D The Ethernet 10BaseT technology uses a star topology.

37. Ethernet's multiple access protocol is ( ).

A CDMA

B CSMA/CD

C slotted ALOHA

D token-passing protocol

38. In the following four descriptions about CSMA/CD, which one is not correct? ( )

A An adapter may begin to transmit at any time.

B An adapter never transmits a frame when it senses that some other adapter is transmitting.

C A transmitting adapter aborts 中止 its transmission as soon as it detects that another adapter is also transmitting.

D An adapter retransmits when it detects a collision.

39. Which of the following descriptions about CSMA/CD is correct? ( )

A No slots are used.

B It uses carrier sensing.

C It uses collision detection.

D All of the above.

40. The Ethernet 10BaseT technology uses( )as its physical media.

A fiber optics

B twisted-pair copper wire
C coaxial cable
D satellite radio channel
41. For 10BaseT, the maximum length of the connection between an adapter and the hub is ( )meters.
A 100
B 200
C 500
D 10
42. A ( )is a physical-layer device that acts on individual bits rather than on frames.
A switch
B hub
C router
D gateway
43. A hub is a ( )device that acts on individual bits rather than on frames.
A physical-layer
B link-layer
C network-layer
D ransport-layer
44. A switch is a( )device that acts on frame.
A physical-layer
B link-layer
C network-layer
D transport-layer
45. In the following four descriptions, which one is not correct? ( )
A Switches can interconnect different LAN technologies.
B Hubs can interconnect different LAN technologies.
C There is no limit to how large a LAN can be when switches are used to interconnect LAN segments.
D There is restriction on the maximum allowable number of nodes in a collision domain when hubs are used to interconnect LAN segments.
46. The ability to determine whether a frame should be forwarded to some interface or should just be dropped is ( ).
A filtering
B forwarding
C self-learning
D optimal routing
47. Which of the following devices is not a plug and play device? ( )
A hub
B router
C switch
D repeater
48. Which of the following devices is not cut-through device? ( )
A hub

B router
C switch
D repeater

49. In the following four descriptions, which one is not correct? ( )
A Switches do not offer any protection against broadcast storms.
B Routers provide firewall protection against layer-2 broadcast storms.
C Both switches and routers are plug and play devices.
D A router is a layer-3 packet switch, a switch is a layer-2 packet switch.

50. Which device has the same collision domain? ( )冲突域
A Hub
B Switch
C Router
D Bridge

51. IEEE802.2 protocol belong to ( )layer
A network
B MAC
C LLC
D physical

52. IEEE802.11 protocol defines ( )rules.
A Ethernet Bus
B wireless WAN
C wireless LAN
D Token Bus

53. In data link-layer, which protocol is used to share bandwidth? ( )
A SMTP
B ICMP
C ARP
D CSMA/CD

54. When two or more nodes on the LAN segments transmit at the same time, there will be a collision and all of the transmitting nodes well enter exponential back-off, that is all of the LAN segments belong to the same( ).
A collision domain
B switch
C bridge
D hub

55. ( )allows different nodes to transmit simultaneously 同时地 and yet have their respective receivers correctly receive a sender's encoded data bits.
A CDMA
B CSMA
C CSMA/CD
D CSMA/CA

56. Because there are both network-layer addresses (for example, Internet IP addresses) and link-layer addresses (that is, LAN addresses), there is a need to translate between them. For the Internet, this is the job of ( ).

A RIP
B OSPF
C ARP
D IP

57. PPP defines a special control escape byte, ( ). If the flag sequence, 01111110 appears anywhere in the frame, except in the flag field, PPP precedes that instance of the flag pattern with the control escape byte.
A 01111110
B 01111101 0x7D
C 10011001
D 10111110

58. The device ( ) can isolate 隔离 collision domains for each of the LAN segment.
A modem
B switch
C hub
D NIC

59. In the following four descriptions about PPP, which one is not correct? ( )
A PPP is required to detect and correct errors.
B PPP is not required to deliver frames to the link receiver in the same order in which they were sent by the link sender.
C PPP need only operate over links that have a single sender and a single receiver.
D PPP is not required to provide flow control.

60. In the PPP data frame, the( ) field tells the PPP receivers the upper-layer protocol to which the received encapsulated data belongs.
A flag
B control
C protocol
D checksum

61. PPP's link-control protocols (LCP) accomplish ( ).
A initializing the PPP link
B maintaining the PPP link
C taking down the PPP link
D all of the above

62. The PPP link always begins in the ( ) state and ends in the ( ) state. ( )
A open, terminating
B open, dead
C dead, dead
D dead, terminating

63. For( ) links that have a single sender at one end of the link and a single receiver at the other end of the link.
A point-to-point
B broadcast
C multicast
D all of the above

64. With ( )transmission, the nodes at both ends of a link may transmit packets at the same time.
A half-duplex
B full-duplex
C simplex(单工)
D synchronous
65. With ( ) transmission, a node can not both transmit and receive at the same time.
A half-duplex
B full-duplex
C simplex(单工)
D synchronous
66. Which of the following functions can't be implemented in the NIC? ( )
A encapsulation and decapsulation
B error detection
C multiple access protocol
D routing
67. Which of the following four descriptions is wrong? ( )
A The bus interface of an adapter is responsible for communication with the adapter's parent node.
B The link interface of an adapter is responsible for implementing the link-layer protocol.
C The bus interface may provide error detection, random access functions.
D The main components of an adapter are the bus interface and the link interface.
68. For odd parity schemes, which of the following is correct? ( )
A 011010001
B 111000110
C 110101110
D 000110110
69. ( )divides time into time frames and further divides each time frame into N time slots.
A FDM
B TMD
C CDMA
D CSMA
//70. With CDMA, each node is assigned a different ( )
A code
B time slot
C frequency
D link
71. Which of the following four descriptions about random access protocol is not correct? ( )
A A transmission node transmits at the full rate of the channel
B When a collision happens, each node involved in the collision retransmits at once.
C Both slotted ALOHA and CSMA/CD are random access protocols.

D With random access protocol, there may be empty slots.

72 . PPP defines a special control escape byte 01111101. If the data is b1b201111110b3b4b5, the value is( )after byte stuffing.

A b1b20111110101111110b3b4b5

B b1b20111111001111101b3b4b5

C b5b4b301111111001111101b2b1

D b5b4b301111110101111110b2b1

73. MAC address is in ( ) of the computer.

A RAM

B NIC

C hard disk

D cache

74. Which of the following is wrong? ( )

A ARP table is configured by a system administrator 系统管理员安装的

B ARP table is built automatically

C ARP table is dynamic

D ARP table maps IP addresses to MAC addresses

75. NIC works in ( )layer.

A physical

B link

C network

D transport

//76. In LAN, if UTP is used, the common connector is( ).

A AUI

B BNC

C RJ-45

D NNI

//77. The modem's function(s) is(are) ( ).

A translates digital signal into analog signal

B translates analog signal into digital signal

C both translates analog signal into digital signal and translates digital signal into analog signal

D translates one kind of digital signal into another digital signal

78. ( )defines Token-Ring protocol.

A IEEE 802.3

B IEEE 802.4

C IEEE 802.5

D IEEE 802.2

79. ( )defines Token-Bus protocol.

A IEEE 802.3

B IEEE 802.4

C IEEE 802.5

D IEEE 802.2

80. ( ) defines CSMA/CD protocol.

A IEEE 802.3
B IEEE 802.4
C IEEE 802.5
D IEEE 802.2

81. The computer network that concentrated in a geographical area, such as in a building or on a university campus, is ( )
A a LAN
B a MAN
C a WAN
D the Internet

82. The MAC address is ( ) bits long.
A 32
B 48
C 128
D 256

83. Which of the following four descriptions about MAC addresses is wrong? ( )
A a MAC address is burned into the adapter's ROM
B No two adapters have the same address
C An adapter's MAC address is dynamic
D A MAC address is a link-layer address

//84. Which of the following four descriptions about DHCP is correct? ( )
A DHCP is C/S architecture
B DHCP uses TCP as its underlying transport protocol
C The IP address offered by a DHCP server is valid forever
D The DHCP server will offer the same IP address to a host when the host requests an IP address

85. The ( )field permits Ethernet to multiplex network-layer protocols.
A preamble
B type
C CRC
D destination MAC address

86. For 10BaseT, the maximum length of the connection between an adapter and the hub is ( ) meters.
A 50
B 100
C 200
D 500

87. An entry 项 in the switch table 交换机表 contains the following information excepts for ( )
A the MAC address of a node
B the switch interface that leads towards the node
C the time at which the entry for the node was placed in the table
D the IP address of a node

Answers:

1~5 DBDCA 6~10 BDAAD 11~15 CCBDD 16~20 BDCBA 21~25 DCBDB

26~30ADBCD 31~35DCCBA 36~40 BBDDB 41~45 ABABB 46~50 ABBCA

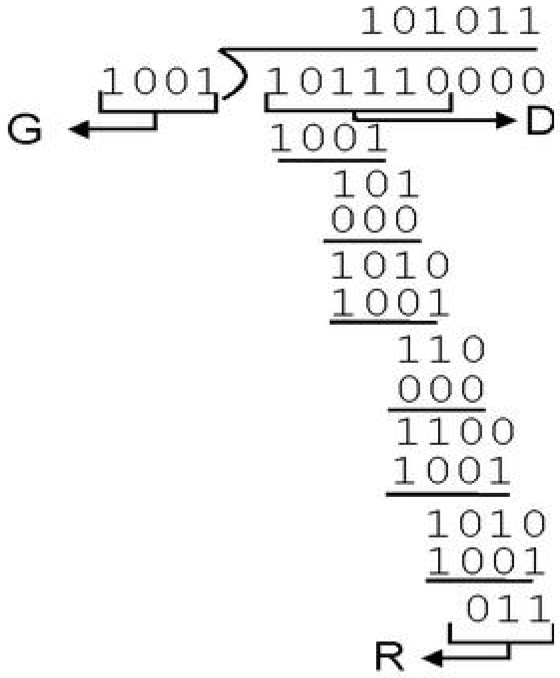
51~55CCDAA 56~60CBBAC 61~65 DCABA 66~70 DCBBA 71~75 BABAB

76~80 CCCBA 81~85ABCBB

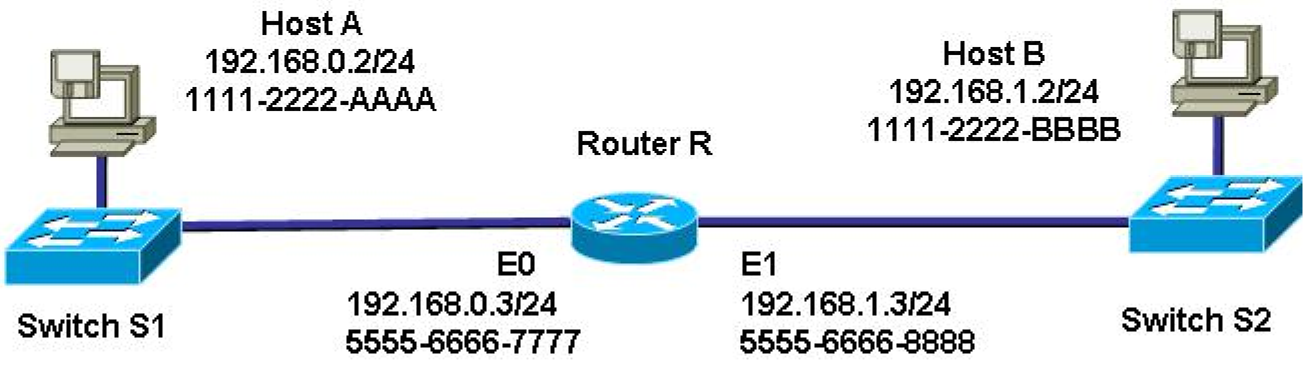
86~87BD

88． Consider the 4-bit generator , G is 1001, and suppose that D has the value 101110000. What is the value of R?

88.



89． Consider the following graph of the network. Suppose Host A will send a datagram to Host B, Host A run OICQ on port 4000, Host B run OICQ on port 8000. All of ARP tables are up to date. Enumerate 列举 all the steps when message “Hello” is sent from host A to host B.



89.

host A application-layer: Hello

host A transport-layer: 4000 8000 Hello

host A network-layer: 192.168.0.2 192.168.1.2 4000 8000 Hello

host A link-layer: 5555-6666-7777 1111-2222-AAAA 192.168.0.2 192.168.1.2 4000 8000 Hello FCS(CRC)

router R E1: 1111-2222-BBBB 5555-6666-8888 192.168.0.2 192.168.1.2 4000 8000 Hello FCS(CRC)

host B network-layer: 192.168.0.2 192.168.1.2 4000 8000 Hello

host B transport-layer: 4000 8000 Hello

host B application-layer: Hello