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.
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
B 100

C 011
D 110

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 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 detectany 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
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 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.

32. 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.
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.
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 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?)(
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 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

C 10011001

D 10111110

58. The device ( ) can isolate 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 b5b4b30111111001111101b2b1

D b5b4b30111110101111110b2b1

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

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 signalinto digital signal and translates digitalsignal 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 in the switch table 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

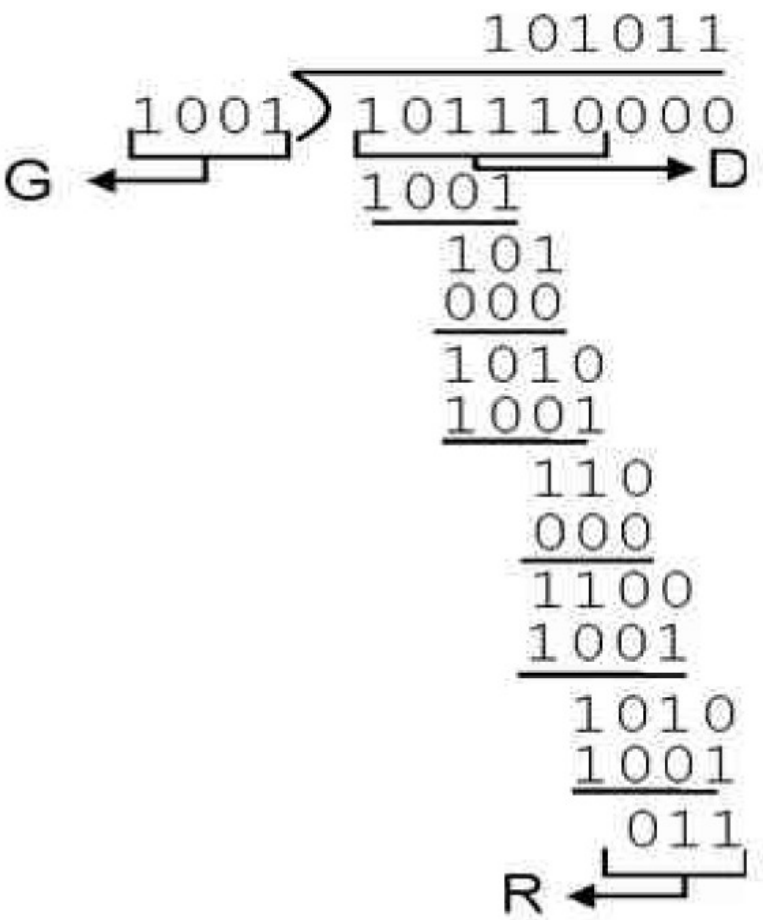
51~55CCDAA 56~60CBBAC 61~65 DCABA 66~70 DCBBA 71~75 BABAB

76~80 CCCBA 81~85ABCBB

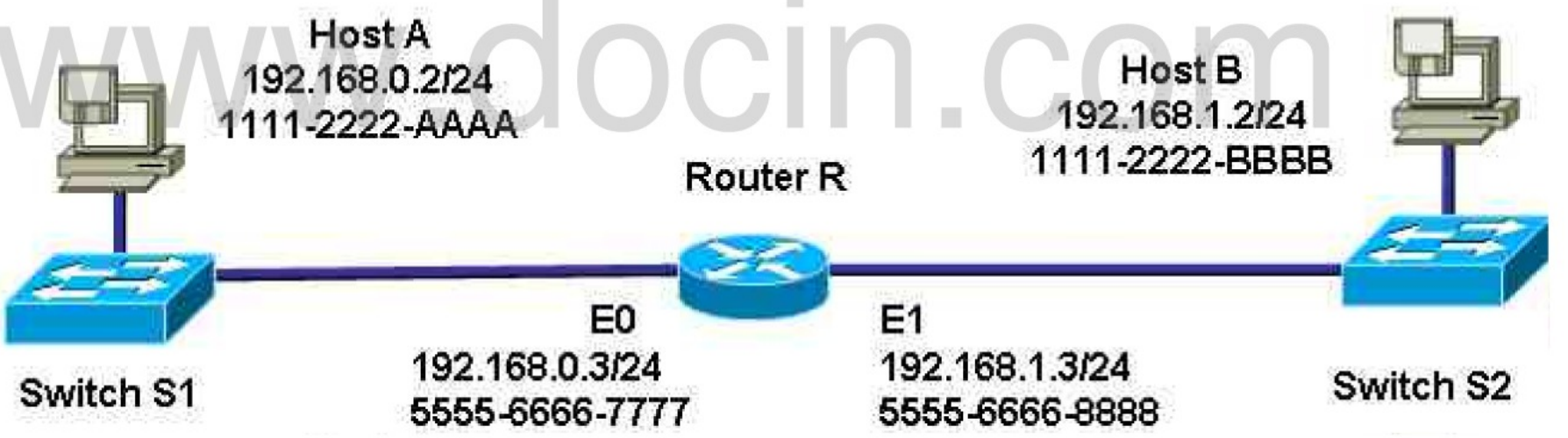
86~87BD

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 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