Multiple Choices

1. The data link control portion of most LAN protocols in use today is based on _______.
   a. ANSI  b. FDDI  c. SDLC  d. HDLC

2. In Project 802, the data link layer consists of the _______ sublayer and the _______ sublayer.
   a. LAN; MAC  b. LLC; MAC  c. CSMA; LLC  d. LLC; PDU

3. _______ signal is analog.
   a. A baseband  b. A broadband  c. An Ethernet  d. none of the above

4. A 10Base2 Ethernet LAN has a data rate of _______ Mbps.
   a. 1  b. 2  c. 10  d. 100

5. There are _______ types of HDLC frames.
   a. 1  b. 2  c. 3  d. 4

6. BSC uses _______ for flow control.
   a. stop-and-wait ARQ  b. go-back-n ARQ  c. selective-reject ARQ  d. any of the above

7. When message data is mistaken for control data, this is called a lack of _______.
   a. synchronization  b. data transparency  c. flow control  d. line discipline

8. BSC operates in the _______ mode.
   a. simplex  b. half-duplex  c. full-duplex  d. duplex

9. XMODEM, BLAST, and Kermit are all _______ protocols.
   a. character-oriented  b. bit-oriented  c. synchronous protocols  d. asynchronous protocols

10. What is the main disadvantage of stop-and-wait flow control?
    a. unreliable  b. inefficient  c. attenuation  d. dropped packets

11. A sender has a sliding window of size 15. The first 15 frames are sent. The receiver sends an ACK 10. How many spaces does the receiver window expand?
    a. 5  b. 9  c. 10  d. 15

12. A sender has a sliding window of size 15. The first 15 frames are sent. The receiver sends an ACK 10 and expands its window. What is the size of the receiver window now?
    a. 5  b. 9  c. 10  d. 15

13. _______ is the basis for all bit-oriented protocols in use today.
    a. SDLC  b. HDLC  c. PPP  d. LAP

14. In a five-byte HDLC address field, _______ in a 0 bit and _______ in a 1 bit.
    a. 2 bytes end; 3 bytes end  b. 3 bytes end; 2 bytes end  c. 4 bytes end; 1 byte ends  d. 1 byte ends; 4 bytes end

15. If the first two bits of an HDLC control field both 1s, this signifies _______.
    a. an I-frame  b. an S-frame  c. a U-frame  d. an E-frame

16. Control information in a system using _______ protocol are characters from an existing character encoding system.
    a. an asynchronous  b. a character-oriented  c. a bit-oriented  d. b and c

17. Negative acknowledgment requires an HDLC S-frame with the code field set to _______.
    a. 01  b. 10  c. 11  d. a or c
18. AN HDLC _______ station sends both commands and responses.
   a. primary   b. secondary   c. combined   d. none of the above

19. HDLC inserts a redundant 0 bit after the _______ consecutive 1 bit in the message data.
   a. fifth   b. sixth   c. seventh   d. eighth

20. An HDLC _______ is used to transport user data and control information.

21. When primary station A sends an HDLC frame to secondary station B, the address field contains the _______.
   a. physical address of station A   b. physical address of station B
   c. logical address of station A   d. logical address of station B

22. Twisted-pair wire, coaxial cable, and fiber-optic cable are all types of _______.
   a. protocols   b. messages   c. media   d. data

23. Which of the following primarily uses guided media?
   a. cellular telephone system   b. local telephone system
   c. satellite communications   d. radio broadcasting

24. Radio communication frequencies range from ________________?
   a. 3 KHz to 300 KHz   b. 300 KHz to 3 GHz
   c. 3KHz to 300GHz   d. 3 KHz to 3000 GHz

25. In cellular telephony, a service area is divided into small regions called ________________.
   a. cells   b. cell offices   c. MTSOs   d. relay sites

26. Which error detection method involves polynomials?
   a. VRC   b. LRC   c. CRC   d. checksum

27. If the data unit is 111111 and the divisor 1010, what is the dividend at the transmitter?
   a. 111111000   b. 1111110000   c. 111111   d. 1111111010

28. FDM uses _______ to prevent modulated signals from overlapping.
   a. physical hardware devices   b. carrier frequencies
   c. guard bands   d. demultiplexers

29. In the analog hierarchy, twelve voice channels are multiplexed to create a _______.
   a. group   b. super group   c. master group   d. jumbo group

30. If the sum of the data rates of the sending devices is X, TDM can be applied when the data rate capacity of the transmission medium is _______.
   a. less than X   b. one half X
   c. greater than X   d. two times X

31. A DS-4 service is implemented by a _______.
   a. DS line   b. T-4 line   c. DS-4 line   d. none of the above

32. _______ allow the demultiplexer to synchronize with the incoming stream.
   a. Framing bits   b. Slots
   c. Demultiplexing bits   d. Trailers

33. In cyclic redundancy checking, the divisor is _______ the CRC.
   a. the same size as   b. one bit less than
   c. one bit more than   d. two bits more than

34. For 10 groups, each of 8 bits, we calculate the LRC. How many bits make up the LRC?
   a. 10   b. 8   c. 18   d. 80
35. In XMODEM and Kermit, the sender waits for _______ before transmission begins.
   a. an ACK   b. a NAK   c. a CAN   d. any of the above

36. In BSC, an _______ means that a frame was accepted.
   a. ACK   b. ACK0   c. ACK1   d. b and c

37. In the sliding window method of flow control, if the frame numbers range from 0 to 63, the size of the window is _______ frames.
   a. 32   b. 63   c. 64   d. 65

38. Which data link layer function answers the question: How much data may be sent?
   a. line discipline   b. flow control   c. error control   d. session management

39. ENQ/ACK is a _______ technique.
   a. line discipline   b. flow control   c. error control   d. session management

40. Sliding window is a _______ technique.
   a. line discipline   b. flow control   c. error control   d. session management

41. When a primary has data to send to a secondary, it sends a _______ frame to the secondary.
   a. poll   b. select   c. inquire   d. acknowledge

42. In the sliding window method of flow control, the sender window _______ size when frames are sent.
   a. increases in   b. decreases in   c. expands in   d. remains its original

43. _______ signal is digital.
   a. A baseband   b. A broadband   c. An Ethernet   d. none of the above

44. A 10Base5 Ethernet LAN has a maximum cable length of _______ meters (assume no repeaters, bridges, or other such devices).
   a. 5   b. 10   c. 100   d. 500

45. _______ is a digital leased line with a maximum data rate of 64 Kbps.
   a. DS   b. DDS   c. Switched/56 service   d. Analog switched service

46. If we want to combine 20 voice-grade signals (each of 4 KHz) with a guard band of 1 KHz between them, how much bandwidth do we need?
   a. 84 KHz   b. 81 KHz   c. 100 KHz   d. 99 KHz   e. none of the above

47. In the analog hierarchy, a _______ consists of 60 independent voice channels.
   a. group   b. super group   c. master group   d. jumbo group

48. Selective reject ARQ is a _______ error control method.
   a. stop-and-wait ARQ   b. sliding window ARQ   c. go-back-n ARQ   d. any of the above

49. In the sliding window method of flow control, the sender may send _______ at a time.
   a. several frames   b. only one frame   c. a set number of frames   d. two frames

50. The HDLC P/ F bit means poll when the frame is sent by a _______ station to a _______ station.
   a. secondary; primary   b. primary; secondary   c. secondary; combined   d. secondary; secondary

51. The Ethernet access method _______.
   a. involves a token   b. involves time registers   c. involves input and output queues   d. is CSMA/CD
52. The T in 10Base-T and 100Base-T indicates the _______.  
   a. data rate  b. cable type  c. signal type  d. access type

53. A station on _______ network is identified by a unique 6-byte physical address.  
   a. an Ethernet  b. a Token Ring  c. an FDDI  d. all of the above

54. An Ethernet LAN uses _______ signals.  
   a. Manchester encoded  b. differential Manchester encoded  c. differential PSK  d. PSK

55. The error detection information for the IEEE 802.3 frame is found in the _______ field.  
   a. SFD  b. PDU  c. CRC  d. preamble

56. Which field in the IEEE 802.3 frame consists entirely of alternating 1s and 0s?  
   a. preamble  b. SFD  c. PDU  d. CRC

57. Daisy chaining is often used by _______ networks to increase the number of stations per hub.  
   a. 10Base5  b. 10Base2  c. 10Base-T  d. 1Base5

58. The collision domain of Ethernet is limited to _______ meters.  
   a. 2.5  b. 25  c. 250  d. 2500

59. 100Base-TX, 100Base-T4, and 100Base-FX are types of _______ Ethernet.  
   a. Switched  b. Fast  c. Gigabit  d. 100Base-X

60. The purpose of connecting each Token Ring station to an automatic switch is to _______.  
   a. multiplex frames  b. bypass an inactive station  c. prevent errors  d. increase the data rate

61. When a primary wants to receive data from a secondary, it sends a _______ frame to the secondary.  
   a. poll  b. select  c. inquire  d. acknowledge

62. In the stop-and-wait method of flow control, the sender sends _______ at a time.  
   a. a variable number of frames  b. only one frame  c. a set number of frames  d. two frames

63. Token Ring and FDDI both use _______ as an access method.  
   a. CSMA  b. CSMA/CD  c. token passing  d. HDLC

64. In the sliding window method of flow control, the receiver window _______ size when an ACK is sent.  
   a. increases in  b. decreases in  c. doubles in  d. remains its original

65. _______ layer protocols contain rules for line discipline, flow control, and error handling.  
   a. Data link  b. Network  c. Physical  d. Transport

66. A sender using stop-and-wait ARQ sends data frames numbered _______.  
   a. 0 and 1 only  b. sequentially, beginning with 0  c. sequentially, beginning with 1  d. the frames are not numbered