1. Each of the following is a wireless LAN device except

a. wireless client network interface card

b. wireless gateway

c. access portal

d. remote wireless bridge

2. A wireless client network interface card performs each of the following tasks except

**a.** transmitting the packet over radio waves

b. determining when to send the packet

c. dividing data it into packets

d. sending packets to a wired network through a root remote wireless bridge

3. The type of wireless network interface card that would not be found in a laptop computer is a(n)

a. Mini PCI card

b. PCI card

c. CardBus

d. PC Card Type III

4. An access point has a(n) \_\_\_\_\_ interface that allows it to connect to a wired network.

a. RJ-45

b. SDDIO

c. CF

d. RJ-111

5. One of the functions of an access point is to serve as a base station for the wireless network.

True

6. Although the transmission range of an access point can vary, the number of wireless clients that it can support does not vary.

False

7. Power over Ethernet allows wireless client network adapter cards to be placed in locations even though there is not an electrical outlet nearby.

True

8. A remote wireless bridge can only connect wireless networks together.

False

9. Both point-to-point and point-to-multipoint configurations can be supported by a remote wireless bridge.

True

10. A wireless gateway is a device that combines wireless management and security in a single appliance.

11. What are the features of a wireless gateway?

1. Authentication - Ensures that all users are allowed to connect to the network and controls their access
2. Bandwidth Management - Ensures that all users get the appropriate amount of bandwidth
3. Centralized Network Management - Provides a single location to manage the WLAN instead of individually managing APs
4. Encryption - Secures all data against eavesdropping
5. Intrusion detection and malicious program protection - Monitors network traffic to detect malicious network traffic

12. What are unregulated bands and how are they used in wireless LANs?

The unregulated bands are bands created by the FCC that do not require any special license to use.

The unregulated bands 2.4 GHz and 5.0 GHz are used for 802.11 and Bluetooth.

13. What are some limitations to infrared wireless LAN systems?

1. No mobility, due to the fact that receivers must be aligned to be within line of site of the transmitter.
2. Directed must be directly pointed at each other and cannot have a chance of being blocked, and diffused infrared can only blanket ~50ft.
3. No outdoor use due to the fact that light will interfere with the transmission.
4. Poor throughput there is only a maximum speed of 4Mbps.

14. Give a brief summary of the characteristics of IEEE 802.11b, 802.11a, and 802.11g wireless networks (data rates, frequency, transmit power, channels).

1. 802.11b - A wireless local area network with a bandwidth of 11 Mbps that uses the ISM band.
2. 802.11a - A wireless local area network with a bandwidth of 54 Mbps that uses the U-NII band.
3. 802.11g - A wireless local area network with the bandwidth of 54 Mbps that uses the ISM band.

15. Each of the following is a wireless modulation scheme used in IEEE WLANs except

a. Phase key analog shifting (PKAS)

b. frequency hopping spread spectrum (FHSS)

c. direct sequence spread spectrum (DSSS)

d. orthogonal frequency division multiplexing (OFDM)

16. Because of its vulnerability to interference, \_\_\_\_\_ transmissions are not used for WLAN networks.

a. digital

b. analog

c. modulated

d. narrowband

17. \_\_\_\_\_ transmissions take a narrow, weaker signal and spread it over a broader portion of the radio frequency band.

a. Spread spectrum

b. Direct data (DDA)

c. Analog

d. Orthogonal frequency division multiplexing (OFDM)

18. The bit pattern used in a WLAN direct sequence spread spectrum transmission is called the

a. Barker code (chipping code)

b. oscillation modulation

c. chip set

d. XOR Inverse (XORI)

19. DSSS has the potential for greater transmission speeds over FHSS.

True

20. Orthogonal frequency division multiplexing (OFDM) splits a signal low-speed digital signal into several faster signals running in parallel.

True

21. IEEE has subdivided the Physical layer for WLANs into six sublayers.

False

22. The Physical Medium Dependent (PMD) sublayer includes the standards for both the characteristics of the wireless medium (such as DSSS or FHSS) and defines the method for transmitting and receiving data through that medium.

True

23. The Physical Layer Convergence Procedure (PLCP) standards for 802.11b are based on direct sequence spread spectrum (DSSS)**.**

24. One of the disadvantages of an 802.11b network is the PLCP frame preamble and header are always transmitted

at 1 Mbps.

25. The 802.11b standard uses the Industrial, Scientific, and Medical band at 2.4 GHz for its transmissions while IEEE 802.11a uses the unlicensed band known as the U-NII (Unlicensed National Information Infrastructure).

26. Explain why any network operating system or LAN application will run on an IEEE WLAN without modification.

The IEEE WLAN standards ensure that the WLAN is transparent to the upper layers of the IEEE model. This means that to any devices it appears no different than another network.

27. What is Forward Error Correction (FEC) and how does it work with 802.11a networks? **Hint:** Of the 52 subchannels, 48 are used for standard transmissions and 4 are used for FEC transmissions.

FEC transmits a secondary copy along with the primary information. Out of 802.11a's 52 channels, only 48 are used for standard transmission with the 4 remaining used for FEC transmission. This allows for damaged or lost data to be recovered without retransmission.

28. A(n) \_\_\_\_\_\_\_\_\_ is simply two or more BSS wireless networks installed within the same area, providing users with uninterrupted mobile access to the network.

a) Ad-hoc mode

b) Extended Service Set (ESS)

c) Peer-to-peer mode

d) Independent Basic Service Set (IBSS)

29. The 802.11a standard uses which band for its transmissions?

a) ISM

b) U-NII

c) MAC

d) PHY

30. In 802.11a, \_\_\_\_\_\_\_\_\_\_\_\_ frequency channels operate simultaneously in the Low Band (5.15 to 5.25 GHz) and Middle Band (5.25 to 5.35 GHz).

a) 3

b) 8

c) 11

d) 14

31. Wireless device that incorporates all of the functions of an AP and can control multiple dumb 802.11 radios is called:

a) Wireless bridge

b) Multiple in, multiple out (MIMO)

c) Wireless NIC

d) Wireless switching

32. What are advantages/disadvantages of IEEE 802.11g as compared to 802.11a and 802.11b networks? (still need some disadvantages)

A & G have the same speed 54 Mb/s

B & G using same band 2.4 GHz

33. \_\_\_\_\_ is a group of wireless devices that is served by a single access point (AP).

a. Basic Service Set

b. ad hoc mode

c. Extended Service Set

d. Independent Service Set

34. Each WLAN must be assigned a unique identifier known as the \_\_\_\_\_.

a. Service Set Identifier (SSID)

b. Access Category Channel

c. Traffic Indication Set (TIS)

d. Beacon identifier

35. With dynamic rate shifting implemented in a WLAN, what happens when a user moves farther away from the access point?

a. The connection is automatically dropped at 25 meters.

b. The connection speed decreases.

c. The connection speed increases.

d. The connection frequency changes from 2.4 GHz to 5 GHz.

36. In order to accommodate additional wireless users over a wider area, which configuration should be used?

a. ad hoc

b. Basic Service Set

c. Extended Service Set

d. Channel Access Set

37. At regular intervals the AP in an infrastructure network or wireless device in an ad hoc network sends a data frame to both announce its presence and to provide the necessary information for other devices to join the network.

True (beaconing)

38. In passive scanning, the wireless device must first send out a management probe request frame on each available channel and then wait for an answer from all available APs.

False, it waits for a transmission

39. Because wireless LANs cannot limit access to the RF signal by walls or doors, wireless authentication requires the wireless device to be authenticated prior to being connected to the network.

True

40. Shared key authentication requires the wireless device to correctly encrypt the challenge text**.**

41. Once a wireless device is authenticated the final step is to be accepted into the wireless network is a process known as association.

42. The IEEE 802.11 standard specifies two procedures for transmitting on the WLAN, distributed coordination function (DCF) and an optional Point coordination function (PCF).

43. Instead of using Ethernet CSMA/CD, IEEE WLANs use Distributed coordination Function (DCF).

44. Explain why Carrier Sense Multiple Access/Collision Detection cannot be used on a WLAN.

Wireless transceivers can't send and receive on the same channel at the same time, so they can't detect collisions. The sending would cover up any possible chance of receiving a foreign signal, no chance of "Collision Detection".

For this reason, Collision Avoidance with Control Messages is necessary.

45. Explain how virtual carrier sensing works. Hint: RTS/STS.

The 802.11 standard specifies two ways to determine if the medium is busy.

46. How does fragmentation reduce collisions?

Fragmentation reduces the overall traffic and the number of re-transmissions in the

network, thus reducing collisions

47. Why is Quality of Service (QoS) important to WLANs?

With QoS, bandwidth can be managed more efficiently across LANs, including WLANs and WANs. QoS provides enhanced and reliable network service.

48. Explain how power management functions on an infrastructure network.

The power management function of IEEE 802.11 wireless local area networks (WLANs) allows stations (STAs) to operate in the doze mode so that their power consumption is significantly reduced.

49. Each of the following is one of the four basic steps in building a wireless network except

a. Planning for the network

b. Providing user training and support

c. Designing the wireless LAN

d. Configuring the IP address of the network switch.

50. Each of the following are locations in which businesses install wireless networks for increased employee productivity except

a. lobbies

b. lunchrooms

c. common areas

d. remote parking lots

51. When examining the current state of the organization each of the following questions is valid except

a. What is the purpose or mission of our competition?

b. Is the current mission expected to change in the future?

c. What is the size of the organization?

d. How much growth is anticipated in the organization?

52. Which the following should cause an organization not to install a wireless network?

a. An existing network that is adequate

b. Lack of IEEE standards

c. Anticipated release of IEEE 802.11z network standards

d. Interference from commercial radio signals

53. When documenting the current network it is important to identify the number and type of clients.

True

54. Installation of a wireless LAN is significantly more expensive than a wired LAN.

False, they are cheaper due to less infrastructure costs

55. Return on Investment (ROI) is a standard measure of the profitability of a project.

56. A hot spot provides wireless LAN service, for free or for a fee, from a variety of public meeting areas, including coffee shops, public libraries, and airport lounges.

57. A Point-to-Point wireless bridge typically interconnects two LAN segments between buildings.

58. When should an 802.11a network be installed instead of an 802.11g network?

When you need a higher level of security.

59. The 802.15.3 PNC is primarily responsible for \_\_\_\_\_\_\_\_\_in a piconet

a. timing

b. acting as the router

c. switching

d. Internet connections

60. The 802.15.3 standard was developed to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. compete with Bluetooth technology

b. provide short-range PC networking

c. support multimedia

d. All of the above

61. Which of the following is not an advantage of 802.15.3 over Bluetooth?

a. QoS support

b. Data transmission rate

c. Support for child and neighbor piconets sharing the same frequency channel

d. Security

62. In 802.15.3, the lower levels of the stack are implemented in the\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. software

b. hardware

c. IR

d. Data Link layer

63. The dual upper layers of the WiMedia protocol stack are the and \_\_\_\_\_\_\_ layers.

a. RF;MAC

b. Audio/video; data transfer

c. TCP/IP; network

d. PHY; adaptation

64. How many channels are available in 802.15.3?

a. 2

b. 14

c. 4

d. 11

65. Frame collisions in 802.15.3 can only happen during the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. CTAP

b. MCTA

c. CTA

d. CAP

66. In 802.15.3 collisions are prevented using a method called\_\_\_\_\_\_\_\_\_\_\_

a. CAP

b. CTAP

c. CSMA/CA

d. CSMA/CD

67. A transmission at \_\_\_\_\_\_\_\_Mbps is not coded with TCM so that devices can detect piconet traffic without having to decode the signal first.

a. 53 Mbps

b. 11 Mbps

c. 22 Mbps

d. 44 Mbps

68. In the \_\_\_\_\_\_\_\_\_\_power save mode, 802.15.3 devices must listen to the system-wide wake beacons.

a. SPSS

b. DSPS

c. PSPS

d. APS

69. 802.15.3 channels are limited to 15 MHz of bandwidth.

70. The frequencies between 3.1 GHz and 10.6 GHz were approved by the FCC for use with UWB technology.

71. The minimum duration of a superframe is one millisecond.

72. The neighbor piconet PNC cannot communicate with the parent piconet's devices.

73. The hardware address is not used when a device communicates in the piconet.

Instead, devices use the Piconet ID and the Device ID.

74. The beacon carries timing information for the piconet.

True

75. Devices in an 802.15.3 piconet can only communicate through the PNC.

False

76. CTAPs are optional.

False, the CAP is optional.

77. A WiMedia device cannot request more channel time from the PNC.

False, it can, at any time.

78. Discuss the reasons why 802.15.3 devices should be easier for consumers to use.

Automatic connection and finding out about the services provided by other devices in the piconet, as a minimum.

79. Describe potential interference issues between UWB and 802.11 and how they can be resolved.

UWB can potentially interfere with 802.11a because th 5 GHz band falls right in the middle of the UWB band.

80. What is the function of PAN coordinator in ZigBee Network?

81. What are the main disadvantages of Bluetooth?

* It can be hacked into
* If installed on a cellphone it is prone to receiving cell phone viruses
* It only allows short range communication between devices
* It can only connect two devices at once
* It can lose connection in certain conditions

82. Explain the two-step Bluetooth connection process.

83. Standard way to transmit, format, and display Internet data for small wireless devices such as cell phones is:

a) Bluetooth

b) WAP2

c) WMAN

d) IEEE 802.16

84. An infrared \_\_\_\_\_\_\_ transmission relies on reflected light.

a) Diffused

b) Directed

c) Antenna-based

d) Modem-based

85. A \_\_\_\_\_\_\_ is a particular sequence of 1s and 0s which is used to modulate radio waves.

a) FHSS

b) PSK

c) CDMA

d) Barker code

86. A certain 3G base station transmits 2 watt power. What is the value in dBw?

a) 3.9

b) 3.0

c) 33.0

d) 2.0

87. Which layer is responsible for establishing and maintaining connectivity to the local network?

a) Data link

b) Physical (PHY)

c) Logical Link Control (LLC)

d) Transport

88. FIR uses a modulation scheme called:

a) 4-PPM

b) BSK

c) PSK

d) FSK

89. The Bluetooth \_\_\_\_\_\_\_\_\_\_ layer defines how the basic hardware controls the radio transmission functions.

a) Radio module

b) Baseband

c) Link Manager

d) RF

90. Which one is a symmetric point-to-point link between a master and a single slave in the piconet?

a) Asynchronous Connectionless (ACL)

b) Access Control List (ACL)

c) Forward Error Correction (FEC)

d) Synchronous Connection –Oriented (SCO)

91. A \_\_\_\_\_\_\_\_\_\_ signals the beginning of a superframe and contains information about the type and number of time slots contained in the superframe.

a) Piconet

b) Scatternet

c) Beacon

d) GTS

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a) RF; MAC

b) Audio/video; data transfer

c) TCP/IP; network

d) PHY; adaptation