

## Contemporary Wireless

1. What are the two dominant forms of wireless?
  - a. Cell phones and palm pilots
  - b. Cell phones and radios
  - c. Wireless LANs and cell phones
  - d. Wireless LANs and wireless computers
2. The first generation of cell phones were
  - a. Analog
  - b. Combination of analog and digital
  - c. Digital
  - d. Unknown
3. What advancements were made with the third generation (3G) cell phones?
  - a. They could handle computer data
  - b. They required minimal spectrum space
  - c. They were more reliable than analog
  - d. They were the first digital phones
4. The 3G cell phones are very popular and widely used today.
  - a. True
  - b. False
5. What does the modern cellular telephone system use to provide coverage over an entire city?
  - a. Many overlapping cell sites
  - b. Many public telephone switching offices
  - c. One large cell site
  - d. Any of the above will work
6. All cell sites in a coverage area are equal in shape and size
  - a. True
  - b. False
7. A cell phone will communicate with a
  - a. Cell site base station
  - b. Computer network base station
  - c. Mobile telephone switching office
  - d. Public switched telephone network



8. Each cell site will communicate with
  - a. A mobile telephone switching office
  - b. A public switched telephone network
  - c. Other cell site base stations
  - d. All of the above
9. The shape of cell site coverage area is roughly
  - a. Hexagonal
  - b. Rectangular
  - c. Circular
  - d. Triangular
10. When a cell phone subscriber travels out of one cell site
  - a. A lot of noise is heard
  - b. It is automatically picked up by the next cell site
  - c. The call is terminated
  - d. You are switched to roaming mode
11. Each cell site has an antenna array that is divided into \_\_\_\_\_ areas
  - a. Two
  - b. Three
  - c. Four
  - d. Six
12. By dividing a cell site into different sectors, it will
  - a. Increase the coverage area
  - b. Increase the number of potential subscribers
  - c. Reduce the noise to the subscribers
  - d. Reduce the number of base stations needed
13. Currently, the standard cell phones spectrum space has two \_\_\_\_\_ bands.
  - a. 30 kHz
  - b. 10 MHz
  - c. 25 MHz
  - d. 50 MHz
14. The upper spectrum is used for
  - a. Both uplink and downlink between the base station and cell phone
  - b. Communication between cell phones and the switching office
  - c. Downlink from the base station to the cell phones
  - d. Uplink from the cell phones to the base station



15. Spectrum space in the 1900 MHz range is used by
  - a. Analog phones
  - b. Digital phones
  - c. Two way radios
  - d. Wireless networks
16. Another name for the 1900 MHz band is the
  - a. Personal communications service band
  - b. Primary cellular service band
  - c. Radio technology service band
  - d. Special cell phone spectrum band
17. The frequency spectrum sharing concept is also called
  - a. Frequency reuse
  - b. Frequency space
  - c. Spectrum reuse
  - d. United share plan
18. Name the basic types of multiple access
19. One way each channel is designated is by its
  - a. Bandwidth
  - b. Center frequency
  - c. Digital code
  - d. Upper frequency
20. Each channel used in FDMA can hold multiple phone calls and uplink or downlink at the same time.
  - a. True
  - b. False
21. In time division multiple access (TDMA), the voice signals must first go through a/n
  - a. Amplifier
  - b. Analog-to-digital converter
  - c. Digital-to-analog converter
  - d. Vocoder
22. An ADC samples the signal and produces
  - a. A 16 bit digital word
  - b. An 8 bit binary number
  - c. An amplified signal
  - d. Voltage level



23. In order for all the information to be retained, the sampling rate must be at least
- As high as the maximum frequency of the signal
  - Four times greater than the maximum frequency of the signal
  - Greater than 2 KHz
  - Two times the highest frequency of the signal
24. A common sampling rate for voice signals is
- 2 kHz
  - 4 kHz
  - 8 kHz
  - 16 kHz
25. Pulse code modulation is the transmission of data
- Eight bits at a time
  - In parallel
  - One bit at a time
  - One word at a time
26. If you have a bit time of 10 microseconds, what is the serial data rate?
- 10 kilobits per second
  - 100 kilobits per second
  - 1000 kilobits per second
  - Not enough information
27. In order to reduce the bandwidth needed to transmit data, a \_\_\_\_\_ is used to compress it
- ADC
  - DAC
  - Multiplexer
  - Vocoder
28. What is another name for the combination of an ADC and a Vocoder?
- CODAC
  - CODEC
  - DACODER
  - DIGICODE
29. Which method of multiple access allows more than one user to use the same frequency?
- Code division
  - Frequency division
  - Lane division
  - Time division



30. Why can't users tell that their signal has been segmented?
- The binary data is being transmitted too fast
  - The data is constantly being resent
  - The user is not on the phone long enough
  - There is too much noise
31. What three components are needed to recreate the original voice signal in TDMA?
32. Code division multiple access is also known as
- Code spectrum
  - Duplicate spectrum
  - Multiple spectrum
  - Spread spectrum
33. Which multiple access method uses a large available spectrum range instead of assigning a specific frequency to each user?
- Code division multiple access
  - Frequency division multiple access
  - Spatial division multiple access
  - Time division multiple access
34. In CDMA, how are individual conversations selected?
- Each conversation goes through a specific base station
  - Each conversation has a specific data rate
  - Each conversation is at a specific frequency
  - Each conversation is encoded with a pseudo-random digital code
35. In spatial division multiple access (SDMA), multiple users can share the same frequency bands because
- Each user has a specific code
  - Only one bit of data is transmitted at a time
  - The antennas transmit/receive over a very narrow range
  - The antennas used are extremely long and wide
36. Antennas which can select a desired signal are called
- Adaptive arrays
  - Extreme arrays
  - Genius antennas
  - Selective antennas
37. All phones use \_\_\_\_\_ communication.
- Quarter duplex
  - Half duplex
  - Full duplex
  - Double duplex



38. In frequency division duplex, transmitting and receiving is done
- At different frequencies
  - At different times
  - In parallel
  - In series
39. Time division duplexing requires the signals to be
- Amplified first
  - At different frequencies
  - In a very narrow bandwidth
  - In serial digital format
40. The specifications and standards used in cell phone service is referred to as
- Cell phone plans
  - Cell phone technology
  - Cellular agenda
  - Cellular systems
41. Which cell phone system did the early analog phones use?
- Advanced mobile phone system
  - Global systems for mobile communications
  - Serial data systems
  - Time division multiple access
42. What is the serial data rate for TDMA?
- 22.4 kbps
  - 48.6 kbps
  - 96.1 kbps
  - 126 kbps
43. Which system is a time division multiple access system?
- AMPS
  - GSM
  - FDMA
  - AARP
44. Global system for communication (GSM) allows \_\_\_\_\_ users to transmit though a single channel.
- 2
  - 4
  - 8
  - 10



45. Which of the following U.S. cell phone carriers use GSM?
- a. Cingular
  - b. T-mobile
  - c. Verizon
  - d. Both (a) and (b)
46. By adding enhanced data for global evolution (EDGE) to GPRS, data rates as high as \_\_\_\_\_ are possible.
- a. 100 kbps
  - b. 224 kbps
  - c. 384 kbps
  - d. 701 kbps
47. What is the standard used by code division multiple access?
- a. IS-25
  - b. IS-54
  - c. IS-95
  - d. IS-136
48. In CDMA, about \_\_\_\_\_ signals can occupy the same channel.
- a. 10 to 20
  - b. 20 to 30
  - c. 40 to 60
  - d. 80 to 100
49. Which U.S. cell phone service providers use CDMA?
- a. Cingular
  - b. Sprint
  - c. T-mobile
  - d. All of the above
50. Which standard added the data handling capability to the IS-95 standard?
- a. CDMA2000
  - b. Edge
  - c. GSM
  - d. TDMA
51. What is the main disadvantage of the WCDMA standard?
- a. It can only be used with digital phones
  - b. It has a slow data rate
  - c. It is hard to maintain
  - d. It requires large spectrum space



52. Local area networks allow individuals to
- Access the internet
  - Send emails
  - Share company resources
  - All of the above
53. In order for an individual PC to access a WLAN, it must have a
- Modem
  - Telephone line
  - Wireless network interface card
  - Wireless remote
54. Wireless network interface cards are
- An access point to the server
  - Hard wired to a telephone line
  - The storage device for all emails
  - Two way radios that communicate with the access point
55. Access points installed in public locations are called
- Hot spots
  - Local hubs
  - Public network cards
  - T1 lines
56. How do hot spots communicate with an Internet service provider?
- By email
  - By radio
  - Through a telephone line called a T1 line
  - None of the above
57. What is the function of a server?
- Create access points
  - Maintain the clock
  - Manage the network
  - Store all emails
58. What is the maximum outdoor transmission range for a WLAN?
- 100 feet
  - 200 feet
  - 300 feet
  - 500 feet





59. Why does the WLAN transmission range decrease indoors?
- The home lights cause interference
  - The radio signals are absorbed by the walls and other solid items
  - The temperature indoors is higher
  - There is not enough air circulation indoors
60. Which WLAN standard operates in the 5.8 GHz band?
- 802.11
  - 802.11a
  - 802.11g
  - 802.11x
61. The Wi-Fi Alliance sponsors a certification program, which ensures compliance and interoperability.
- True
  - False
62. Short range wireless technology is designed for operation
- Up to 10 feet
  - Up to 30 feet
  - Over 50 feet
  - Over 100 feet
63. In a mesh network, the communication range is extended because
- A more sophisticated transmitter is used
  - Data can pass from one node to another
  - The data is sent one word at a time
  - The nodes are farther apart
64. Name two categories of short range radio.
65. Which form of short wave radio can be found in PDA's?
- Bluetooth
  - Radio frequency ID
  - Ultra wideband
  - ZigBee
66. Which form of short wave radio is primarily used for industrial control?
- Bluetooth
  - Radio frequency ID
  - Ultra wideband
  - ZigBee



67. Bluetooth uses \_\_\_\_\_ to allow many users to share the same band
- Frequency division multiple access
  - Frequency hopping multiple access
  - Frequency hopping spread spectrum**
  - Narrow band frequency division
68. In Bluetooth, the frequency hop sequence is set by
- Code breaking circuit
  - FCC
  - Pseudo random code**
  - User
69. A Bluetooth transceiver can hop at a rate of
- 500 hops per second
  - 1100 hops per second
  - 1600 hops per second**
  - 2500 hops per second
70. ZigBee devices automatically network to form
- Master networks
  - Mesh networks**
  - Piconets
  - Random networks
71. Which short range radio technology uses very short pulses to represent binary data?
- Bluetooth
  - Radio frequency ID
  - Ultra wideband**
  - ZigBee
72. UWB is widely used today in the consumer electronics area.
- True
  - False**