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multiple choice questions on wireless communication

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- Q1. Reflection is?
- a) Propagation mode
 - b) Propagation mechanism
 - c) Spread spectrum
 - d) None of the above
- Q2. Which type of handoff used in CDMA?
- a) Soft handoff
 - b) Hard handoff
 - c) Soft & hard handoff
 - d) None of the above
- Q3. What is intersystem handoff?
- a) During a course of a call,
 - b) Hard handoff
 - c) Soft & hard handoff
 - d) None of the above
- Q4. The type of access used in GSM technology is
- a) FDMA/TDMA
 - b) CDMA
 - c) OFDMA
 - d) None of the above
- Q5. Which of these is not true for TDD?
- a) TDD uses different time slots for transmission and reception paths
 - b) Single radio frequency can be used
 - c) Duplexer is required
 - d) It increases the battery life of mobile phones
- Q6. The coverage & capacity of CDMA system is more than that of GSM system
- a). True
 - b). False
 - c). Equal
 - d). None of the above
- Q7. The type of Access technology which can enhance the battery life is
- a). CDMA
 - b). TDMA
 - c). OFDMA
 - d). None of the above
- Q8. The uplink frequency of P-GSM system is
- a). 1850-1910Mhz
 - b). 1710-1785Mhz
 - c). 890-915 Mhz

- d). None of the above
- Q9. The technique adopted to increase the system capacity and reduce co-chl interference is
- a). High power BTS
 - b). By installing the Omnidirectional antenna
 - c). Sectorisation
 - d). None of the above
- Q10. The remote and sparsely populated areas will be covered by
- a). Microcell
 - b). Macrocell
 - c). Picocell
 - d). None of the above
- Q11. The cell having the same number in the adjacent cluster using the same set of RF channels are termed as
- a). adjacent cell
 - b). Co channel cell
 - c). Macro cell
 - d). Selective Cell
- Q12. Higher value of Q is achievable in
- a). big cluster size
 - b). small cluster size
 - c). medium cluster size
 - d). None of the above
- Q13. The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by
- a). BTS
 - b). BSC
 - c). MS
 - d). None of the above
- Q14. The terminal is under observation from the network for the possible problems. Under which list will this belong in EIR
- a). White List
 - b). Grey List
 - c). Black List
 - d). None of the above
- Q15. Modulation technique used in DECT is
- a). GFSK
 - b). QPSK
 - c). BPSK
 - d). None of the above
- Q16. The broad spectrum of the transmitted signal gives rise to
- a). Fading
 - b). Noise
 - c). Spread Spectrum
 - d). All Of the above
- Q17. Which of these are Digital Cellular Technologies
- a). IS-54 / IS-136 – N America
 - b). GSM – Europe and Asia

- c). IS-95 – N America
 - d). All of the above
- Q18. Which of these block processes CDMA channels, and performs digital and analogue signal processing for IS-95A calls of each channel and interface with the RF block.
- a). BHI
 - b). CCB
 - c). TCP
 - d). None of the above
- Q19. What is channel assignment ? what are the types?
- a) For efficient utilization of radio spectrum a frequency reuse scheme with increasing capacity and minimizing interference is required.
 - b). For efficient utilization of radio spectrum a frequency reuse scheme with increasing capacity and maximizing interference is required.
 - c). a & b
 - d). None of the above
- Q20. what are the types of channel assignment?
- a) Fixed channel assignment, dynamic channel assignment.
 - b). moderate channel assignment
 - c). a & b
 - d). None of the above
- Q21. What is fixed channel assignment?
- a) If the channels in each cell are allocated to the users within the cell, it will be called as fixed channel assignment. If all channels are occupied, the call Will be blocked.
 - b) If the channels in each cell are allocated to the users within the cell, it will be called as fixed channel assignment. If all channels are occupied, the call Will not be blocked.
 - c). a & b
 - d). None of the above
- Q22. What is dynamic channel assignment?
- (a) If the voice channels are not allocated permanently in a cell, it will be called as dynamic channel assignment. In this assignment, channels are dynamically allocated to users by the MSC.
 - b). If the voice channels are allocated permanently in a cell, it will be called as dynamic channel assignment. In this assignment, channels are dynamically allocated to users by the MSC.
 - c). a & b
 - d). None of the above
- Q22. What is hand off?

(a) When a mobile moves into a different cell while conversation in progress, the MSC automatically transfers the call from one cell to other cell without any interference. This is called as hand off.

b). When a mobile moves into a different cell while conversation in progress, the MSC automatically transfers the call from one cell to other cell with interference. This is called as hand off.

c). a & b

d). None of the above

1. IEEE has defined the specifications for a wireless LAN, called _____, which covers the physical and data link layers.

A) IEEE 802.3

B) IEEE 802.5

C) IEEE 802.11

D) IEEE 802.2

2. In IEEE 802.11, a ____ is made of stationary or mobile wireless stations and an optional central base station, known as the access point (AP).

A) ESS

B) BSS

C) CSS

D) none of the above

3. In IEEE 802.11, a BSS without an AP is called an _____.

A) an ad hoc architecture

B) an infrastructure network

C) either (a) or (b)

D) neither (a) nor (b)

4. In IEEE 802.11, a BSS with an AP is sometimes referred to as _____.

A) an ad hoc architecture

B) an infrastructure network

C) either (a) or (b)

D) neither (a) nor (b)

5. In IEEE 802.11, communication between two stations in two different BSSs usually occurs via two _____.

A) BSSs

B) ESSs

C) APs

D) none of the above

6. In IEEE 802.11, a station with _____ mobility is either stationary (not moving) or moving only inside a BSS.

A) no-transition

B) BSS-transition

C) ESS-transition

D) none of the above

7. In IEEE 802.11, a station with _____ mobility can move from one BSS to another, but the movement is confined inside one ESS.

A) no-transition

B) BSS-transition

C) ESS-transition

D) none of the above

8. In IEEE 802.11, a station with _____ mobility can move from one ESS to another.

A) no-transition

B) BSS-transition

C) ESS-transition

D) none of the above

9. In IEEE 802.11, _____ is an optional access method that can be implemented in an infrastructure network (not in an ad hoc network).

A) DCF

B) PCF

C) either (a) or (b)

D) neither (a) nor (b)

10. In IEEE 802.11, when a frame is going from one station in a BSS to another without passing through the distribution system, the address flag is _____

A) 00

B) 01

C) 10

D) 11

11. In IEEE 802.11, when a frame is coming from an AP and going to a station, the address flag is _____.

A) 00

B) 01

C) 10

D) 11

12. In IEEE 802.11, when a frame is going from a station to an AP, the address flag is _____.

A) 00

B) 01

C) 10

D) 11

13. In IEEE 802.11, when a frame is going from one AP to another AP in a wireless distribution system, the

address flag is _____

A) 00

B) 01

C) 10

D) 11

14. The IEEE 802.11 standard for wireless LANs defines two services: _____ and _____.

A) BSS; ASS

B) ESS; SSS

C) BSS; ESS

D) BSS; DCF

15. In IEEE 802.11, the access method used in the DCF sublayer is _____.

A) ALOHA

B) CSMA/CA

C) CSMA/CD

D) none of the above

16. In IEEE 802.11, the access method used in the PCF sublayer is _____.

A) contention

B) controlled

C) polling

D) none of the above

17. In IEEE 802.11, the _____ is a timer used for collision avoidance.

A) NAV

B) BSS

C) ESS

D) none of the above

18. In IEEE 802.11, the MAC layer frame has _____ fields.

A) four

B) five

C) six

D) none of the above

19. In IEEE 802.11, the addressing mechanism can include up to _____ addresses.

A) four

B) five

C) six

D) none of the above

20. The original IEEE 802.11, uses _____.

A) FHSS

B) DSSS

C) OFDM

D) either (a) or (b)

21. The IEEE 802.11a, uses _____.

A) FHSS

B) DSSS

C) OFDM

D) either (a) or (b)

22. The IEEE 802.11b, uses _____.

- A) FHSS
- B) DSSS
- C) OFDM
- D) either (a) or (b)

23. The IEEE 802.11g, uses _____.

- A) FHSS
- B) DSSS
- C) OFDM
- D) either (a) or (b)

24. The original IEEE 802.11, has a data rate of _____Mbps.

- A) 1
- B) 6
- C) 11
- D) 22

25. IEEE 802.11a, has a data rate of _____Mbps.

- A) 1
- B) 2
- C) 6
- D) none of the above

26. IEEE 802.11b, has a data rate of _____Mbps.

- A) 1
- B) 2

C) 5.5

D) none of the above

27. IEEE 802.11g, has a data rate of _____Mbps.

A) 1

B) 2

C) 11

D) 22

28. The IEEE 802.11 wireless LANs use _____ types of frames.

A) four

B) five

C) six

D) none of the above

29. Bluetooth is a _____ technology that connects devices (called gadgets) in a small area.

A) wired LAN

B) wireless LAN

C) VLAN

D) none of the above

30. A Bluetooth network is called a _____.

A) piconet

B) scatternet

C) bluenet

D) none of the above

31. In Bluetooth, multiple _____ form a network called a _____.

A) scatternet; piconets

B) piconets: scatternet

C) piconets: bluenet

D) bluenet; scatternet

32. A Bluetooth network consists of _____ primary device(s) and up to _____ secondary devices.

A) one; five

B) five; three

C) two; six

D) one; seven

33. The RTS and CTS frames in CSMA/CA _____ solve the hidden station problem. The RTS and CTS frames in CSMA/CA _____ solve the exposed station problem.

A) can; cannot

B) cannot; can

C) can; can

D) cannot; cannot

34. In Bluetooth, the current data rate is _____Mbps

A) 2

B) 5

C) 11

D) none of the above

35. In Bluetooth, the _____ layer is roughly equivalent to the physical layer of the Internet model.

A) radio

B) baseband

C) L2CAP

D) none of the above

36. In Bluetooth, the _____ layer is roughly equivalent to the MAC sublayer in LANs.

A) radio

B) baseband

C) L2CAP

D) none of the above

37. In Bluetooth, the L2CAP sublayer, is roughly equivalent to the LLC sublayer in LANs.

A) radio

B) baseband

C) L2CAP

D) none of the above

38. The access method in Bluetooth is _____.

A) FDMA

B) TDD-TDMA

C) CDMA

D) none of the above

39. In Bluetooth, the _____ link is used when avoiding latency (delay in data delivery) is more important than integrity (error-free delivery).

A) SCO

B) ACL

C) ACO

D) SCL

40. In Bluetooth, the _____ link is used when data integrity is more important than avoiding latency.

A) SCO

B) ACL

C) ACO

D) SCL

41. Bluetooth uses _____ method in the physical layer to avoid interference from other devices or other networks.

A) DSSS

B) FHSS

C) FDMA

D) none of the above

42. Some examples for wireless communication system are:

(a) Cordless phones,

(b) handheld walkie-talkies,

(c) pagers

(d) all of these

43. The terms “data” and “information” mean the same thing.

(a) True

(b) False

(c) Same

(d) None of these

1. What is the frequency range of the IEEE 802.11a standard?

A.2.4Gbps

B.5Gbps

C.2.4GHz

D.5GHz

2. What is the maximum distance running the lowest data rate for 802.11b?

A. About 100 feet

B. About 175 feet

C. About 300 feet

D. About 350 feet

3. What is the maximum distance with maximum data rate for 802.11a?

A. About 65-75 feet

B. About 90-100 feet

C. About 150 feet

D. Over 200 feet

4. What is the frequency range of the IEEE 802.11b standard?

A. 2.4Gbps

B. 5Gbps

C. 2.4GHz

D. 5GHz

5. You have a Cisco mesh network. What protocol allows multiple APs to connect with many redundant connections between nodes?

A. LWAPP

B. AWPP

C. STP

D. IEEE

1. The sharing of a medium and its link by two or more devices is called _____.

(a) modulation

(b) encoding

(c) line discipline

(d) multiplexing

2. Which multiplexing technique transmits analog signals?

- (a) FDM
- (b) TDM
- (c) WDM
- (d) a&c

3. What is the frequency reuse factor in CDMA?

- (a). 0
- (b). 1
- (c). 10
- (d). infinity

4. In CDMA, Reduction of co channel interference due to processing gain allows frequency reuse factor of _____.

- (a). zero
- (b). one
- (c). ten
- (d). infinity

1. Transmission media are usually categorized as _____.

- A) Fixed or unfixed
- B) Guided or unguided
- C) Determinate or indeterminate
- D) Metallic or nonmetallic

2. Transmission media lie below the _____ layer.
- A) physical
 - B) Network
 - C) Transport
 - D) Application
3. _____ cable consists of an inner copper core and a second conducting outer Sheath.
- A) Twisted-pair
 - B) Coaxial
 - C) Fiber-optic
 - D) Shielded twisted-pair
4. In fiber optics, the signal is _____ waves.
- A) Light
 - B) Radio
 - C) infrared
 - D) Very low-frequency
5. Which of the following primarily uses guided media?
- A) Cellular telephone system
 - B) Local telephone system
 - C) Satellite communications
 - D) Radio broadcasting
6. Which of the following is not a guided medium?
- A) twisted-pair cable
 - B) Coaxial cable
 - C) fiber-optic cable
 - D) Atmosphere
7. What is the major factor that makes coaxial cable less susceptible to noise than? Twisted-pair cable?
- A) Inner conductor
 - B) Diameter of cable
 - C) Outer conductor
 - D) Insulating material
8. In an optical fiber, the inner core is _____ the cladding.
- A) Denser than
 - B) Less dense than
 - C) The same density as
 - D) Another name for
9. The inner core of an optical fiber is _____ in composition.

- A) Glass or plastic
- B) Copper
- C) Bimetallic
- D) liquid

10. When a beam of light travels through media of two different densities, if the angle of Incidence is greater than the critical angle, _____ occurs.

- A) Reflection
- B) Refraction
- C) Incidence
- D) Criticism

11. When the angle of incidence is _____ the critical angle, the light beam bends along The interface.

- A) More than
- B) Less than
- C) Equal to
- D) None of the above

12. Signals with a frequency below 2 MHz use _____ propagation.

- A) Ground
- B) Sky
- C) line-of-sight
- D) None of the above

13. Signals with a frequency between 2 MHz and 30 MHz use _____ propagation.

- A) Ground
- B) Sky
- C) line-of-sight
- D) None of the above

14. Signals with a frequency above 30 MHz use _____ propagation.

- A) Ground
- B) Sky
- C) line-of-sight
- D) None of the above

15. A parabolic dish antenna is a (n) _____ antenna.

- A) omnidirectional
- B) Bidirectional
- C) Unidirectional
- D) Horn

16. A (n) _____ medium provides a physical conduit from one device to another.

- A) Guided
- B) Unguided

- C) Either (a) or (b)
- D) None of the above

17. _____ cable consists of two insulated copper wires twisted together.

- A) Coaxial
- B) Fiber-optic
- C) Twisted-pair
- D) None of the above

18. _____ cable is used for voice and data communications.

- A) Coaxial
- B) Fiber-optic
- C) Twisted-pair
- D) None of the above

19. _____ consists of a central conductor and a shield.

- A) Coaxial
- B) Fiber-optic
- C) Twisted-pair
- D) None of the above

20. _____ cable can carry signals of higher frequency ranges than _____ cable.

- A) Twisted-pair; fiber-optic
- B) Coaxial; fiber-optic
- C) Coaxial; twisted-pair
- D) None of the above

21. _____ cables are composed of a glass or plastic inner core surrounded by cladding, All encased in an outside jacket.

- A) Coaxial
- B) Fiber-optic
- C) Twisted-pair
- D) None of the above

22. _____ cables carry data signals in the form of light.

- A) Coaxial
- B) Fiber-optic
- C) Twisted-pair
- D) None of the above

23. In a fiber-optic cable, the signal is propagated along the inner core by _____.

- A) Reflection
- B) Refraction
- C) Modulation
- D) None of the above

24. _____ media transport electromagnetic waves without the use of a physical Conductor.

- A) Guided
- B) Unguided
- C) Either (a) or (b)
- D) None of the above

25. Radio waves are _____.

- A) omnidirectional
- B) unidirectional
- C) Bidirectional
- D) None of the above

26. Microwaves are _____.

- A) omnidirectional
- B) Unidirectional
- C) Bidirectional
- D) None of the above

27. _____ is used for cellular phone, satellite, and wireless LAN communications.

- A) Radio waves
- B) Microwaves
- C) Infrared waves
- D) None of the above

28. _____ are used for short-range communications such as those between a PC and A peripheral device.

- A) Radio waves
- B) Microwaves
- C) Infrared waves
- D) None of the above

1. Location Area is an area covered by _____.

(a). BTS

(b). BSC

- (c). MSC
- (d). Operator

2. GSM is a digital system with an over-the-air bit rate of _____

- (a). 9.6 kbps
- (b). 56 kbps
- (c). 144 kbps
- (d). 270 kbps

3. The separation between adjacent carrier frequencies is called . In GSM, this is _____.

- (a). 100 kHz
- (b). 200 kHz
- (c). 225 kHz
- (d). 250 kHz

4. GSM uses linear predictive coding (LPC). The purpose of LPC is to _____ the bit rate

- (a). reduce
- (b). increase
- (c). maintain
- (d). None of the above

Q1. In free space transmission, the signal attenuation increases

- (a) proportionally with distance
- (b) proportionally with the square distance

- (c) proportionally with distance cube
- (d) none of these

Q2. When transmitting over a perfectly reflecting, smooth, plane earth, the path loss tends to increase

- (a) linearly with distance
- (b) with the square of distance
- (c) with distance cube
- (d) with the fourth power of distance

Q3. Consider a cellular operator, who must select an appropriate frequency reuse distance.

If radio propagation attenuation increases rapidly with distance, his cellular systems will be

- (a) relatively inefficient.
- (b) relatively efficient
- (c) poor performance
- (d) none of these

Q4. Consider propagation over a perfectly reflecting, smooth, plane earth. Doubling the antenna height of a mobile receiver near the cell boundary

- (a) does not change the received power
- (b) leads to 3 dB power increase
- (c) leads to 6 dB power increase
- (d) none of these

Q5. The Doppler spread depends on

- (a) the fade margin
- (b) the speed of the antenna
- (c) the delay spread

(d) none of these

Q6. If reflected waves arrive with uniformly distributed angles of arrival, the Doppler spectrum,

(a) is bell shaped

(b) is U-shaped

(c) has a raised cosine shape

(d) has a rectangular shape

Q7. GSM can best be called a system for

(a) cordless telephony

(b) cellular telephony

(c) wireless communication

(d) none of these

Q8. What is the multiple access scheme used in GSM?

(a) Time Division Multiple Access (TDMA)

(b) Code Division Multiple Access (CDMA)

(c) Frequency Division Multiple Access (FDMA)

(d) A combination of TDMA and FDMA

Q9. What is IS 95?

(a) a standard for cellular CDMA

(b) a standard procedure for measuring indoor multipath propagation characteristics

(c) the 1995 edition of the conference proceedings on Information Systems

(d) a standard interconnecting base stations

Q10. The better measure of spectrum efficiency of a wireless system is

(a) bits per second per Hertz

(b) bits per second per Hertz per km^2

(c) bits per second per km^2

(d) none of these

Q11. A handover is initiated by the base station.

(a) This is true for DECT and GSM

(b) True for DECT but not for GSM

(c) True for GSM, but not for DECT

(d) none of these

Q12. The cluster size of the frequency reuse pattern of a hexagonal cellular system can only take on a particular values. Namely

(a) 1,3,5,7,9,...

(b) 1,4,9,16,25,...

(c) 1,3,4,7,9,11,...

(d) 1,3,4,6,7,9,10,...

Q13. The reuse distance increases with the cluster size, more precisely

(a) with the square root of the cluster size

(b) proportional to cluster size

(c) with the square of the cluster size

(d) with the logarithm of the cluster size

Q14. propagation phenomena as experienced in wireless communication tend to improve the stability of an ALOHA random access method

(a) True

(b) False

(c) same

(d) none of these

Q15. In a packet data transmission system with Rayleigh fading, error correction coding is more critical in a system

(a) with short packet duration compared to the average fade duration

(b) with long packet duration compared to the average fade duration

(c) with short packet duration compared to the mean fade duration

(d) none of these

Q16. In an analog narrowband-FM cellular network, an operator can choose between a transmit bandwidth of 12.5 or 25 kHz. Which bandwidth would you choose, if spectrum efficiency is your prime concern?

(a) 12.5 kHz, because the system can accommodate twice as many channels per MHz of system bandwidth

(b) 25 kHz, because it allows much denser frequency reuse than with 12.5 kHz.

(c) 25 kHz, because it allows much denser frequency reuse than with 125.5 kHz.

(d) none of these

Q17. The IS 95 Cellular CDMA uses the following spreading code in the downlink:

(a) a Walsh Hadamard code

(b) a Maximum Length PN sequence

(c) Gold code

(d) a combination of Walsh-Hadamard and a PN-sequence

Q18. a cellular telephone network, random access inevitably occurs

(a) during call set-up initiated the mobile

(b) during call set-up initiated a fixed subscriber of the PSTN

(c) during a handover

(d) during roaming

Q1. Bluetooth profiles are also referred to as:

a. Interfaces

b. Protocols

- c. Applications
- d. Procedures

2. Power consumption level changes when a Bluetooth device is in different states. Which of the following options represents the incremental trend of power consumption among all possible states?

- (a) Standby → Park → Sniff → Hold → Active
- (b) Standby → Sniff → Park → Hold → Active
- (c) Standby → Park → Hold → Sniff → Active
- (d) Standby → Hold → Park → Sniff → Active

3. Which of the following protocols is NOT part of Bluetooth core protocol?

- a. Baseband
- b. SDP
- c. L2CAP
- d. LMP
- e. RFCOM

4. Bluetooth security Mode 2 is:

- a. Link level security
- b. No security
- c. Baseband level security
- d. Service level security
- e. None of the above

5. The IEEE 802.11b standard is also known as:

- a. Bluetooth

- b. Hiperlan
- c. Wi-Fi
- d. IrDA
- e. HomeRF

6. Which of the followings are the characteristics of WPAN?

- a. Short range
- b. Low power
- c. Low cost
- d. Small networks
- e. All of the above

7. HCI is one of the Bluetooth transport protocols

- (a) False
- (b) true
- (c) same
- (d) none of these

8. Bluetooth devices use maximum of 79 RF channels throughout the world

- (a) False
- (b) true
- (c) same
- (d) none of these

9. Bluetooth ACL link is a best-effort link

- (a) True
- (b) false
- (c) same
- (d) none of these

1. In _____ each station sends a frame whenever it has a frame to send.
- A) pure ALOHA
 - B) slotted ALOHA

- C) both (a) and (b)
- D) neither (a) nor (b)

2. In pure ALOHA, the vulnerable time is _____ the frame transmission time.

- A) the same as
- B) two times
- C) three times
- D) none of the above

3. The maximum throughput for pure ALOHA is _____ per cent.

- A) 12.2
- B) 18.4
- C) 36.8
- D) none of the above

4. In _____, each station is forced to send only at the beginning of the time slot.

- A) pure ALOHA
- B) slotted ALOHA
- C) both (a) and (b)
- D) neither (a) nor (b)

5. In slotted ALOHA, the vulnerable time is _____ the frame transmission time.

- A) the same as

- B) two times
- C) three times
- D) none of the above

6. The maximum throughput for pure ALOHA is _____ per cent.

- A) 12.2
- B) 18.4
- C) 36.8
- D) none of the above

7. The vulnerable time for CSMA is the _____ propagation time.

- A) the same as
- B) two times
- C) three times
- D) none of the above

8. In the _____ method, after the station finds the line idle, it sends its frame immediately. If the line is not idle, it continuously senses the line until it finds it idle.

- A) nonpersistent
- B) 1-persistent
- C) p-persistent
- D) none of the above

9. In the _____ method, a station that has a frame to send senses the line. If the line is idle, it sends immediately. If the line is not idle, it waits a random amount of time and then senses the line again.

- A) nonpersistent
- B) 1-persistent
- C) p-persistent
- D) none of the above

10 In the _____ method, after the station finds the line idle it sends or refrain from sending based on the outcome of a random number generator. If the line is busy, it tries again.

- A) nonpersistent
- B) 1-persistent
- C) p-persistent
- D) none of the above

11. We have categorized access methods into _____ groups.

- A) two
- B) three
- C) four
- D) five

12. In _____ methods, no station is superior to another station and none is assigned the control over another.

- A) random access
- B) controlled access

- C) channelization
- D) none of the above

13. In _____, the chance of collision can be reduced if a station senses the medium before trying to use it.

- A) MA
- B) CSMA
- C) FDMA
- D) CDMA

14. _____ requires that each station first listen to the medium before sending.

- A) MA
- B) CSMA
- C) FDMA
- D) CDMA

15. _____ augments the CSMA algorithm to detect collision.

- A) CSMA/CA
- B) CSMA/CD
- C) either (a) or (b)
- D) both (a) and (b)

16. In _____, a station monitors the medium after it sends a frame to see if the transmission was successful. If so, the station is finished. If, however, there is a collision, the frame is sent again.

- A) CSMA/CA
- B) CSMA/CD
- C) either (a) or (b)
- D) both (a) and (b)

17. To avoid collisions on wireless networks, _____ was invented.

- A) CSMA/CA
- B) CSMA/CD
- C) either (a) or (b)
- D) both (a) and (b)

18. In _____, collisions are avoided through the use of three strategies: the interframe space, the contention window, and acknowledgments.

- A) CSMA/CA
- B) CSMA/CD
- C) either (a) or (b)
- D) both (a) and (b)

19. In _____ methods, the stations consult one another to find which station has the right to send.

- A) random access
- B) controlled access
- C) channelization
- D) none of the above

20. In _____ methods, a station cannot send unless it has been authorized by other stations.

- A) random access
- B) controlled access
- C) channelization
- D) none of the above

21. We discussed _____ popular controlled-access methods.

- A) two
- B) three
- C) four
- D) none of the above

22. In the _____ method, a station needs to make a reservation before sending data. Time is divided into intervals.

- A) reservation
- B) polling
- C) token passing
- D) none of the above

23. In the _____ method, time is divided into intervals. In each interval, a reservation frame precedes the data frames sent in that interval.

- A) reservation
- B) polling

- C) token passing
- D) none of the above

24. In the _____ method, all data exchanges must be made through the primary device even when the ultimate destination is a secondary device.

- A) reservation
- B) polling
- C) token passing
- D) none of the above

25. In the _____ method, the primary device controls the link; the secondary devices follow its instructions.

- A) reservation
- B) polling
- C) token passing
- D) none of the above

26. In the _____ method, the stations in a network are organized in a logical ring.

- A) reservation
- B) polling
- C) token passing
- D) none of the above

27. In the _____ method, each station has a predecessor and a successor.

- A) reservation
- B) polling
- C) token passing
- D) none of the above

28. In the _____ method, a special packet called a _____ circulates through the ring.

- A) reservation: control frame
- B) polling: poll request
- C) token passing: token
- D) none of the above

29. _____ is a multiple-access method in which the available bandwidth of a link is shared in time, frequency, or through code, between different stations.

- A) Random access
- B) Controlled access
- C) Channelization
- D) none of the above

30. We discussed _____ channelization protocols.

- A) two
- B) three
- C) four
- D) none of the above

31. In _____, the available bandwidth is divided into frequency bands.

- A) FDMA
- B) TDMA
- C) CDMA
- D) none of the above

32. In _____, each station is allocated a band to send its data. In other words, each band is reserved for a specific station, and it belongs to the station all the time.

- A) FDMA
- B) TDMA
- C) CDMA
- D) none of the above

33. In _____, the stations share the bandwidth of the channel in time.

- A) FDMA
- B) TDMA
- C) CDMA
- D) none of the above

34. In _____, each station is allocated a time slot during which it can send data. Each station transmits its data in its assigned time slot.

- A) FDMA
- B) TDMA
- C) CDMA

D) none of the above

35. In _____, each station transmits its data in its assigned time slot.

A) FDMA

B) TDMA

C) CDMA

D) none of the above

36. In _____, the stations use different codes to achieve multiple access.

A) FDMA

B) TDMA

C) CDMA

D) none of the above

37. _____ is based on coding theory and uses sequences of numbers called chips.

A) FDMA

B) TDMA

C) CDMA

D) none of the above

38. In _____, the sequences are generated using orthogonal codes such the Walsh tables.

A) FDMA

B) TDMA

- C) CDMA
- D) none of the above

1. Which multiplexing technique transmits digital signals?

- A) FDM

- B) TDM
- C) WDM
- D) None of the above

2. Which multiplexing technique shifts each signal to a different carrier frequency?

- A) FDM
- B) TDM
- C) Both (a) and (b)
- D) None of the above

3. In synchronous TDM, for n signal sources of the same data rate, each frame contains _____ slots.

- A) n
- B) $n + 1$
- C) $n - 1$
- D) 0 to n

4. In TDM, the transmission rate of the multiplexed path is usually _____ the sum of the transmission rates of the signal sources.

- A) greater than
- B) less than
- C) equal to
- D) not related to

5. Which multiplexing technique involves signals composed of light beams?

- A) FDM
- B) TDM
- C) WDM
- D) none of the above

6. _____ utilization is the use of available bandwidth to achieve specific goals.

- A) Frequency

- B) Bandwidth
- C) Amplitude
- D) None of the above

7. _____ can be achieved by using multiplexing; _____ can be achieved by using spreading.

- A) Efficiency; privacy and anti jamming
- B) Privacy and anti jamming; efficiency
- C) Privacy and efficiency; anti jamming
- D) Efficiency and anti jamming; privacy

8. _____ is the set of techniques that allows the simultaneous transmission of multiple signals across a single data link.

- A) Demodulating
- B) Multiplexing
- C) Compressing
- D) None of the above

9. In a multiplexed system, ___ lines share the bandwidth of _____ link.

- A) 1; n
- B) 1; 1
- C) n; 1
- D) n; n

10. The word _____ refers to the portion of a _____ that carries a transmission.

- A) channel; link
- B) link; channel
- C) line; channel
- D) line; link

11. _____ can be applied when the bandwidth of a link (in hertz) is greater than the combined bandwidths of the signals to be transmitted.

- A) TDM
- B) FDM
- C) Both (a) or (b)
- D) Neither (a) or (b)

12. FSM is an _____ technique.

- A) analog
- B) digital
- C) either (a) or (b)
- D) none of the above

13. _____ is designed to use the high bandwidth capability of fiber-optic cable.

- A) FDM
- B) TDM
- C) WDM
- D) None of the above

14. _____ is an analog multiplexing technique to combine optical signals.

- A) FDM
- B) TDM
- C) WDM
- D) None of the above

15. _____ is a digital process that allows several connections to share the high bandwidth of a link.

- A) FDM
- B) TDM

- C) WDM
- D) None of the above

16 _____ is a digital multiplexing technique for combining several low-rate channels into one high-rate one.

- A) FDM
- B) TDM
- C) WDM
- D) None of the above

17. We can divide _____ into two different schemes: synchronous or statistical.

- A) FDM
- B) TDM
- C) WDM
- D) none of the above

18. In _____ TDM, each input connection has an allotment in the output even if it is not sending data.

- A) synchronous
- B) statistical
- C) isochronous
- D) none of the above

19. In _____ TDM, slots are dynamically allocated to improve bandwidth efficiency.

- A) synchronous
- B) statistical
- C) isochronous
- D) none of the above

20. In _____, we combine signals from different sources to fit into a larger bandwidth.

- A) spread spectrum

- B) line coding
- C) block coding
- D) none of the above

21. _____ is designed to be used in wireless applications in which stations must be able to share the medium without interception by an eavesdropper and without being subject to jamming from a malicious intruder.

- A) Spread spectrum
- B) Multiplexing
- C) Modulation
- D) None of the above.

22. The _____ technique uses M different carrier frequencies that are modulated by the source signal. At one moment, the sign modulates one carrier frequency; at the next moment, the signal modulates another carrier frequency.

- A) FDM
- B) DSSS
- C) FHSS
- D) TDM

23. The _____ technique expands the bandwidth of a signal by replacing each data bit with n bits.

- A) FDM
- B) DSSS
- C) FHS
- D) TDM

24. _____ is a first-generation cellular phone system.

- A) AMPS
- B) D-AMPS
- C) GSM
- D) none of the above

25. _____ is a second-generation cellular phone system.

- A) AMPS
- B) D-AMPS
- C) GSM
- D) none of the above

26. _____ is a digital version of AMPS.

- A) GSM
- B) D-AMPS
- C) IS-95
- D) none of the above

27. _____ is a second-generation cellular phone system used in Europe.

- A) GSM
- B) D-AMPS
- C) IS-95
- D) none of the above

28. _____ is a second-generation cellular phone system based on CDMA and DSSS.

- A) GSM
- B) D-AMPS
- C) IS-95
- D) none of the above

29. The _____ cellular phone system will provide universal personal communication.

- A) first-generation
- B) second-generation
- C) third-generation
- D) none of the above

30. In a _____ handoff, a mobile station only communicates with one base station.

- A) hard
- B) soft
- C) medium
- D) none of the above

31. In a _____ handoff, a mobile station can communicate with two base stations at the same time.

- A) hard
- B) soft
- C) medium
- D) none of the above

32. _____ is an analog cellular phone system using FDMA.

- A) AMPS
- B) D-AMPS
- C) GSM
- D) none of the above

33. AMPS operate in the ISM _____ band.

- A) 800-MHz
- B) 900-MHz
- C) 1800-MHz
- D) none of the above

34. In AMPS, each band is divided into _____ channels.

- A) 800
- B) 900
- C) 1000
- D) none of the above

35. AMPS has a frequency reuse factor of _____.

- A) 1
- B) 3
- C) 5
- D) 7

36. AMPS uses _____ to divide each 25-MHz band into channels.

- A) FDMA
- B) TDMA
- C) CDMA
- D) none of the above

37. D-AMPS uses _____ to divide each 25-MHz band into channels.

- A) FDMA
- B) TDMA
- C) CDMA
- D) both (a) and (b)

38. GSM allows a reuse factor of _____.

- A) 1
- B) 3
- C) 5
- D) 7

39. GSM is a digital cellular phone system using _____.

- A) FDMA
- B) TDMA
- C) CDMA
- D) both (a) and (b)

40. IS-95 is based on _____.

- A) FDMA
- B) CDMA
- C) DSSS
- D) all of the above

41. IS-95 uses the ISM _____ band.

- A) 800-MHz
- B) 900-MHz
- C) 1900-MHz
- D) either (a) or (c)

42. IS-95 uses the _____ satellite system for synchronization.

- A) GPS
- B) Teledesic
- C) Iridium
- D) none of the above

43. In an IS-95 system, the frequency-reuse factor is normally _____.

- A) 1
- B) 3
- C) 5
- D) 7

44. In the third generation of cellular phones, _____ uses W-CDMA.

- A) IMT-DS
- B) IMT-MC
- C) IMT-TC
- D) IMT-SC

45. In the third generation of cellular phones, _____ uses CDMA2000.

- A) IMT-DS
- B) IMT-MC
- C) IMT-TC
- D) IMT-SC

46. In the third generation of cellular phones, _____ uses a combination of W-CDMA and TDMA.

- A) IMT-DS
- B) IMT-MC
- C) IMT-TC
- D) IMT-SC

47. In the third generation of cellular phones, _____ uses TDMA.

- A) IMT-DS
- B) IMT-MC
- C) IMT-TC
- D) IMT-SC

Q1. The spacing between subcarriers in 802.11a specifications is

- (a) 100 kHz
- (b) 615 kHz
- (c) 312.5 kHz
- (d) none of these

Q2. The duration of an OFDM symbol in 802.11a specification is

- (a) 0.8us
- (b) 2.4us
- (c) 3.2us
- (d) 4us

3. The coding scheme used in 802.11a specifications is

- (a) Hamming Code
- (b) Convolutional code
- (c) Reed Solomon Code
- (d) Turbo code

4. The number of used subcarriers in 802.11a specification is

- (a) 52
- (b) 64
- (c) 48
- (d) 24

5. The modulation used in SIGNAL field in 802.11a specification is

- (a) BPSK
- (b) D-BPSK (differential-BPSK)
- (c) QPSK

(d) 64QAM

6. The acronym CCA in 802.11a specification stands for

(a) Cross Correlation Algorithm

(b) Clear Channel Assessment

(c) Cross Coupled Antenna

(d) Co Channel Access

7. The number of short preambles used in 802.11a specification is

(a) 2

(b) 3

(c) 8

(d) 10

8. The duration of the long preamble in 802.11a specification is

(a) 3.2us

(b) 4us

(c) 8us

(d) 10us

9. *The number of TAIL bits in 802.11a specification is*

(a) 6

(b) 9

(c) 12

(d) 18

10. *The transmitter center frequency tolerance in 802.11a specification is*

(a) ± 10 ppm

(b) ± 20 ppm

(c) ± 40 ppm

(d) ± 50 ppm

Q1. What is soft handoff?

- (a) In CDMA system, MSC selects received signals from a variety of base stations with the help of software. This is called as soft handoff.
- (b) In CDMA system, BSC selects received signals from a variety of base stations with the help of software.
- (c) In GSM system, MSC selects received signals from a variety of base stations with the help of software. This is called as soft handoff.
- (d) None of these

Q2. What is co channel interference?

- (a) The interference between the signals from co channel cells is called as co channel interference.
- (b) In CDMA system, BSC selects received signals from a variety of base stations with the help of software.
- (c) The interference between the signals from channel cells is called as co channel interference.
- (d) None of these

Q3. Define co-channel reuse ratio.

- (a) The interference between the signals from co channel cells is called as co channel interference.
- (b) It is define as the ratio between the distance between the centers of nearest co channel cells to the radius of the cell. $Q = D/R$
- (c) The interference between the signals from channel cells is called as co channel interference.
- (d) None of these

Q4. Define adjacent channel interference.

- (a) The interference between the signals from co channel cells is called as co channel interference.
- (b) Interference resulting from signals which are adjacent in frequency to the desired signal is called adjacent channel interference.
- (c) The interference between the signals from channel cells is called as co channel interference.
- (d) None of these

Q5. Define Grade of service.

- (a) The interference between the signals from co channel cells.

(b) It is defined as the measure of the ability of a user to access a trunked system during the busiest hour.

(c) The interference between the signals from channel cells.

(d) None of these

Q6. What is blocked call clear system (BCC)?

(a) In a system, a user is blocked without access by a system when no channels are available in the system. The call blocked by the system is cleared and the user should try again. This is called BCC system.

(b) It is defined as the measure of the ability of a user to access a trunked system during the busiest hour.

(c) The interference between the signals from channel cells.

(d) None of these

Q7. What is blocked call delay system?

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

(b) It is defined as the measure of the ability of a user to access a trunked system during the busiest hour.

(c) The interference between the signals from channel cells.

(d) None of these

Q8. Define cell splitting.

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

(b) Cell splitting is the process of subdividing congested cells into smaller cells each with its own base stations and a corresponding reduction in antenna height and transmitter power. It increases the capacity of cellular system.

(c) The interference between the signals from channel cells.

(d) None of these

Q9. What is sectoring?

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

(b) Sectoring is a technique for decreasing co-channel interference and thus increasing the system performance by using directional antennas.

(c) The interference between the signals from channel cells.

(d) None of these

Q10. What is propagation model?

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

(b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.

(c) The interference between the signals from channel cells.

(d) None of these

Q11. Define large scale propagation model?

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

(b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.

(c) The propagation models that characterize the signal strength over large T-R separation distances (several hundreds or thousands of meters).

(d) None of these

Q12. What is small scale model?

(a) If a channel is not available immediately, the call request may be delayed until a channel becomes available.

- (b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.
- (c) The propagation models that characterize the rapid fluctuations of the received signal strength over very short travel distances (a few wavelengths) or short time duration.
- (d) None of these

Q13. What is free space propagation model?

- (a) The free space propagation model is used to predict received signal strength, when unobstructed line-of-sight path between transmitter & receiver.
- (b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.
- (c) The propagation models that characterize the rapid fluctuations of the received signal strength over very short travel distances (a few wavelengths) or short time duration.
- (d) None of these

Q14. Explain path loss?

- (a) The free space propagation model is used to predict received signal strength, when unobstructed line-of-sight path between transmitter & receiver.
- (b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.
- (c) The path loss is defined as the difference(in dB) between the effective transmitted power & the received power, & may or may not include the effect of the antenna gains.
- (d) None of these

Q15. What is scattering?

- (a) The free space propagation model is used to predict received signal strength, when unobstructed line-of-sight path between transmitter & receiver.
- (b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.
- (c) When a radio wave impinges on a rough surface, the reflected energy is spread out in all directions due to scattering.

(d) None of these

Q16. Explain small scale fading?

(a) Small scale fading is used to describe the rapid fluctuations of the amplitudes, phases, or multipath delays of a radio signal over a short period of time or travel distance.

(b) Propagation models that predict the mean signal strength for an arbitrary transmitter – receiver separation distance are useful in estimating the radio coverage area of a transmitter.

(c) When a radio wave impinges on a rough surface, the reflected energy is spread out in all directions due to scattering.

(d) None of these

Q17. What are the factors influencing small scale fading?

(a) Speed of surrounding objects

(b) Multipath propagation

(c) Transmission bandwidth of the signal.

(d) all of these

Q18. Define Doppler shift?

(a) Speed of surrounding objects

(b) Multipath propagation

(c) The shift in received signal frequency due to motion is called the Doppler shift.

(d) None of these

Q19. What flat fading?

(a) If the mobile radio channel has a constant gain & linear phase response over a bandwidth which is greater than the bandwidth of the transmitted signal, then the received signal will undergo flat fading.

(b) Multipath propagation

(c) The shift in received signal frequency due to motion is called the Doppler shift.

(d) None of these

Q20. What is frequency selective fading?

(a) If the mobile radio channel has a constant gain & linear phase response over a bandwidth which is greater than the bandwidth of the transmitted signal, then the received signal will undergo flat fading.

- (b) If the channel possesses a constant gain & linear phase response over a bandwidth that is smaller than the bandwidth of the transmitted signal, then the channel creates frequency selective fading on the received signal.
- (c) The shift in received signal frequency due to motion is called the Doppler shift.
- (d) None of these

Q21. Define fast fading channel?

- (a) If the mobile radio channel has a constant gain & linear phase response over a bandwidth which is greater than the bandwidth of the transmitted signal, then the received signal will undergo flat fading.
- (b) The channel impulse response changes rapidly within the symbol duration. This type of a channel is called fast fading channel.
- (c) The shift in received signal frequency due to motion is called the Doppler shift.
- (d) None of these

Q22. Define slow fading channel?

- (a) The channel impulse response changes at a rate much slower than the transmitted baseband signal. This type of a channel is called slow fading channel.
- (b) The channel impulse response changes rapidly within the symbol duration. This type of a channel is called fast fading channel.
- (c) The shift in received signal frequency due to motion is called the Doppler shift.
- (d) None of these

Q23. What is multiple access?

- (a) Multiple access schemes are used to allow many mobile users to share simultaneously a finite amount of radio spectrum. It is required to achieve high capacity by simultaneously allocating the bandwidth to multiple users.
- (b) The channel impulse response changes rapidly within the symbol duration. This type of a channel is called fast fading channel.
- (c) The shift in received signal frequency due to motion is called the Doppler shift.
- (d) None of these

Q24. What is frequency division duplexing?

- (a) It is duplexing done using frequency techniques. FDD provides two distinct bands of frequencies for every user. The forward band provides traffic from the base station to the mobile, and the reverse band provides traffic from the mobile to the base station.
- (b) The channel impulse response changes rapidly within the symbol duration. This type of a channel is called fast fading channel.
- (c) The shift in received signal frequency due to motion is called the Doppler shift.
- (d) None of these

Q25. What are the multiple access techniques?

- (a) Frequency division multiple access
- (b) Time division multiple access
- (c) Code division multiple access
- (d) all of these

Q26. What is a wide band system?

- (a) In wideband system, the transmission bandwidth of a single channel is much larger than the coherence bandwidth of the channel. Thus multipath fading does not greatly vary the received signal power within a wideband channel.
- (b) Time division multiple access
- (c) Code division multiple access
- (d) None of these

Q27. What are the nonlinear effects in FDMA?

- (a) In FDMA, many channels share the same antenna at the base station. The power amplifiers are nonlinear which causes signal spreading in the frequency domain and generate inter modulation frequencies. It is undesirable and can result in interference.
- (b) Time division multiple access
- (c) Code division multiple access
- (d) None of these

Q28. What is time division multiple access?

- (a) Time division multiple access systems divide the radio spectrum into time slots and in each slot only one user is allowed to either transmit or receive.
- (b) Time division multiple access
- (c) Code division multiple access
- (d) None of these

Q29. What is fast and slow frequency hopping?

- (a) If the rate of change of the carrier frequency is greater than the symbol rate, then the system is referred to as fast frequency hopping. If the rate of change of the carrier frequency is lesser than the symbol rate, then the system is referred to as slow frequency hopping.
- (b) Time division multiple access
- (c) Code division multiple access
- (d) None of these

Q30. Define capacity of cellular systems

- (a) It can be defined as the maximum number of channels or users that can be provided in a fixed frequency band.
- (b) Time division multiple access
- (c) Code division multiple access
- (d) None of these

Q31. Define forward channel interference

- (a) It can be defined as the maximum number of channels or users that can be provided in a fixed frequency band.
- (b) For a particular subscriber until, the desired base station will provide the desired forward channel while the surrounding co-channel base stations will provide the forward channel interference.
- (c) Code division multiple access
- (d) None of these

Q32. Define adaptive channel allocation

- (a) It can be defined as the maximum number of channels or users that can be provided in a fixed frequency band.
- (b) Adaptive channel allocation in TDMA eliminates system planning since it is not required to plan frequencies for cells.
- (c) Code division multiple access
- (d) None of these

Q33. State some of the features of CDMA

- (a) Users of CDMA share the same frequency.
- (b) CDMA has soft capacity limit.
- (c) Multipath fading may be substantially reduced
- (d) All of these

Q34. Define efficiency of TDMA

- (a) The efficiency of a TDMA is a measure of the percentage of transmitted data that contains information as opposed to providing overhead for the access scheme.
- (b) CDMA has soft capacity limit.
- (c) Multipath fading may be substantially reduced

(d) None of these

Q35. What are the features of TDMA?

- (a) TDMA shares a single carrier frequency with several users, where each user makes use of non overlapping time slots.
- (b) Data transmission occurs in bursts.
- (c) Handoff process is much simpler
- (d) All of these

Q36. What are the features of TDMA?

- (a) Duplexers are not required, since transmission and reception occurs at different time slots.
- (b) Data transmission occurs in bursts.
- (c) Handoff process is much simpler
- (d) All of these

Q37. What is time division multiplexing?

- (a) TDD uses time instead of frequency to provide both a forward and reverse link. Multiple users share a single radio channel by taking turns in the time domain.
- (b) Data transmission occurs in bursts.
- (c) Handoff process is much simpler
- (d) None of these

Q38. What are the features of FDMA?

- (a) FDMA channel carries only one phone circuit at a time
- (b) The bandwidth of FDMA channels is relatively narrow as each channel supports only one circuit per carrier.
- (c) a & b
- (d) None of these

Q39. Why the second generation was developed?

- (a) FDMA channel carries only one phone circuit at a time
- (b) The bandwidth of FDMA channels is relatively narrow as each channel supports only one circuit per carrier.
- (c) The second – generation systems have been developed to provide higher quality signals, higher data rate for support of digital services and greater capacity.
- (d) None of these

Q40. What are second generation are available?

- (a) Global System Mobile (GSM) in Europe
- (b) Interim standard

- (c) Pacific Digital Cellular
- (d) All of these

Q41. What are second generation are available?

- (a) Interim standard-95
- (b) Interim standard
- (c) Pacific Digital Cellular
- (d) All of these

Q42. Write advantages 2G over 1G.

- (a) Natural integration with the evolving digital wireless network
- (b) Higher data rate
- (c) Flexibility for capacity expansion
- (d) All of these

Q43. What is service offered by GSM?

- (a) Telephone services
- (b) Bearer or Data services
- (c) Supplementary services
- (d) All of these

Q44. What is the function of NSS in GSM?

- (a) The NSS managing the switching function of the systems and allows the MSCs to communicate with other networks such as PSTN and ISDN.
- (b) Bearer or Data services
- (c) Supplementary services
- (d) None of these

Q45. Define the bursts.

- (a) Data is transmitted small portions called bursts.
- (b) Bearer or Data services
- (c) Supplementary services
- (d) None of these

Q46. Write types of TCH channels of GSM?

- (a) Full-rate TCH
- (b) Half-rate TCH
- (c) both a & b
- (d) None of these

Q47. What is the need guard period (space)?

- (a) Full-rate TCH
- (b) Half-rate TCH
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q48. Why Dummy burst is used?

- (a) Dummy burst is used as filter information for unused time slots on the forward link.
- (b) Half-rate TCH
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q49. Define burst formatting in GSM.

- (a) Dummy burst is used as filter information for unused time slots on the forward link.
- (b) Burst formatting adds binary data to the ciphered blocks, in order to help synchronization and equalization of the received signal.
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q50. What is the need of pilot channel?

- (a) Dummy burst is used as filter information for unused time slots on the forward link.
- (b) Burst The pilot channel is intended to provide a reference signal for all MSS within a cell provides the phase reference for coherent demodulation.
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q51. Define Piconet.

- (a) The simplest Bluetooth networks called piconet can have from two to eight nodes. Piconet is a collection of Bluetooth devices which are synchronized to the same hopping sequence.
- (b) Burst The pilot channel is intended to provide a reference signal for all MSS within a cell provides the phase reference for coherent demodulation.
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q52. What is Bluetooth?

- (a) The simplest Bluetooth networks called piconet can have from two to eight nodes. Piconet is a collection of Bluetooth devices which are synchronized to the same hopping sequence.
- (b) Bluetooth is an open specification for the short range wireless voice and data communication that's was originally developed for cable replacement in personal area networking to operate all over the world.
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q53. What is Scatternet?

- (a) The simplest Bluetooth networks called piconet can have from two to eight nodes. Piconet is a collection of Bluetooth devices which are synchronized to the same hopping sequence.
- (b) One Bluetooth devices can operate simultaneously on two piconet acting as a bridge between the two.
- (c) The guard period is used to avoid overlapping with other bursts due to different path delays and to give the transmitter time to turn on and off.
- (d) None of these

Q54. What is T1 data rate?

- (a) 1.544 Mbps
- (b) 15.44 Mbps
- (c) 544 Mbps
- (d) None of these

Q55. ISM stands as_____.

- (a) Industrial, Scientific, Medical (b) Industrial, Scientific, Matrix
(c) Inter, Scientific, Medical (d) None of these

Q55. The Fresnel zone clearance, radius of Fresnel circle at $K=4/3$:

- (a) $R \geq (d_1 d_2) / 2$ (b) $R \geq (d_1 d_2)$
(c) $R \geq (d_1) / 2$ (d) None of these

Q55. The Fresnel zone clearance, radius of Fresnel circle at $K=2/3$:

- (a) $R \geq (d_1 d_2) / 2$ (b) $R \geq (d_1 d_2)$
(c) $R \geq (d_1) / 2$ (d) None of these

Q56. The equation for ray bending is expressed as:

- (a) $\frac{1}{R} = -\frac{dn}{dh}$ (b) $\frac{1}{R} = \frac{dn}{dh}$
(c) $R = \frac{dn}{dh}$ (d) None of these

Q57. Effective earth radius is

- (a) $r' = \frac{4}{3}r$ (b) $r' = \frac{2}{3}r$
(c) $r' = \frac{1}{3}r$ (d) None of these

Q58. The frequency range for infrared link is

- (a) 300 GHz to 400THz (b) 30 GHz to 40THz
(c) 3000 GHz to 4000THz (d) None of these

Q59. _____ for microwave and VHF band.

- (a) LOS Propagation (b) Ground wave propagation
(c) Sky wav Propagation (d) none of these

Q60. The total bits per frame in T1 carrier is

- (a) 193 bits/frame (b) 192 bits/frame
(c) 194 bits/frame (d) none of these

Q61. MAC stands as

- (a) Medium Access Control (b) Introduce of the multipath reception
- (c) Multipath propagation (d) none of these

Q62. Fresnel zone clearance is

- (a) Elimination of the multipath reception (b) Introduce of the multipath reception
- (c) Multipath propagation (d) none of these

Q63. WAP stands as

- (a) Wireless Application Protocol (b) Wire-line Application Protocol
- (c) Wireless access protocol (d) none of these

Q64. WLL stands as

- (a) Wireless Local Loop (b) Wire-line Application Protocol
- (c) Wireless access protocol (d) none of these

Q64. DECT stands as

- (a) Digital Enhanced Cordless Telecommunications (b) Wire-line Application Protocol
- (c) Wireless access protocol (d) none of these