

Started on Friday, 11 March 2022, 2:30 PM

State Finished

Completed on Friday, 11 March 2022, 3:30 PM

Time taken 1 hour

Marks 22.00/32.00

Grade 27.50 out of 40.00 (69%)

Question **1**

Complete

Mark 1.00 out of 1.00

In the link design analysis the power received path loss is not a function of

- ☐ a. Distance between the transmitter and receiver
- ☐ b. Antenna Gain
- ☒ c. None of these
- ☐ d. Transmitter power

The correct answer is:

None of these

Question **2**

Complete

Mark 0.00 out of 1.00

In a wireless communication channel, a change in frequency of a EM signal causes due to

- ☒ a. Multipath effect
- ☐ b. Shadowing
- ☐ c. Reflection
- ☐ d. Doppler shift

The correct answer is:

Doppler shift

Question **3**

Complete

Mark 1.00 out of 1.00

What is full form of UMTS?

- ☐ a. Universal Mobile Telecommunication Server
- ☐ b. Universal Mobile Telephonic System
- ☐ c. Universal Mobile Telephonic Server
- ☒ d. Universal Mobile Telecommunications System

The correct answer is:

Universal Mobile Telecommunications System

Question **4**

Complete

Mark 1.00 out of 1.00

Among the following which is not a part of Base Station Subsystem (BSS)

- ☒ a. Mobile Switching Centre (MSC)
- ☐ b. Base Station Controller (BSC)
- ☐ c. Base Transceiver Station (BTS)
- ☐ d. Mobile Station (MS)

The correct answer is:

Mobile Switching Centre (MSC)

Question **5**

Complete

Mark 1.00 out of 1.00

The frequency range of IEEE 802.11b standard is

- ☒ a. 2.4 GHz
- ☐ b. 5 Gbps
- ☐ c. 5 GHz
- ☐ d. 2.4 Gbps

The correct answer is:

2.4 GHz

Question **6**

Complete

Mark 0.00 out of 1.00

Relation between system capacity (**C**) of a cellular system with frequency reuse factor (**Q**) and distance between co-channel cells (**R**)

- ☐ a. **R** increases, **Q** increases and **C** increases
- ☒ b. **R** increases, **Q** increases and **C** decreases
- ☐ c. **R** decreases, **Q** increases and **C** increases
- ☐ d. **R** increases, **Q** decreases and **C** increases

The correct answer is:

R increases, **Q** increases and **C** increases

Question **7**

Complete

Mark 1.00 out of 1.00

A network of five mobile phones for data sharing is created using Bluetooth, what is the operating frequency of this network

- ☒ a. 2.4 GHz
- ☐ b. 5 GHz
- ☐ c. None of these
- ☐ d. 200 MHz

The correct answer is:

2.4 GHz

Question **8**

Complete

Mark 0.00 out of 1.00

Among them which one is not a multicarrier modulation technique

- ☐ a. GFDM (Generalized Frequency Division Multiplexing)
- ☐ b. OFDM (Orthogonal Frequency Division Multiplexing)
- ☒ c. None of these
- ☐ d. CDMA (Code Division Multiple Access)

The correct answer is:

CDMA (Code Division Multiple Access)

Question **9**

Complete

Mark 1.00 out of 1.00

Determine the signal-to-interference ratio (SIR) in dB, for path loss $n = 3$, and $i = 1, j = 1$. There are 9 co-channel cells in cellular system.

- ☐ a. 5.3 dB
- ☒ b. 3.0 dB
- ☐ c. 4.5 dB
- ☐ d. 4.0 dB

The correct answer is:

3.0 dB

Question **10**

Complete

Mark 0.00 out of 1.00

Which of the statement is incorrect among the following

- ☐ a. The PCU (Packet Control Unit) in GPRS directs the circuit switched data to standard GSM network and packet switched data to GPRS network.
- ☐ b. The PCU (Packet Control Unit) in GPRS directs only the packet switched data to GPRS network.
- ☐ c. None of these
- ☒ d. The PCU (Packet Control Unit) in GPRS directs the circuit switched data to GPRS network and packet switched data to standard GSM network.

The correct answer is:

The PCU (Packet Control Unit) in GPRS directs the circuit switched data to standard GSM network and packet switched data to GPRS network.

Question **11**

Complete

Mark 1.00 out of 1.00

In the link design analysis, the received power is not a function of

- ☐ a. Antenna gain
- ☐ b. Path loss
- ☒ c. Doppler shift
- ☐ d. Transmitter power

The correct answer is:

Doppler shift

Question **12**

Complete

Mark 0.00 out of 1.00

The uplink and downlink frequency bands of cellular GSM system are

- ☐ a. Uplink 1710-1785 MHz, Downlink 1805-1880 MHz
- ☐ b. None of these
- ☐ c. Uplink 890-915 MHz, Downlink 935-960 MHz
- ☒ d. Uplink 935-960 MHz, Downlink 890-915 MHz

The correct answer is:

Uplink 890-915 MHz, Downlink 935-960 MHz

Question **13**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect about microcell zone concept?

- ☐ a. Reduced interference
- ☐ b. No loss in trunking efficiency
- ☒ c. More number of handoffs
- ☐ d. Increase in capacity

The correct answer is:

More number of handoffs

Question **14**

Complete

Mark 1.00 out of 1.00

A spectrum of 60 MHz is allocated to a wireless cellular system which uses 50 KHz of duplex channel for communication. For cluster size $N = 7$ and replication factor $M = 4$, calculate the total capacity offered by the cellular system.

- ☐ a. 4200
- ☐ b. 4400
- ☒ c. 4800
- ☐ d. None of these

The correct answer is:
4800

Question **15**

Complete

Mark 1.00 out of 1.00

For a roaming user who is visiting a new MSC, the IMSI (International Mobile Subscriber Identity) will be temporarily stored in

- ☐ a. HLR (Home Location Register)
- ☒ b. VLR (Visitor Location Register)
- ☐ c. None of these
- ☐ d. AUC (Authentication Center)

The correct answer is:
VLR (Visitor Location Register)

Question **16**

Complete

Mark 0.00 out of 1.00

The uplink and downlink frequency channels of GSM are separated by

- ☐ a. 50 MHz
- ☒ b. 25 MHz
- ☐ c. 45 MHz
- ☐ d. None of these

The correct answer is:

45 MHz

Question **17**

Complete

Mark 0.00 out of 1.00

Which of the statement is incorrect among the following

- ☐ a. UTMS networks has both circuit and packet switched element.
- ☒ b. None of these
- ☐ c. UTMS networks has a circuit switched element.
- ☐ d. UTMS networks has a circuit switched element.

The correct answer is:

UTMS networks has both circuit and packet switched element.

Question **18**

Complete

Mark 1.00 out of 1.00

Among the three basic modulation schemes which yields the minimum probability of error.

- ☐ a. All of these have the same probability of error
- ☒ b. BPSK (Binary Phase Shift Keying)
- ☐ c. BFSK (Binary Frequency Shift Keying)
- ☐ d. BASK (Binary Amplitude Shift Keying)

The correct answer is:

BPSK (Binary Phase Shift Keying)

Question **19**

Complete

Mark 1.00 out of 1.00

GPRS (General Packet Radio Service) is an example of

- ☐ a. 1 G
- ☒ b. 2.5 G
- ☐ c. 2 G
- ☐ d. 3 G

The correct answer is:

2.5 G

Question **20**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect

- ☒ a. In OFDM (Orthogonal Frequency Division Multiplexing), the PARP (Peak to average power ratio) is less.
- ☐ b. In OFDM (Orthogonal Frequency Division Multiplexing), the ICI (Inter-carrier-Interference) and ISI (Inter-Symbol-Interference) problem is less.
- ☐ c. None of these
- ☐ d. OFDM (Orthogonal Frequency Division Multiplexing) provides a high spectral efficiency and data rate.

The correct answer is:

In OFDM (Orthogonal Frequency Division Multiplexing), the PARP (Peak to average power ratio) is less.

Question **21**

Complete

Mark 1.00 out of 1.00

Find the value of frequency reuse factor Q of a cellular system for $i = 0, j = 2$

- ☐ a. 4.58
- ☒ b. 3.46
- ☐ c. 5.75
- ☐ d. 6.25

The correct answer is:

3.46

Question **22**

Complete

Mark 1.00 out of 1.00

Among the following which is not a part of Network Switching Subsystem (NSS)

- ☐ a. Authentication Center (AUC)
- ☐ b. Mobile Switching Centre (MSC)
- ☒ c. Base Transceiver Station (BTS)
- ☐ d. Operation Support Subsystem (OSS)

The correct answer is:

Base Transceiver Station (BTS)

Question **23**

Complete

Mark 0.00 out of 1.00

The number of sensor nodes in an Adhoc network is more than in a Wireless Sensor Network

- ☐ a. False
- ☒ b. True

The correct answer is:

False

Question **24**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect?

- ☒ a. In soft handoff, the existing connection with the Base Station (BS) must be broken before establishing a connection with a new BS.
- ☐ b. In soft handoff, a new connection is established before the old one is released.
- ☐ c. In hard handoff, the existing connection with the Base Station (BS) must be broken before establishing a connection with a new BS.
- ☐ d. In hard handoff, the mobile unit simultaneously remain connected to more than one Base Station (BS).

The correct answer is:

In hard handoff, the mobile unit simultaneously remain connected to more than one Base Station (BS).

Question **25**

Complete

Mark 1.00 out of 1.00

A base station (BS) is transmitting with a power of 25 watt at frequency $f_c = 900 \text{ MHz}$. the distance between the BS and the receiver mobile unit is 50 m. Calculate the power received in dBm by the mobile unit considering free space propagation, where both transmitting and receiving antenna has unit gain.

- ☐ a. -24.53 dBm
- ☐ b. +21.53 dBm
- ☒ c. -21.53 dBm
- ☐ d. +24.53 dBm

The correct answer is:

-21.53 dBm

Question **26**

Complete

Mark 0.00 out of 1.00

The Adhoc network is a centralized type of network

- ☐ a. False
- ☒ b. True

The correct answer is:

False

Question **27**

Complete

Mark 1.00 out of 1.00

In OFDM (Orthogonal Frequency Division Multiplexing), a set of different subcarriers overlapping in frequency domain. However, these subcarriers are

- ☐ a. designed to be in $\pm 180^\circ$ phase shift with each other.
- ☐ b. designed to be in $\pm 135^\circ$ phase shift with each other.
- ☒ c. designed to be in $\pm 90^\circ$ phase shift with each other
- ☐ d. None of these

The correct answer is:

designed to be in $\pm 90^\circ$ phase shift with each other

Question **28**

Complete

Mark 1.00 out of 1.00

If a user is in a voice call and also want to use his/her data connection uninterruptedly then which network will be preferred

- ☐ a. LTE
- ☒ b. VoLTE
- ☐ c. None of these

The correct answer is:

VoLTE

Question 29

Complete

Mark 1.00 out of 1.00

In a dense urban environment, path loss exponent $n = 4.5$ and there are six number of c channel cells in cellular system. The minimum required signal to interference ($\frac{S}{I}$) ratio 13 dB. Determine the smallest cluster size needed to maintain this minimum required ($\frac{S}{I}$;

- ☐ a. 4
- ☒ b. 3
- ☐ c. 5
- ☐ d. 2

The correct answer is:

3

Question 30

Complete

Mark 1.00 out of 1.00

Determine the capacity of a cellular system, with cluster size $N = 7$ where each cell is allocated a group of 60 channels and replication factor $M = 4$.

- ☐ a. None of these
- ☒ b. 1680
- ☐ c. 1600
- ☐ d. 1480

The correct answer is:

1680

Question **31**

Complete

Mark 1.00 out of 1.00

Determine the distance between nearest co-channel cells of a cellular system for $i = 1, j = 2$ and cell radius 2 m

- ☐ a. 4.59
- ☒ b. 9.16
- ☐ c. 7.75
- ☐ d. 10.00

The correct answer is:
9.16

Question **32**

Complete

Mark 0.00 out of 1.00

The relationship between coherence time and coherence bandwidth is

- ☒ a. $\tau_c = \frac{1}{BW^2}$
- ☐ b. $\tau_c = \frac{1}{BW}$
- ☐ c. $\tau_c = BW$
- ☐ d. None of these

The correct answer is:

$$\tau_c = \frac{1}{BW}$$

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/ [Quiz Lab1 25.03.2022 4.25PM to 4.35 PM](#)

Started on Friday, 25 March 2022, 4:25 PM

State Finished

Completed on Friday, 25 March 2022, 4:33 PM

Time taken 8 mins 5 secs

Marks 3.00/5.00

Grade 6.00 out of 10.00 (60%)

Question **1**

Complete

Mark 0.00 out of 1.00

Which of the statement is wrong among the following

- ☐ a. UTMS networks has a packet switched element.
- ☒ b. None of these
- ☐ c. UTMS networks has a circuit switched element.
- ☐ d. UTMS networks has both circuit and packet switched element.

The correct answer is:

UTMS networks has both circuit and packet switched element.

Question **2**

Complete

Mark 0.00 out of 1.00

For a roaming user who is visiting a new MSC, the IMSI (International Mobile Subscriber Identity) will be temporarily stored in

- ☐ a. None of these
- ☐ b. VLR (Visitor Location Register)
- ☐ c. AUC (Authentication Center)
- ☒ d. HLR (Home Location Register)

The correct answer is:

VLR (Visitor Location Register)

Question **3**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect

- ☐ a. In soft handoff, the existing connection with the Base station (BS) must be broken before establishing a connection with a new BS
- ☒ b. In hard handoff, the mobile unit simultaneously remain connected to more than one Base station (BS).
- ☐ c. In hard handoff, the existing connection with the Base station (BS) must be broken before establishing a connection with a new BS
- ☐ d. In soft handoff, a new connection is established before the old one is released.

The correct answer is:

In hard handoff, the mobile unit simultaneously remain connected to more than one Base station (BS).

Question **4**

Complete

Mark 1.00 out of 1.00

Which one is not a characteristics of a coherence bandwidth channel?

- ☒ a. Nonlinear phase response
- ☐ b. Linear phase response
- ☐ c. Channel bandwidth is greater than the bandwidth of the transmitted signal
- ☐ d. Equal gain over all frequencies

The correct answer is:

Nonlinear phase response

Question **5**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect

- ☐ a. In QPSK (Quadrature Phase Shift Keying), the maximum transition between two symbols yields to a phase shift of $\pm 180^\circ$
- ☐ b. In $\frac{\pi}{4}$ QPSK (Quadrature Phase Shift Keying), the maximum transition between two symbols yields to a phase shift of $\pm 135^\circ$
- ☐ c. In BPSK (Quadrature Phase Shift Keying), the maximum transition between two symbols yields to a phase shift of $\pm 180^\circ$
- ☒ d. In OQPSK (Quadrature Phase Shift Keying), the maximum transition between two symbols yields to a phase shift of $\pm 135^\circ$

The correct answer is:

In OQPSK (Quadrature Phase Shift Keying), the maximum transition between two symbols yields to a phase shift of $\pm 135^\circ$

◀ Quiz_Lab2_02.04.2022_12.10 PM to 12.20 PM

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/ [Quiz Lab2 02.04.2022 12.10 PM to 12.20 PM](#)

Started on Saturday, 2 April 2022, 12:10 PM

State Finished

Completed on Saturday, 2 April 2022, 12:19 PM

Time taken 9 mins 29 secs

Marks 3.00/5.00

Grade 6.00 out of 10.00 (60%)

Question **1**

Complete

Mark 0.00 out of 1.00

SS7 (Signalling System No. 7) protocol supports the interface between

- ☐ a. BTS and BSC
- ☐ b. BSC and MSC
- ☐ c. MS and BTS
- ☒ d. None of these

The correct answer is:
BSC and MSC

Question **2**

Complete

Mark 1.00 out of 1.00

Which of the following statement is incorrect

- ☐ a. OFDM (Orthogonal Frequency Division Multiplexing) provides a high spectral efficiency and data rate.
- ☐ b. None of these
- ☒ c. In OFDM (Orthogonal Frequency Division Multiplexing), the PARP (Peak to average power ratio) is less.
- ☐ d. In OFDM (Orthogonal Frequency Division Multiplexing), the ICI (Inter-carrier-Interference) and ISI (Inter-Symbol-Interference) problem is less.

The correct answer is:

In OFDM (Orthogonal Frequency Division Multiplexing), the PARP (Peak to average power ratio) is less.

Question **3**

Complete

Mark 1.00 out of 1.00

Which one among the following statement is wrong

- ☒ a. In both circuit and packet switching networks, billing is based on the amount of transmitted data.
- ☐ b. In packet switching network, billing is based on the amount of transmitted data.
- ☐ c. In circuit switching network, billing is based on the duration of the connection.
- ☐ d. GPRS is a packet switching network

The correct answer is:

In both circuit and packet switching networks, billing is based on the amount of transmitted data.

Question **4**

Complete

Mark 1.00 out of 1.00

The bandwidth of each ARFCN (Absolute Radio Frequency Channel Number) channel and number of subscriber supported by each channel is

- ☐ a. None of these
- ☐ b. 250 KHz, 8 users
- ☐ c. 25 MHz, 6 users
- ☒ d. 200 KHz, 8 users

The correct answer is:
200 KHz, 8 users

Question **5**

Complete

Mark 0.00 out of 1.00

The uplink and downlink frequency channels of GSM are separated by

- ☒ a. 25 MHz
- ☐ b. 45 MHz
- ☐ c. 50 MHz
- ☐ d. None of these

The correct answer is:
45 MHz

[◀ Quiz_Lab3_18.04.2022_12.35 PM to 12.40 PM](#)

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/ [Quiz Lab4 21.04.2022 4.15 PM to 4.20 PM](#)

Started on Thursday, 21 April 2022, 4:16 PM

State Finished

Completed on Thursday, 21 April 2022, 4:21 PM

Time taken 5 mins

Marks 4.00/5.00

Grade 8.00 out of 10.00 (80%)

Question **1**

Complete

Mark 0.00 out of 1.00

Which layer in the protocol stack is targeted for jamming attack?

- ☐ a. Application Layer
- ☐ b. Transport Layer
- ☐ c. MAC Layer
- ☒ d. Network Layer

The correct answer is:

MAC Layer

Question **2**

Complete

Mark 1.00 out of 1.00

The barcodes needs Line of Sight (LoS) communication to be scanned by the barcode reader?

- ☒ a. True
- ☐ b. False

The correct answer is:

True

Question **3**

Complete

Mark 1.00 out of 1.00

Wireless networks are same as computer networks, that uses radio frequency channels as their _____ for communication.

- ☐ a. CDMA
- ☐ b. TDMA
- ☐ c. Media access control
- ☒ d. Physical media

The correct answer is:

Physical media

Question **4**

Complete

Mark 1.00 out of 1.00

An Radio Frequency Identifier (RFID) reader, consists of how many components?

- ☐ a. Two
- ☐ b. One
- ☒ c. Three
- ☐ d. Four

The correct answer is:

Three

Question **5**

Complete

Mark 1.00 out of 1.00

Which layer of the protocol stack is targeted for wormhole attack?

- ☐ a. Transport Layer
- ☐ b. MAC Layer
- ☒ c. Network Layer
- ☐ d. Application Layer

The correct answer is:

Network Layer

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/ [Quiz Lab5 28.04.2022 4.40 PM to 4.45 PM](#)

Started on Thursday, 28 April 2022, 4:40 PM

State Finished

Completed on Thursday, 28 April 2022, 4:45 PM

Time taken 5 mins 1 sec

Marks 5.00/5.00

Grade **10.00** out of 10.00 (**100%**)

Question **1**

Complete

Mark 1.00 out of 1.00

A transceiver module in a wireless sensor network contains which component internally?

- ☒ a. Antennas
- ☐ b. None of these
- ☐ c. Electrodes
- ☐ d. Wires

The correct answer is:

Antennas

Question **2**

Complete

Mark 1.00 out of 1.00

Optical communication needs line of sight for communication between transmitter and receiver.

- ☒ a. True
- ☐ b. False

The correct answer is:

True

Question **3**

Complete

Mark 1.00 out of 1.00

Sound Navigation and Ranging (SONAR) technology uses _____ for communication.

- ☐ a. LASER
- ☐ b. Microwaves
- ☒ c. Ultrasonic waves
- ☐ d. Infrared waves

The correct answer is:

Ultrasonic waves

Question **4**

Complete

Mark 1.00 out of 1.00

The major constraint in a mobile sensor network (MSN) _____

- ☐ a. Bandwidth Management
- ☒ b. Mobility Management
- ☐ c. Power Management
- ☐ d. Heterogeneity

The correct answer is:

Mobility Management

Question **5**

Complete

Mark 1.00 out of 1.00

SYN flooding is an _____ layer attack.

- ☐ a. Network
- ☒ b. Transport
- ☐ c. Data Link
- ☐ d. Application

The correct answer is:

Transport

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Started on Monday, 2 May 2022, 1:00 PM

State Finished

Completed on Monday, 2 May 2022, 1:05 PM

Time taken 5 mins 1 sec

Marks 3.00/5.00

Grade 6.00 out of 10.00 (60%)

Question **1**

Complete

Mark 1.00 out of 1.00

Which among them has the strongest wireless security?

- ☒ a. WPA3 (Wi-Fi Protected Access 3)
- ☐ b. WPA2 (Wi-Fi Protected Access 2)
- ☐ c. WPA (Wi-Fi Protected Access)
- ☐ d. WEP (Wireless Equivalent Privacy)

The correct answer is:

WPA3 (Wi-Fi Protected Access 3)

Question **2**

Complete

Mark 1.00 out of 1.00

Among the following statements which one is incorrect

- ☒ a. Cellular networks are based on distributed routing and Adhoc networks are based on centralized routing.
- ☐ b. High cost and time of deployment (cellular network) and Quick and cost-effective deployment (MANET)
- ☐ c. None of these
- ☐ d. Cellular networks are based on reuse of frequency spectrum through geographical channel reuse

The correct answer is:

Cellular networks are based on distributed routing and Adhoc networks are based on centralized routing.

Question **3**

Complete

Mark 0.00 out of 1.00

In a GPRS network, Serving GPRS Support Node is the equivalent of _____ system in GSM.

- ☒ a. VLR
- ☐ b. BSC
- ☐ c. MSC
- ☐ d. AuC

The correct answer is:

MSC

Question **4**

Complete

Mark 0.00 out of 1.00

A universal Mobile Telecommunication System (UMTS) is a _____ network.

- ☐ a. 3G
- ☐ b. 2.5G
- ☐ c. 2G
- ☒ d. 4G

The correct answer is:

3G

Question **5**

Complete

Mark 1.00 out of 1.00

Universal Mobile Telecommunications System (UMTS) is based on _____ multiple access technique.

- ☐ a. SDMA
- ☐ b. TDMA
- ☐ c. FDMA
- ☒ d. CDMA

The correct answer is:

CDMA

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