

Wireless Network and Mobile Computing Test II

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Questions

_____ supports the operation and maintenance of GSM.

- ☐ BSS
- ☒ NSS
- ☐ OSS
- ☐ MSC

Clear selection

For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?

- ☒ $S=k*N$
- ☐ $S=k/N$
- ☐ $S=N/k$
- ☐ $S=k \text{ power } N$

Clear selection



Envelope of the sum of two quadrature Gaussian noise signal obeys _____ distribution.

- ☐ Rayleigh
- ☒ Inverse Gaussian
- ☐ Nakagami
- ☐ Gamma

Clear selection

Which of the following combine packets for connection establishment and connection release with user data packets?

- ☒ Transaction oriented TCP
- ☐ Indirect TCP
- ☐ Snooping TCP
- ☐ None of the above

Clear selection

_____ manages the switching function in GSM.

- ☐ BSS
- ☐ NSS
- ☐ OSS
- ☒ MSC

Clear selection



Which of the following is not a channel parameter?

- ☒ Coherence time
- ☐ Rms delay spread
- ☐ Doppler spread
- ☐ Bandwidth

Clear selection

Coherence time refers to

- ☐ Time required to attain a call with the busy base station
- ☒ Time required for synchronization between the transmitter and the receiver
- ☐ Minimum time for change in magnitude and phase of the channel
- ☐ None of the above

Clear selection

For a Rayleigh fading signal, mean and median differ by _____

- ☐ 2 dB
- ☒ 10 dB
- ☐ 0.55 dB
- ☐ 100 dB

Clear selection



Radio signals generally propagate according to the following mechanisms:

- ☐ Modulation, Amplification, Scattering
- ☐ Reflection, Diffraction, Scattering
- ☐ Amplification, Diffraction, Modulation
- ☐ Reflection, Amplification, Diffraction

Adjacent channel interference can be minimized through_____

- ☒ Changing frequency of base stations
- ☐ Carefully filtering and channel assignments
- ☐ Increasing number of base stations
- ☐ Increasing number of control channels

Clear selection

Co-channel reuse ratio depends upon

- ☐ Radius of the cell
- ☐ Distance between the centers of the co channel cells
- ☐ Frequency allocation of nearest cells
- ☒ Both a and b

Clear selection



Which of the following is the drawback for cordless telephones?

- ☐ Security
- ☐ Wireless technology
- ☒ Limited coverage area
- ☐ Mobile

Clear selection

The presents a consistent data format to the higher layers of the WAP protocol stack.

- ☐ Wireless Application Environment(WAE)
- ☐ Wireless Datagram Protocol(WDP)
- ☐ Wireless Transport Layer Security(WTLS)
- ☒ Wireless Transaction Protocol(WTP)

Clear selection

Which of the following statements is correct about the FHSS?

- ☐ FHSS is a type of narrowband signal
- ☐ It uses the 78 frequency in the 2.4 GHz
- ☐ It is referred as Frequency Hopping Spread Spectrum
- ☒ All of the above

Clear selection



Why wireless communication is used?

- ☐ It enables billions of people to connect to the Internet
- ☐ Lowers the cost of network infrastructure
- ☐ Makes services more inexpensive
- ☒ All of the mentioned

Clear selection

Which of the following technology distributes the coverage of the cell and extends the cell boundary to hard-to-reach places?

- ☐ Sectoring
- ☒ Cell splitting
- ☐ Micro cell zone concept
- ☐ Scattering

Clear selection

What is the set of possible carrier frequencies in FH-SS?

- ☐ Hopset
- ☐ Symbols
- ☒ Chips
- ☐ Event

Clear selection



The GSM technology uses a combination of multiplexing techniques.

- ☐ FDMA and TDMA
- ☐ SDMA and FDMA
- ☒ SDMA and TDMA
- ☐ FDMA and CDMA
- ☐ Other:

Clear selection

Consider the following statements:

1. Bluetooth can be used in fax, telephones, Global Positioning System (GPS) receivers, and video game consoles.
2. Bluetooth is used as a wireless communication with PC input and output devices like mouse, keyboard and printer.

Which of the statements given above is/are correct?

- ☐ Only 1
- ☒ Only 2
- ☐ Both 1 and 2
- ☐ Neither 1 nor 2

Clear selection

Antenna's efficiency is given by the ratio of _____

- ☐ Losses
- ☐ Physical aperture to effective aperture
- ☐ Signal power to noise power
- ☒ Effective aperture to physical aperture

Clear selection



Computers were invented for performing only high-end useful computations. However, it is no understatement that they have taken over our world today. The internet, for example, is ubiquitous. Many believe that the internet itself is an unintended consequence of the original invention. With the advent of mobile computing on our phones, a whole new dimension is now enabled. One is left wondering if all these developments are good or, more importantly, required. Which of the statement(s) below is/are logically valid and can be inferred from the above paragraph?

(i) The author believes that computers are not good for us.

(ii) Mobile computers and the internet are both intended inventions

- ☐ (i) only
- ☒ (ii) only
- ☐ both (i) and (ii)
- ☐ neither (i) nor (ii)

Clear selection

I-TCP and Snooping TCP does not help much if a mobile host gets

- ☐ Out of coverage area
- ☒ Disconnected
- ☐ Battery power low
- ☐ None of the above

Clear selection



Mobile IP provides two basic functions

- ☐ Route discovery and registration
- ☒ Agent discovery and registration
- ☐ IP binding and registration
- ☐ None of the above

Clear selection

In a typical mobile phone system with hexagonal cells, it is forbidden to reuse a frequency band in adjacent cells. If 840 frequencies are available, how many can be used in a given cell?

- ☐ 280
- ☐ 210
- ☒ 140
- ☐ 120

Clear selection

Which one of the following can help in avoiding the interferences between the neighboring base station?

- ☐ Assigning different group of channels
- ☐ Using transmitters with the different power level
- ☐ Using different antennas
- ☒ All of the above

Clear selection



M-TCP wants to improve overall throughput to

- ☐ to lower the delay
- ☐ to maintain end-to-end semantics of TCP
- ☐ to provide a more efficient handover
- ☒ All of the above

Clear selection

Determine no of cells in cluster when $i=2$ and $j=4$

- ☒ 7
- ☐ 14
- ☐ 28
- ☐ 35

Clear selection

A very useful extension of TCP is the use of

- ☐ Buffering packets
- ☐ Congestion control
- ☐ Selective retransmission
- ☒ All of the above

Clear selection



Consider a wireless communication link between a transmitter and a receiver located in free space, with finite and strictly positive capacity. If the effective areas of the transmitter and the receiver antennas, and the distance between them are all doubled, and everything else remains unchanged, the maximum capacity of the wireless link

- ☐ increases by a factor of 2
- ☐ decreases by a factor of 2
- ☐ remains unchanged
- ☐ increases by a factor of root 2

The base station covers a specific area that is called a __

- ☐ Cell
- ☐ Tessellate
- ☐ Mobile station
- ☐ None of the above

Which of the reception problems below that is not due to multipath?

- ☐ Delayed spreading
- ☐ Rayleigh fading
- ☐ Random Doppler shift
- ☐ Slow fading



Which of the following subsystem provides radio transmission between mobile station and MSC?

- ☐ BSS
- ☐ NSS
- ☐ OSS
- ☐ BSC

Challenges of mobile computing include____

- ☐ Low Security
- ☐ Ad hoc Networking
- ☐ Shared medium
- ☐ All of the above

Traffic intensity is expressed in

- ☐ Erlang
- ☐ Erlangs /MHz /km²
- ☐ λ / sec
- ☐ dB/sec



Which method of cellular network assists in minimizing the co-channel interference associated with the angle of degree?

- ☐ Cell Splitting
- ☐ Cell Sectoring
- ☐ Cell Segmentation & Dualization
- ☐ None of the above

Path loss in free space model is defined as difference of _____

- ☐ Effective transmitted power and gain
- ☐ Effective received power and distance between T-R
- ☐ Gain and received power
- ☐ Effective transmitter power and receiver power

Consider the following statements S1 and S2 :

S1 : A hard handover is one in which the channel in the source cell is retained and used for a while in parallel with the channel in the target cell.

S2: A soft handover is one in which the channel in the source cell is released and only then the channel in the target cell is engaged.

- ☐ S1 is true and S2 is not true
- ☐ S1 is not true and S2 is true
- ☐ Both S1 and S2 are true
- ☐ Both S1 and S2 are not true



What is a frequency reuse factor for N number of cells in a system?

- ☐ N
- ☐ N raised to 2
- ☐ $2 \times N$
- ☐ $1/N$

Capacity of a cellular system is directly proportional to _____

- ☐ Number of cells
- ☐ Number of times a cluster is replicated
- ☐ Number of Base stations
- ☐ Number of users

A spectrum of 30 MHz is allocated to a cellular system which uses two 25 KHz simplex channels to provide full duplex voice channels. What is the number of channels available per cell for 4 cell reuse factor?

- ☐ 150 channels
- ☐ 600 channels
- ☐ 50 channels
- ☐ 85 channels



Which effect is widespread in adjacent-channel interference especially after the reception of a weak signal by a mobile user from the base-station?

- ☐ Near-far effect
- ☐ Doppler's effect
- ☐ Capture effect
- ☐ Kendall effect

Which of the following can be considered as the primary function of snooping TCP?

- ☐ To buffer data close to the mobile host to perform fast local retransmission in case of packet loss.
- ☐ Congestion control
- ☐ Flow control
- ☐ None of the above

If the system is designed with the usage of hexagonal-shaped cells, how are the base-stations located?

- ☐ At the centre of cell
- ☐ At the edge of cell
- ☐ At the corner of the cell
- ☐ All of the above



The network and switching subsystem includes which of the following entities.

- i. Mobile Switching Center(MSC)
- ii. Operation and Maintenance Center(OMC)
- iii. Visitor Location Register(VLR)
- iv. Authentication Center(AUC)

- ☐ i, ii and iii only
- ☐ ii, iii and iv only
- ☐ i, iii and iv only
- ☐ All i, ii, iii and iv

What does path loss exponent indicates?

- ☐ Rate at which path loss decreases with distance
- ☐ Rate at which path loss increases with distance
- ☐ Rate at which path loss decreases with power density
- ☐ Rate at which path loss increases with power density

Interference in frequency bands may lead to

- ☐ Cross talk
- ☐ Missed calls
- ☐ Blocked calls
- ☐ All of the above



Which of the following problem occur due to adjacent channel interference?

- ☐ Cross talk
- ☐ Missed calls
- ☐ Blocked calls
- ☐ Near-far effect

Which hand-off stage deals with the relinquishment of unnecessary frequency channels by keeping the availability for other mobile users?

- ☐ Initialization
- ☐ Resource Reservation
- ☐ Call Execution
- ☐ Call Completion

All transactions must satisfy the____

- ☐ Consistency
- ☐ Availability
- ☐ ACID Property
- ☐ All of the above



Which of the following is the base of most mobile communications?

- ☐ GSM
- ☐ GPRS
- ☐ CDMA
- ☐ None of the above

The overlapping portion of two piconets is called____

- ☐ Piconet
- ☐ Ad hoc piconet
- ☐ Scatter net
- ☐ All of the above

Relation between wavelength and carrier frequency is _____

- ☐ $\lambda = c/f$
- ☐ $\lambda = c * f$
- ☐ $\lambda = f/c$
- ☐ $\lambda = 1/f$



Consider the following statements:

1. Wireless Local Loop is used in the supply of broadband Internet to telecommunications customers.
2. Roaming abilities are very high in the Wireless Local Loop as compare with cellular network.

Which of the statements given above is/are correct?

- ☐ only 1
- ☐ only 2
- ☐ both 1 and 2
- ☐ neither 1 nor 2

Which of the following is associated with the handoff in first generation analog cellular systems?

- ☐ Breathing cell
- ☐ Locator receiver
- ☐ MAHO
- ☐ Cell dragging

What is the Doppler frequency for 1850MHz transmitter frequency and mobile is moving at 60Km/h ?

- ☐ 370.37 MHz
- ☐ 370.37KHz
- ☐ 370.37Hz
- ☐ 37.03 KHz



State whether the following statements about the serving GPRS Support Node(SGSN) are True or False.

- i. A SGSN is at the same hierarchical level as the MSC.
- ii. SGSN sends queries to HLR to obtain profile data of GPRS subscribers.

- ☐ i-True, ii-False
- ☐ i-True, ii-True
- ☐ i-False, ii-True
- ☐ i. False, ii-False

If a 20MHz of total spectrum is allocated for a duplex wireless cellular system each simplex channel has 25 KHz RF bandwidth, find number of duplex channels

- ☐ 40
- ☐ 400
- ☐ 20
- ☐ 200

Which one of the following enables us to use the entire bandwidth simultaneously?

- ☐ TDMA
- ☐ CDMA
- ☐ FDMA
- ☐ All of the above



Determine frequency reuse ratio for cell radius 0.8km & co- channel cell distance 6.4Km

- ☐ 2
- ☐ 4
- ☐ 6
- ☐ 8

The exponential growth of the congestion window in the slow start mechanism refers to

- ☐ Increases the congestion window every time the acknowledgments come back
- ☐ Doubles the congestion window every time the acknowledgments come back
- ☐ Triples the congestion window every time the acknowledgments come back
- ☐ None of the above

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