

Selected multiple-choice questions for Mobile Communications

1. Why are waves with a very low frequency not used for data transmission in computer networks?

A	They require large antennas, have lower bandwidth and are difficult to manage in cells and frequency reuse schemes	X
B	They require small antennas and have higher bandwidth	
C	They do not penetrate material	

2. Is it possible to transmit a digital signal, e.g., coded as square wave as used inside a computer, using radio transmission without any loss?

A	Yes lossless transmission of square wave-coded signals is common	
B	No, since lossless transmission of analogue signals is not possible and, in addition, square waves need to be represented by infinite sine waves for transmission	X
C	No, since we cannot produce square wave-coded digital signals	

3. What are the main reasons for using cellular systems?

A	The main reasons are to support many users, low power and localization	X
B	The main reason is profit maximization for service providers	
C	The main reasons are user localization and frequency reuse	

4. Hidden terminals in Aloha...

A	Do not exist, as the scheme prevents their existence	
B	Wait for a network signal to start transmission	
C	Do not care about other terminals and may cause collisions	X

5. Considering duplex channels, what are alternatives for implementation in wireless networks?

A	Wireless networks can use different frequencies, different time slots or even different codes to implement duplex channels	X
B	Wireless networks can use different frequencies to implement duplex channels	
C	Wireless networks can use different time slots to implement duplex channels	

6. In TDMA, interference happens if

A	Senders transmit data at the same time	X
B	Senders do not transmit data at the same time	
C	Senders transmit data at the same frequency	

7. In FDMA, interference happens if

A	Senders transmit data using non-orthogonal codes	
B	Senders transmit data at the same frequency	X
C	Senders transmit data at the same time	

8. In CDMA, interference happens if

A	Senders transmit data at the same time	
B	Senders transmit data using non-orthogonal codes	X
C	Senders transmit data at the same frequency	

9. Standard GSM systems support a data rate of

A	9.6 kbps	X
B	64 kbps	
C	128 kbps	

10. DECT supports

A	Wide area coverage	
B	Local coverage	X
C	Medium coverage	

11. UMTS supports a bandwidth of

A	1 Mbps	
B	384 kbps	X
C	9.6–50 kbps	

12. VLR and HLR in GSM systems are

A	Gateways for outer connectivity	
B	Databases of registered users	X
C	Routers and call management servers	

13. GPRS is an extension to GSM that operates

A	Circuit-switched	
B	Packet-switched	X
C	Both circuit and packet switched	

14. Main reasons for a handover in GSM are

A	Weak signal in cell and heavy cell load	X
B	Heavy cell load	
C	Mobile station moves from cell to cell	

15. GPRS needs the following parts of a typical GSM

A	Does not need any part of GSM	
B	The packet-switched core for data transmission	
C	The circuit-switched core for localization and authentication	X

16. Trunked radio systems are attractive to authorities and disaster relief teams

A	Because of special features like very fast connection setup, group calls, paging, reliable and fast messaging and ad-hoc capabilities	X
B	Because they are cheap implementations of GSM	
C	Because of cheap equipment	

17. IMT-2000 / 3G systems operate at

A	1 GHz	
B	2 GHz	X
C	3 GHz	

18. Main features of 3G include (in comparison to 2G)

A	Better voice quality	
B	Higher data rates	
C	Better voice quality and higher and flexible data rates	X

19. LTE stands for

A	Lite Technical Edge	
B	Long Term Evolution	X
C	Linear Technological Evolution	

20. Key difference in LTE (compared with older systems)

A	There is no more circuit switching	X
B	There is high data rate up to 100 Mbps	
C	There is very low RTT up to 10 ms	