

Unit 4 - Week 1

Course outline

How does an NPTEL online course work?

Week 0

Week 1

- Lecture 01: Evolution of wireless communication
- Lecture 02: Evolution of wireless communication standards from 2G to 5G
- Lecture 03: Evolution of wireless communication standards from 2G to 5G (Contd.)
- Lecture 04: Evolution of wireless communication standards from 2G to 5G (Contd.)
- Lecture 05: Evolution of wireless communication standards from 2G to 5G (Contd.)
- Lecture Materials
- Quiz : Assignment 1
- Week 1 Feedback Form

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Tutorial Materials

DOWNLOAD VIDEOS

Text Transcripts

Solutions

Assignment 1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-04, 23:59 IST.

1) The peak data rate transmission required to support video streaming applications supported by HSPDA is in the range of 1 point

- a. 0.1 Mbps
- b. 1 Mbps
- c. 10 Mbps
- d. 100 Mbps

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

2) The chip rate used in 3G mobile standard is 1 point

- a. 3.84 MHz
- b. 38.4 MHz
- c. 384 MHz
- d. 3.84 GHz

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

3) The advantages of using GMSK as the modulation scheme in mobile communication are: 1 point

- a. Low spectral leakage
- b. Low PAPR
- c. High Spectral Efficiency
- d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.

4) In LTE-Advanced, a maximum of how many spatial data streams can be accessed using multi-antenna technique? 1 point

- a. 4
- b. 8
- c. 16
- d. 256

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

5) In a 10-cell mobile network with a total of 100 users, each user receives error-free data at an average rate of 2 Mbps. If the channel bandwidth is 10 MHz, find the downlink cell spectral efficiency of the system 1 point

- a. 1 bps/Hz/cell
- b. 1.5 bps/Hz/cell
- c. 2 bps/Hz/cell
- d. 3 bps/Hz/cell

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

6) The minimum transmit time interval (TTI) specified for 3GPP LTE is 1 point

- a. 1 μ s
- b. 10 μ s
- c. 1 ms
- d. 10 ms

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

7) Turbo code was first introduced in 1 point

- a. 1G
- b. 2G
- c. 3.5G/3.9G
- d. 4G

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.

8) In a mobile network, a user received error-free 10 Mbits of data over an active session of 5 seconds. The channel bandwidth of the system is 2 MHz. Find the normalized throughput of the user 1 point

- a. 0.5 bits/s/Hz
- b. 1 bits/s/Hz
- c. 1.5 bits/s/Hz
- d. 2 bits/s/Hz

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

9) Among the following, which is/are the newly developed tools for providing improved service in upcoming 5G mobile standard? 1 point

- a. Beamforming using Massive MIMO
- b. Use of small cell
- c. Use of OFDM
- d. Use of high frequency bandwidths (mmWave)

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
a.
b.
d.

10) Among the following, which one is **NOT** a main component of the fourth generation (4G) mobile networks? 1 point

- a. Higher order modulation
- b. Use of OFDM
- c. Use of multiple antenna
- d. Use of spreading codes for inter-user interference cancellation

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

11) In order to provide seamless service, the interruption time for intra-frequency and inter-frequency (within a spectrum band) handover should be 1 point

- a. 10 ms and 40 ms respectively
- b. 27.5 ms and 40 ms respectively
- c. 37.5 ms and 50 ms respectively
- d. 50 ms and 100 ms respectively

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

12) Among the following, which technologies will be potentially used to realize the huge demand of throughput and high-quality services specified in 5G ? 1 point

- a. Use of GMSK
- b. Reduction in cell size
- c. Use of Massive MIMO
- d. All of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.
c.

13) Following are statements related to cellular communication: 1 point

- i. 1G used analog communication.
- ii. 2G standard can support both voice and data communication.
- iii. GPRS is also known as 2.5G.
- iv. OFDMA was introduced in 3G.
- v. Massive MIMO was introduced in 4G

Choose the correct option from below about the correctness of the above statements

- a. (i), (ii), (iii) and (iv) are correct.
- b. (i) and (iii) are correct.
- c. (i), (iii) and (v) are correct.
- d. (i), (iii), (iv) and (v) are correct.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
b.

14) Which of the following digital modulation scheme is **NOT** specified to be used in 3GPP LTE ? 1 point

- a. QPSK
- b. 16 QAM
- c. 64 QAM
- d. 256 QAM

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

15) Classify the following keywords related to GSM and WCDMA standards of mobile communication: 1 point

Packet scheduling; Frequency reuse >1; Bandwidth=200 KHz; Rake receiver.

- a. GSM:- Packet scheduling, Frequency reuse >1; WCDMA:- Bandwidth=200 KHz, Rake receiver.
- b. GSM:- Bandwidth=200 KHz, Rake receiver; WCDMA:- Packet scheduling, Frequency reuse >1.
- c. GSM:- Bandwidth=200 KHz, Frequency reuse >1; WCDMA- Rake receiver, Packet scheduling.
- d. GSM- Rake receiver, Packet scheduling; WCDMA- Bandwidth=200 KHz, Frequency reuse \geq 1.

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
c.