

SSY145 Wireless Networks

Quiz A11 Answer Key

Date: May 28, 2020

The solutions are marked in **boldface**.

1. What is(are) the challenge(s) related to positioning in GPS receiver equipped mobile devices?

(a) **GPS is not supported well in urban and indoor scenarios**

Motivation: This is due to penetration losses.

(b) Mobile device requires to communicate with the GPS satellite which takes a lot of energy.

Motivation: Mobile device never communicates with the satellite.

(c) GPS fails in outdoors

Motivation: GPS works comparatively better outdoors.

(d) There are no challenges, the device will position accurately everywhere and always.

Motivation: There are some challenges for GPS such as precision, coverage, availability under bad weather conditions or other factors.

2. What is/are true about farfield patterns?

(a) **The farfield distance depends both on the size of the antenna and the wavelength**

(b) Small antennas have a long farfield distance

Motivation: Small antennas have a short farfield distance

(c) Large antennas have a short farfield distance

Motivation: Large antennas have a long farfield distance

(d) The radiated pattern of an antenna has a shape that never change with increasing distance

Motivation: Only at long distances

3. Which of the following is/are true about channel models?

(a) Velocity of device is the major factor of delay spread.

Motivation: Distance to travel is the major factor of delay spread.

(b) The UMi usually has higher base station antenna correlation than UMa.

Motivation: The UMa usually has higher base station antenna correlation than UMi.

(c) Angles of departure/arrival of all RF paths are the same at a given location in real life.

Motivation: Device antenna can be arbitrary angled towards RF paths in real life.

- (d) **Channel emulator adds many characteristics to help recreating different channel scenarios**

Motivation: Such as doppler shift and delay spread...

4. What is/are true when doing presentations as a group?

- (a) It is not necessary to define the tasks clearly. In the end everything can be merged together.

Motivation: Each group member should have clearly defined tasks.

- (b) **All team members should know the plan.**

- (c) Everyone should introduce himself.

Motivation: The first speaker should introduce everyone in the group.

- (d) **The final speaker will conclude the entire presentation.**