

SSY145 Wireless Networks

Quiz A8 Answer Key

Date: May 7, 2020

The solutions are marked in **boldface**.

1. Which of the following statements is/are correct about optical network security?
 - (a) **Existing models of physical layer impairments are too naive to identify the complex effects of a range of attacks.**
 - (b) Machine learning techniques are found useful because they are able to jointly analyze multiple monitoring parameters to identify security breaches.
 - (c) Machine learning techniques still need a deeper scalability analysis.
 - (d) The artificial neural network is always capable of detecting all the attacks correctly.
Motivation: Sometimes it might classify the attacks in the wrong attack category.
2. Which of the following can be used to improve spectral efficiency?
 - (a) **Higher-order modulation**
 - (b) **Dual Polarization & XPIC**
 - (c) MIMO
 - (d) **High performance antennas**
3. Which of the following statements is/are true about atmospheric attenuation?
 - (a) **The 60 GHz band is suitable for communication between satellites.**
Motivation: True. Since the oxygen line is around 60 GHz signals, there is high attenuation in this frequency on earth. But since the satellites are in an oxygen-free environment, the frequency is perfect to use and won't interfere with anything on earth.
 - (b) The frequency range up to 20 GHz has low attenuation and is suitable for communication between ground station and satellite.
 - (c) The attenuation in oxygen is the worst at around 60 GHz.
 - (d) None of the above.
4. Which of the following is/are true about low earth orbit?
 - (a) Medium data quantities / low data rate
Motivation: True for deep space orbit.
 - (b) **Large data quantities / high data rate**
 - (c) **Small coverage area / short connection time**
 - (d) Large coverage area / long connection time
Motivation: True for deep space orbit.