

KNOWLEDGE PROBE 3: INTRODUCTION TO WIRELESS TECHNOLOGY

Propagation of Radio Waves

Learning Objectives

1. Distinguish between the types of radio wave propagation.
 2. Distinguish between reflection, refraction, and diffraction.
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1. Which of the following condition(s) must exist in order for a radio wave to be reflected?
 - a. There must be a large surface area
 - b. The object must be a conductor
 - c. Both of the above
 - d. None of the above
 2. Radio waves will pass through non-conducting walls and objects.
 - a. True
 - b. False
 3. Refraction is the
 - a. Absorption of a wave
 - b. Bending of a wave
 - c. Same as reflection
 - d. Scattering of a wave
 4. What mode of propagation relies on refraction?
 - a. Ground wave
 - b. Microwaves
 - c. Sky wave
 - d. Space wave
 5. What frequency range of signals relies on ground waves?
 - a. Above 1 GHz
 - b. Above 3 MHz
 - c. Below 3 MHz
 - d. From the 3 to 30 MHz range
 6. What is the main benefit of sky waves?
 - a. Improved reliability of communications
 - b. Increased security of communications
 - c. Long distance communications
 - d. Lower equipment costs



7. What causes refraction of radio waves?
 - a. Atmosphere
 - b. Ionosphere
 - c. Meteor showers
 - d. Pollution

8. Line of sight (LOS) communications means that
 - a. Reflected signals are OK
 - b. Refracted signals work fine
 - c. There should be no objects between the transmitting and receiving antennas
 - d. Transmitting and receiving antennas must “see” one another

9. Radio waves with frequencies above about 50 MHz pass through the ionosphere.
 - a. True
 - b. False

10. What is the distance to the horizon for a radio wave radiated from an antenna tower 300 feet high?
 - a. 17.3 miles
 - b. 24.5 miles
 - c. 33.6 miles
 - d. 47.2 miles