1. Which mode of propagation is primarily affected by the curvature of the Earth?
a) Ground wave propagation
b) Sky wave propagation
c) Space wave propagation
d) Tropospheric propagation

Answer: a) Ground wave propagation
Explanation: Ground wave propagation involves the transmission of radio waves along the surface of the Earth, and its effectiveness is influenced by the curvature of the Earth.

2. What is the primary mechanism behind sky wave propagation?
a) Reflection by the Earth’s surface
b) Refraction and reflection by the ionosphere
c) Absorption by atmospheric phenomena
d) Scattering by clouds

Answer: b) Refraction and reflection by the ionosphere
Explanation: Sky wave propagation occurs when radio waves are refracted and reflected back to Earth by the ionosphere, an electrically charged layer in the Earth’s upper atmosphere.

3. Which factor is responsible for the tilting of wave fronts in ground wave propagation?
a) Reflection by the ionosphere
b) Ground losses
c) Absorption by atmospheric phenomena
d) Scattering by objects on the ground

Answer: b) Ground losses

Explanation: Ground losses in ground wave propagation cause the wave fronts to tilt, affecting the direction of propagation.

4. What is the critical frequency related to in sky wave propagation?
a) Maximum usable frequency
b) Minimum usable frequency
c) Frequency at which scattering occurs
d) Frequency at which super refraction occurs

Answer: a) Maximum usable frequency
Explanation: The critical frequency is the highest frequency that can be refracted back to Earth by the ionosphere. It determines the maximum usable frequency (MUF) for sky wave propagation.

5. Which mode of propagation is primarily affected by super refraction?
a) Ground wave propagation
b) Sky wave propagation
c) Space wave propagation
d) Tropospheric propagation

Answer: d) Tropospheric propagation
Explanation: Super refraction, where radio waves are bent downward by a stronger-than-normal atmospheric gradient, primarily affects tropospheric propagation.

6. Which type of propagation is most susceptible to shadowing effects by hills and buildings?
a) Ground wave propagation
b) Sky wave propagation

c) Space wave propagation
d) Tropospheric propagation

Answer: c) Space wave propagation
Explanation: Space wave propagation, which involves line-of-sight transmission between antennas, is most susceptible to shadowing effects by hills and buildings because obstacles can obstruct the direct path between the transmitter and receiver.

7. What is the term used to describe the variation of field strength with height in space wave propagation?
a) Super refraction
b) Tropospheric scatter
c) Fresnel zone clearance
d) Knife-edge diffraction

Answer: c) Fresnel zone clearance
Explanation: Fresnel zone clearance refers to the variation of field strength with height in space wave propagation, particularly in relation to the clear path between the transmitter and receiver.

8. Which layer of the atmosphere plays a significant role in sky wave propagation?
a) Troposphere
b) Stratosphere
c) Ionosphere
d) Mesosphere

Answer: c) Ionosphere

Explanation: The ionosphere, located in the Earth’s upper atmosphere, plays a significant role in sky wave propagation by refracting and reflecting radio waves back to Earth.

9. What is the term for the lowest frequency that can be refracted back to Earth by the ionosphere?
a) Maximum usable frequency (MUF)
b) Lowest usable frequency (LUF)
c) Optimum frequency (OF)
d) Virtual height frequency (VHF)

Answer: b) Lowest usable frequency (LUF)
Explanation: The lowest usable frequency (LUF) is the lowest frequency that can be refracted back to Earth by the ionosphere.

10. Which phenomenon causes fluctuations in signal strength over short periods in radio wave propagation?
a) Absorption by atmospheric phenomena
b) Super refraction
c) Tropospheric scatter
d) Fading

Answer: d) Fading
Explanation: Fading refers to the fluctuations in signal strength experienced over short periods due to changes in the propagation environment, such as multipath interference or variations in atmospheric conditions.

11. In which mode of propagation does the wave travel parallel to the Earth’s surface?

a) Ground wave propagation
b) Sky wave propagation
c) Space wave propagation
d) Tropospheric propagation

Answer: a) Ground wave propagation
Explanation: In ground wave propagation, the radio wave travels parallel to the Earth's surface, following the curvature of the Earth.

12. What term describes the phenomenon where radio waves are scattered in various directions by atmospheric particles?
a) Super refraction
b) Tropospheric scatter
c) Fresnel zone clearance
d) Knife-edge diffraction

Answer: b) Tropospheric scatter
Explanation: Tropospheric scatter occurs when radio waves are scattered in various directions by atmospheric particles, such as dust or water droplets, resulting in signal attenuation and fluctuations.

13. Which factor primarily determines the skip distance in sky wave propagation?
a) Critical frequency
b) Maximum usable frequency (MUF)
c) Ionospheric density
d) Virtual height of the ionosphere

Answer: a) Critical frequency
Explanation: The skip distance in sky wave propagation is primarily determined by the critical frequency, which is the highest frequency that can be refracted back to Earth by the ionosphere.

14. What is the term for the phenomenon where radio waves are refracted more than usual, leading to an increase in the range of communication?
a) Super refraction
b) Tropospheric scatter
c) Ionospheric reflection
d) Fresnel zone clearance

Answer: a) Super refraction
Explanation: Super refraction occurs when radio waves are refracted more than usual in the atmosphere, resulting in an increase in the range of communication beyond what is normally achievable.

15. Which layer of the ionosphere primarily reflects radio waves back to Earth in sky wave propagation?
a) D layer
b) E layer
c) F1 layer
d) F2 layer

Answer: d) F2 layer
Explanation: The F2 layer of the ionosphere primarily reflects radio waves back to Earth in sky wave propagation, particularly at higher frequencies.

16. What is the term for the distance between the transmitter and the point where the refracted sky wave first returns to Earth’s surface in sky wave propagation?
a) Skip distance
b) Hop distance
c) Virtual height
d) Maximum usable frequency (MUF)

Answer: a) Skip distance
Explanation: Skip distance refers to the distance between the transmitter and the point where the refracted sky wave first returns to Earth’s surface in sky wave propagation, indicating the range of communication.

17. Which factor primarily determines the extent of signal attenuation in tropospheric propagation?
a) Absorption by atmospheric phenomena
b) Scattering by atmospheric particles
c) Super refraction
d) Reflection by the ionosphere

Answer: b) Scattering by atmospheric particles
Explanation: In tropospheric propagation, signal attenuation is primarily determined by scattering, where radio waves are dispersed in various directions by atmospheric particles, leading to reduced signal strength.

18. Which term refers to the bending of radio waves around obstacles or obstructions in their path?
a) Tropospheric scatter

b) Knife-edge diffraction
c) Fresnel zone clearance
d) Super refraction

Answer: b) Knife-edge diffraction
Explanation: Knife-edge diffraction refers to the bending of radio waves around obstacles or obstructions in their path, allowing the waves to reach areas beyond the obstruction.

19. What is the term for the frequency at which scattering of radio waves begins to occur in sky wave propagation?
a) Maximum usable frequency (MUF)
b) Critical frequency
c) Lowest usable frequency (LUF)
d) Optimum frequency (OF)

Answer: b) Critical frequency
Explanation: The critical frequency is the frequency at which scattering of radio waves begins to occur in sky wave propagation, marking the upper limit for effective communication via sky waves.

20. In space wave propagation, what factor primarily determines the strength of the received signal at a given distance from the transmitter?
a) Fresnel zone clearance
b) Absorption by atmospheric phenomena
c) Free space path loss
d) Knife-edge diffraction

Answer: c) Free space path loss
Explanation: Free space path loss, which accounts for the spreading of the radio wave as it travels through space, primarily determines the strength of the received signal at a given distance from the transmitter in space wave propagation.