1. What is the primary cause of signal degradation in optical fibers?

a) Attenuation
b) Dispersion
c) Interference
d) Reflection

Explanation: The correct answer is (b) Dispersion. Signal degradation in optical fibers primarily occurs due to dispersion, which is the spreading of the signal pulse as it travels through the fiber, resulting in distortion and loss of signal quality.

2. Which type of dispersion occurs within a single mode of propagation in optical fibers?

a) Intermodal dispersion
b) Intramodal dispersion
c) Attenuation dispersion
d) Chromatic dispersion

Explanation: The correct answer is (d) Chromatic dispersion. Intramodal dispersion refers to the spreading of different wavelengths of light within a single mode of propagation, causing signal distortion.

3. What is the main method used for fabricating optical fibers?

a) Chemical vapor deposition (CVD)
b) Injection molding
c) Extrusion
d) Drawing

Explanation: The correct answer is (d) Drawing. Optical fibers are typically fabricated through a process called drawing, where a preform (a cylindrical glass rod) is heated and stretched into a long, thin fiber.

4. Which measurement technique is commonly used for assessing the quality and integrity of optical fibers?

a) SONET
b) OTDR
c) MPLS
d) DWDM

Explanation: The correct answer is (b) OTDR (Optical Time Domain Reflectometer). OTDR is used to measure the attenuation and detect faults in optical fibers by sending a series of optical pulses and analyzing the reflected signals.

5. What is the phenomenon where different modes of light propagate at different velocities, causing signal distortion?

a) Chromatic dispersion
b) Intermodal dispersion
c) Attenuation
d) Rayleigh scattering

Explanation: The correct answer is (b) Intermodal dispersion. In intermodal dispersion, different modes of light travel at different velocities within the optical fiber, leading to signal distortion.

6. Which factor describes the loss of signal strength as light travels through the fiber?

a) Dispersion
b) Reflection
c) Attenuation
d) Absorption

Explanation: The correct answer is (c) Attenuation. Attenuation refers to the loss of signal strength as light travels through the optical fiber due to factors such as scattering and absorption.

7. What property of optical fibers makes them suitable for long-distance communication?

a) Low dispersion
b) High attenuation
c) Low bandwidth
d) High bandwidth

Explanation: The correct answer is (a) Low dispersion. Optical fibers with low dispersion can transmit signals over long distances without significant distortion, making them ideal for long-distance communication.

8. Which type of dispersion occurs due to variations in the refractive index profile of the fiber core?

a) Material dispersion
b) Waveguide dispersion
c) Intermodal dispersion

d) Intramodal dispersion

Explanation: The correct answer is (b) Waveguide dispersion. Waveguide dispersion occurs due to variations in the refractive index profile of the fiber core, causing different light modes to travel at different velocities.

9. What is the process of analyzing the backscattered light in an optical fiber to determine its characteristics called?

a) Reflectometry
b) Scattering analysis
c) Backscattering profiling
d) Optical time domain reflectometry (OTDR)

Explanation: The correct answer is (d) Optical time domain reflectometry (OTDR). OTDR is a technique used to analyze the backscattered light in an optical fiber to determine characteristics such as attenuation and detect faults.

10. Which parameter of optical fibers determines the maximum distance over which a signal can be transmitted without significant loss?

a) Dispersion
b) Bandwidth
c) Attenuation
d) Reflection coefficient

Explanation: The correct answer is (c) Attenuation. Attenuation is the parameter that determines the maximum distance over which a signal can be transmitted without significant

loss of signal strength in optical fibers.