Advanced Optics: Core Principles

Optics · Answer Key · 10 Questions

1. What phenomenon, primarily responsible for the formation of a rainbow, involves the separation of white light into its constituent colors due to varying wavelengths interacting with a medium?

A) Diffraction
B) Interference
C) Dispersion
D) Polarization

2. The ability of certain materials to transmit light in only one plane is known as:

A) Scattering
B) Absorption
C) Dispersion
D) Polarization

3. When light waves bend as they pass from one medium to another with a different refractive index, this phenomenon is called:

A) Reflection
B) Diffraction
C) Refraction
D) Total internal reflection

4. The optical instrument that uses two or more lenses to produce a magnified image of a distant object is called a:

A) Microscope
B) Periscope
C) Spectroscope
D) Telescope

5. What optical phenomenon causes a dimming or brightening of light when waves from two sources overlap, resulting in constructive or destructive interference patterns?

A) Refraction
B) Diffraction
C) Scattering
D) Interference

6. Which law states that the angle of incidence is equal to the angle of reflection when light bounces off a smooth surface?

A) Snell's Law
B) Huygens' Principle
C) The Law of Reflection
D) The Doppler Effect

7. The bending of light waves around obstacles or through narrow openings, causing them to spread out, is known as:

A) Refraction
B) Reflection
C) Diffraction
D) Interference

8. What is the primary principle behind the operation of a convex lens in forming a real, inverted image?

A) Total internal reflection
B) Diffraction at the edges
C) Refraction at both surfaces
D) Absorption of light

9. The electromagnetic spectrum, ordered by increasing frequency, includes radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, X-rays, and:

A) Visible light
B) Infrared radiation
C) Gamma rays
D) Microwaves

10. When light strikes a surface and bounces back, the process is called:

A) Refraction
B) Transmission
C) Absorption
D) Reflection