

Advanced Optics: Core Principles

Optics · Practice Test · 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