Unit-4. LASER and Fiber Optics (CO-4)

Part A: Give answers in short. (1 or 2 marks)

(1) Write Snell's law.

(2) Write full form of LASER.

(3) What is monochromatic light and polychromatic light?

(4) Write properties of laser light.

(5) Define: Absolute refractive index, Critical angle.

Part B: Write answers in Detail. (2 or 3 marks)

(1) Explain refraction of light with figure and examples.

(2) Explain refractive index. What is absolute refractive index?

(3) Explain total internal reflection in detail with figure.

(4) Give difference between common light and laser light.

(5) Write at least 6 application of laser light in various fields in detail.

(6) Describe types of optical fiber in detail.

(7) Write applications of optical fiber in various fields in detail.

(8) Explain construction of optical fiber with figure.

(9) Describe advantages of optical fiber over coaxial cable.

Part C: Numericals (3 marks)

(1) Velocity of light in air is 3×10^8 m/s and in liquid 1.8×10^8 m/s, so find out refractive index of liquid.

(2) Velocity of light in air is 3×10^8 m/s and in glass 2×10^{10} m/s, so find out refractive index of glass.

(3) light enters in glass medium from air. Glass has refractive index is 1.56. So find velocity of light in glass.

(4) one optical fiber has value of refractive indices are 1.563 and 1.498, respectively. Calculate acceptance angle of optical fiber.

(5) An optical fiber has value of refractive indices are 1.48 and 1.45, respectively. Calculate acceptance angle and numerical aperture of optical fiber.

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