

CHAPTER-9

RAY OPTICS AND OPTICAL INSTRUMENTS

GLOSSARY :

- ▲ **Aperture** : The diameter of the spherical refracting surface.
- ▲ **Absolute refractive index** : The ratio of the velocity of light in air or in a vacuum to the velocity of light in another medium.
- ▲ **Dispersion of light** : The phenomenon of splitting of white light in to its constituent colours on passing through a prism.
- ▲ **Linear magnification (in case of spherical mirror)** : The ratio of size of image (h_2) to the size of the object (h_1).
- ▲ **Mirage** : An optical illusion observed in deserts and coal-tarred roads on a hot day.
- ▲ **Pole** : The center of the spherical refracting surface.

- ▶ **Power of a lens/Mirror** : The ability of the lens to converge or diverge a beam of light falling on the lens.
- ▶ **Primary rainbow** : Rainbow with inner edge violet and other edge red, subtending $41^\circ - 43^\circ$ angle on observer's eye.
- ▶ **Reflection of light** : The phenomenon of change in the path of light without any change in medium.
- ▶ **Refraction of light** : The phenomenon of change in the path of light, when it goes from one medium to another.
- ▶ **Rainbow** : Spectrum of sunlight through rain drops suspended in air.
- ▶ **Spherical reflecting surface** : A surface which forms a part of a sphere of transparent reflecting material.
- ▶ **Secondary rainbow** : Rainbow with inner edge red and outer edge violet, subtending an angle $51^\circ - 54^\circ$ on observer's eye.

- ▲ **Spherical aberration in lenses** : The ability of lens of large aperture to bring all the rays in wide beam falling on it, to focus at a single point.
- ▲ **spectrometer** : It is an optical instrument to obtain and study the pure spectrum.
- ▲ **Total internal reflection** : The phenomenon of reflection of light in to denser medium from the boundary of denser medium with rarer medium.
- ▲ **The critical angle for a pair of media in contact** : The angle of incidence in the denser medium corresponding to which angle of refraction in the rarer medium is 90° .
- ▲ **X-ray** : A relatively high energy photon having a wave length in the approximate range from 0.01 to 10 nanometers.

Again, X-rays are a type of radiation used in imaging and therapy that uses short wave length energy beams capable of penetration most substances except heavy metals.