

UNIT – 6 – RAY OPTICS**I. Answer in brief (2/3 marks)**

1. Define Reflection.
2. **Define Laws of reflection.**
3. **What is angle deviation due to reflection?**
4. What are all the characteristics of image formed by plane mirror?
5. What are Paraxial and Marginal rays?
6. What are the Cartesian sign Conventions for Spherical Mirrors?
7. Define Lateral magnification of Spherical mirrors.
8. Define Refractive index.
9. What is optical path? Obtain its equation.
10. **Define Snell's law of refraction.**
11. What is Angle of deviation due to refraction?
12. Define Simultaneous reflection (or) Refraction.
13. Define Principle of reversibility of relative refraction index.
14. Why do stars twinkle?
15. What are Critical angle of total internal reflection?
16. **Write the conditions for total internal reflection.**
17. Explain the reason for the Glittering of diamond.
18. What are mirage and looming?
19. Write a short note on the prisms making use of total internal reflections.
20. What is optical fiber?
21. **What are primary and secondary focus of a lens?**
22. **What are the sign conventions followed for lenses?**
23. **Define power of a lens.**
24. What is angle of minimum deviation?
25. What is dispersion?
26. **What is dispersive power?**
27. How are rainbows formed?
28. **What is Rayleigh's scattering?**
29. **Why does sky appear blue?**

30. What is the reason for reddish appearance of sky during sunset and sunrise?

31. Why do clouds appear white?

II. Answer in a paragraph (5 marks)

1. Derive relation between F and R.
2. **Arrive at the mirror equation.**
3. **Derive lateral magnification for spherical mirrors.**
4. Describe the Fizeau's method to determine speed of light.
5. Arrive at the equation for apparent depth.
6. Derive expression for Critical angle (i.e.).
7. Obtain the equation for radius of illumination (or) Snell's window.
8. **Derive the equation for acceptance angle and numerical aperture of optical fiber.**
9. **Obtain the equation for lateral displacement of light passing through a glass slab.**
10. Derive the equation for refraction at single spherical surface.
11. Obtain Len's makers formula of mention its signification.
12. Derive the equation for lateral magnification of thin lens.
13. Obtain the equation for focal length of lenses in contact.
14. Derive the equation for angle of deviation produced by a prism and thus obtain the equation refractive index of the material of the prism.
15. **What is dispersion? Obtain the equation for dispersive power of a medium.**