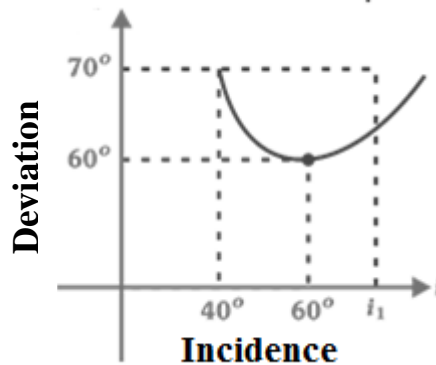


National Institute of Open Schooling
Senior Secondary
Lesson 21 – Dispersion and Scattering of Light
WORKSHEET – 21

- Q1.** The splitting of white light into its constituent colours or wavelengths by a medium is called dispersion. Explain the phenomenon by using one example from daily life.
- Q2.** The curve of angle of incidence versus angle of deviation is plotted as shown in figure below. What is the refractive index of the prism used?



- Q3.** Take a prism and allow light to pass through the prism. Observe and draw a ray diagram showing the dispersion through a prism when a narrow beam of white light is incident on one of its refracting surfaces. Also indicate the order of the colours of the spectrum obtained. Comment, size and angle of the prism influence dispersion or not?
- Q4.** Perform an activity to explain how light reaches even those nooks and corners where it normally is not able to reach straight from the source. The position of a star as seen by us is its true position or not; justify with explanation.
- Q5.** You observed that sky appears blue, clouds appear white and the sun appears red at sunrise as well as at sunset. Why it happens so? Give explanation for each case.
- Q6.** A prism ($\mu=1.5$) has a refracting angle of 30° for monochromatic. Find the angle of minimum, angle of incidence and refraction of a monochromatic ray incident perpendicularly on one of its surface.
- Q7.** A ray of light passing through a glass prism of refracting angle 60° undergoes a minimum deviation of 30° . Calculate the velocity of light in glass if the velocity of light in air is $3 \times 10^{10} \text{ cm s}^{-1}$.
- Q8.** A ray of white light, incident upon a glass prism, is dispersed into its various colour components. Which one of the following colours: orange, violet, red, green experience the greatest amount of refraction and why?
- Q9.** Calculate the angular dispersion produced by a prism of angle 6° , if the refractive indices of material of prism for blue and green colours are 1.664 and 1.655.
- Q10.** When light radiation undergoes scattering from a transparent substance (solid, liquid or gas) then the frequency of the scattered radiation may be greater or less than the frequency of the incident radiation. Name and explain the phenomenon.