

NTSE

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PHYSICS – Human Eye and Colourful World



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NCERT ANNEXURE

1. **What is the far point and near point of the human eye with normal vision?**

Ans. For a human eye with normal vision the far point is at infinity and the near point is at 25 cm from the eye.

2. **A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from? How can it be corrected?**

Ans. The student is suffering from myopia or short-sightedness. The defect can be corrected by the use of a concave (diverging) lens of an appropriate power.

3. **Why do stars twinkle?**

Ans. Stars twinkle due to atmospheric refraction of starlight. As the stars are very far away, they behave as almost point sources of light. As on account of atmospheric refraction, the path of rays of light coming from the star goes on varying slightly, the apparent position of the star fluctuates and the amount of starlight entering the eye flickers. So, sometimes, the star appears brighter and at some other time, fainter. In this way, the stars appear twinkling.

4. **Explain why the planets do not twinkle.**

Ans. Planets are much closer to the earth and are seen as extended sources. So, a planet may be considered as a collection of a large number of point-sized light sources. Although light coming from individual point-sized sources flickers, the total amount of light entering our eye from all the individual point-sized sources compensate for each other. Therefore, planets appear equally bright and there is no twinkling of planets.

5. **Why does the Sun appear reddish early in the morning?**

Ans. In the early morning, the sun is situated near the horizon. Light from the Sun passes through thicker layers of air and travels a larger distance in the atmosphere before reaching our eyes. While passing through the atmosphere red colour is least scattered as compared to other colours because of its maximum wavelength among seven colours of white light and the Sun appears reddish.

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NCERT EXEMPLAR

Here are objective type questions and answers for your reference.

- 1. A person cannot see distinctly objects kept beyond 2 m. This defect can be corrected by using a lens of power**
(a) + 0.5 D (b) – 0.5 D (c) + 0.2 D (d) – 0.2 D
- 2. A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his textbook. Which of the following statements is correct?**
(a) The near point of his eyes has receded away
(b) The near point of his eyes has come closer to him
(c) The far point of his eyes has come closer to him
(d) The far point of his eyes has receded away
- 3. At noon the sun appears white as**
(a) light is least scattered
(b) all the colours of the white light are scattered away
(c) blue colour is scattered the most
(d) red colour is scattered the most
- 4. Which of the following phenomena of light are involved in the formation of a rainbow?**
(a) Reflection, refraction and dispersion
(b) Refraction, dispersion and total internal reflection
(c) Refraction, dispersion and internal reflection
(d) Dispersion, scattering and total internal reflection
- 5. Twinkling of stars is due to atmospheric**
(a) dispersion of light by water droplets
(b) refraction of light by different layers of varying refractive indices
(c) scattering of light by dust particles
(d) internal reflection of light by clouds

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