PRACTICE PAPER (2026–27)

Chapter 10: Human Eye and the Colourful World

CLASS: X **SUBJECT: SCIENCE** **DURATION: 1½ hrs** **MAX. MARKS: 40**

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five Sections: **A**, **B**, **C**, **D**, and **E**.
3. **Section A** comprises 10 Multiple Choice Questions (including Assertion-Reason) of 1 mark each.
4. **Section B** comprises 4 questions of 2 marks each.
5. **Section C** comprises 3 questions of 3 marks each.
6. **Section D** comprises 1 question of 5 marks (with internal choice).
7. **Section E** comprises 2 Case Study Based Questions of 4 marks each.
8. Use of calculators is strictly prohibited.

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. The human eye forms the image of an object at its:

   (a) Cornea (b) Iris

   (c) Pupil (d) Retina

2. The change in focal length of an eye lens to focus objects at varying distances is brought about by the action of the:

   (a) Pupil (b) Retina

   (c) Ciliary muscles (d) Iris

3. A person cannot see objects distinctly placed beyond 2 metres. This defect of vision 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

4. When a beam of white light passes through a glass prism, which colour deviates the least?

   (a) Violet (b) Blue

   (c) Yellow (d) Red

5. Twinkling of stars is primarily caused by:

   (a) Atmospheric reflection of starlight (b) Atmospheric refraction of starlight

   (c) Dispersion of starlight by water droplets (d) Internal reflection of starlight in clouds

6. The clear sky appears blue because:

   (a) Blue light is absorbed by the atmosphere (b) Ultraviolet radiation is absorbed in the atmosphere

   (c) Violet and blue lights are scattered more than other colours (d) Light of all other colours is scattered more than the violet and blue colour

7. At noon, the sun appears white because:

   (a) Light is least scattered (b) All colours of white light are scattered away

   (c) Blue colour is scattered the most (d) Red colour is scattered the most

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8. A student traces the path of a ray of light through a triangular glass prism. The angle between the incident ray produced forward and the emergent ray produced backward is called the:

(a) Angle of prism
(b) Angle of emergence
(c) Angle of deviation
(d) Angle of refraction

Directions for Q9 and Q10: In each question, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Mark the correct choice as:
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.

9. **Assertion (A):** Danger signal lights installed at airports and traffic signals are always red in colour.
Reason (R): Red light has the longest wavelength among visible colours and is scattered least by smoke or fog particles.

10. **Assertion (A):** Planets in the night sky do not twinkle like stars.
Reason (R): Planets are much closer to the earth and act as extended sources composed of multiple point sources of light, nullifying the flickering effect.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Define the term "power of accommodation" of the human eye. State the role played by ciliary muscles when viewing:
    a. Distant objects
    b. Nearby objects

12. A 14-year-old student is unable to see clearly the writing on the blackboard sitting in the last row.
    a. Name the defect of vision the student is suffering from.
    b. Suggest the type of corrective lens required to restore normal vision.

13. Why is the normal eye unable to focus clearly on objects placed closer than 25 cm without strain?

14. The sun is visible to us about 2 minutes before the actual sunrise, and about 2 minutes after the actual sunset. Explain the optical phenomenon responsible for this observation.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. A person with a myopic eye cannot see objects beyond 1.2 m distinctly.
    a. State two possible causes of myopia.
    b. Calculate the focal length and power of the corrective lens required to see distant objects clearly.

16. Describe Isaac Newton's classic experiment using two identical triangular glass prisms to prove that white sunlight consists of seven constituent colours. Draw a neat labelled diagram of the arrangement.

17. Give reasons for the following observations:
    a. Stars appear higher in the sky than their actual physical position.
    b. To an astronaut in outer space, the sky appears completely dark instead of blue.
    c. The path of a narrow beam of sunlight becomes distinctly visible as it enters a dusty room through a tiny crevice.

SECTION – D

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c. If the earth had no atmosphere, what would the daytime sky look like to an observer on the ground? Justify your answer. **[2 Marks]**

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