Affiliated to CBSE, New Delhi (Affiliation No. 1030642)

GNPS

GOMTI NANDAN PUBLIC SCHOOL

Gandhi Ward, Bina (M.P.) 470113. | 9165 609 333. | info@mygnps.com | www.mygnps.com

CLASS X · SCIENCE (086) · PHYSICS · CBSE BOARD EXAMINATION 2027

CHAPTER 10

The Human Eye and the Colourful World

Chapter Practice Booklet · Questions only · Answers in the separate Answer Booklet

12 note blocks + 6 diagrams | 70 practice questions | 3 case studies | Board question index

INSIDE THIS BOOKLET

1	**Chapter Notes** 12 note blocks, 6 diagrams, quick reasons + exam snapshot	2
A	**NCERT Practice** 23 questions	7
B	**Exemplar Practice** 16 questions	8
C	**Board Pattern Practice** 31 questions, with frequency stars	9
D	**Case-Based Questions** 3 case studies	12
E	**Board PYQ Index** Real 2023–2026 questions by type	13
F	**My Mistakes** Your error log	14

STUDENT DETAILS

NAME _____

CLASS & SECTION _____

ROLL NO. _____

BOOKLET STARTED ON _____

CHAPTER TEST SCORE _____ / 20

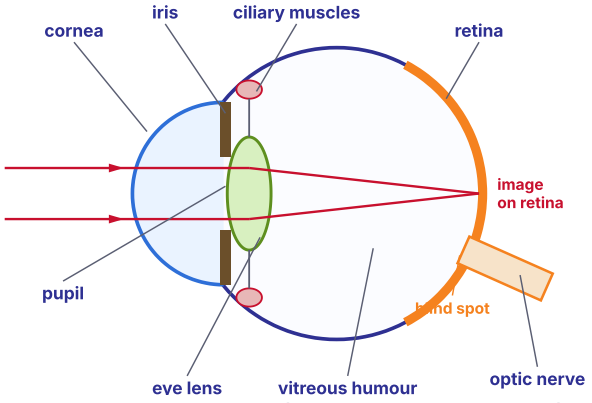
1

READ THIS FIRST

Chapter Notes

The whole chapter in short-note form: every definition, activity, diagram, formula and reason. Revise from here – you should not need the textbook again.

1 The human eye – parts and their jobs



Section of the human eye (eyeball about 2.3 cm across)

Cornea	Thin, clear bulge at the front. **Most of the refraction** of light entering the eye happens at its outer surface.
Iris	Dark muscular diaphragm behind the cornea; **controls the size of the pupil**.
Pupil	The opening in the iris; **regulates the amount of light** entering the eye.
Eye lens	Clear, jelly-like **convex lens**; fine-tunes the focal length to focus objects at different distances.
Ciliary muscles	Hold the lens; change its **curvature** and hence its focal length.
Retina	Light-sensitive screen with a huge number of light-sensitive cells; the image forms here.
Optic nerve	Carries the electrical signals from the retina to the **brain**.

2 How we see; the pupil

- The eye lens forms a **real, inverted** image of the object on the retina. The light-sensitive cells produce electrical signals, which the optic nerve carries to the brain. The brain interprets them so that we see the object as it is (upright).
- In **dim light** the iris makes the pupil **larger** to let in more light; in **bright light** the pupil becomes **smaller**.
- On walking from bright sunlight into a dark room (or cinema hall) we cannot see for a short while: the pupil takes some time to widen.
- The point where the optic nerve leaves the eye has no light-sensitive cells – the **blind spot**.

3 Power of accommodation

> **Power of accommodation:** the ability of the eye lens to adjust its focal length so that both near and far objects are focused on the retina.

Looking at a distant object	Looking at a near object
Ciliary muscles **relax**	Ciliary muscles **contract**
Lens becomes **thinner**; focal length **increases**	Lens becomes **thicker**; focal length **decreases**

- **Near point** (least distance of distinct vision): the nearest point at which an object is seen clearly without strain – about **25 cm** for a normal young adult.
- **Far point:** the farthest point up to which the eye sees clearly – **infinity** for a normal eye. So a normal eye sees clearly from 25 cm to infinity.
- We cannot see an object clearly at, say, 10 cm because the focal length of the eye lens **cannot be reduced below a certain minimum**.
- The image distance in the eye is fixed (lens to retina); only the focal length changes.

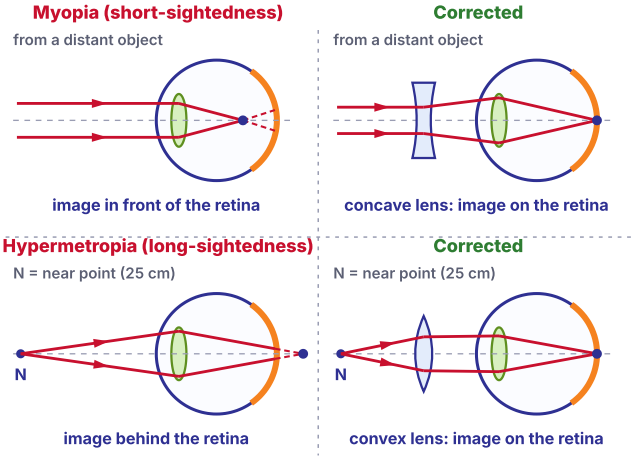
4 Cataract; power of a lens

- **Cataract:** in old age the eye lens can become **milky and cloudy**, causing partial or complete loss of vision. Vision is restored by **cataract surgery**.
- Defects of vision are corrected with spherical lenses. Recall from Chapter 9:

$$P = \frac{1}{f\,(\text{in m})}\ \text{dioptre (D)} \cdot \frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

- Convex lens: **positive** power; concave lens: **negative** power. A lens of –2.0 D is concave with f = –50 cm.
- Take the object distance as **negative** (object on the left of the lens), e.g. u = –25 cm.

5 Defects of vision and their correction



Myopia and hypermetropia, and their correction

	Myopia (near-sightedness)	Hypermetropia (far-sightedness)
Sees clearly	Near objects, not distant ones	Distant objects, not near ones
Point affected	Far point is **nearer than infinity**	Near point is **farther than 25 cm**
Image	In **front of** the retina	**Behind** the retina
Causes	(i) Excessive curvature of the eye lens (ii) elongation of the eyeball	(i) Focal length of the eye lens too long (ii) eyeball too small
Corrected by	**Concave** lens (negative power)	**Convex** lens (positive power)

6 Worked examples – power of the corrective lens

> **Myopia:** the lens must make light from infinity appear to come from the far point. So **f = – (far point)**.

Far point 80 cm: f = –80 cm = –0.8 m; P = 1/(–0.8) = **–1.25 D** (concave).

> **Hypermetropia:** an object at 25 cm must form a virtual image at the person's near point. So u = –25 cm and v = –(near point).

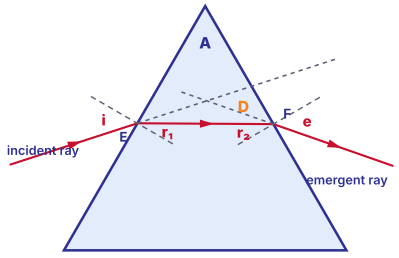
Near point 1 m: $\frac{1}{f} = \frac{1}{-100} - \frac{1}{-25} = \frac{3}{100}$, so f = 33.3 cm = 0.333 m; P = **+3.0 D** (convex).

Near point 50 cm: $\frac{1}{f} = \frac{1}{-50} + \frac{1}{25} = \frac{1}{50}$, so f = +50 cm; P = **+2.0 D**.

7 Presbyopia

- With age the power of accommodation **decreases**; the near point gradually moves away. Such people find it hard to read comfortably without glasses.
- **Cause:** gradual **weakening of the ciliary muscles** and **reduced flexibility** of the eye lens.
- **Correction:** a **convex** lens for near vision.
- A person may suffer from both myopia and hypermetropia. Then **bifocal lenses** are used: the **upper part concave** (for distant vision) and the **lower part convex** (for reading).
- Today defects can also be corrected with **contact lenses** or by **surgery**.

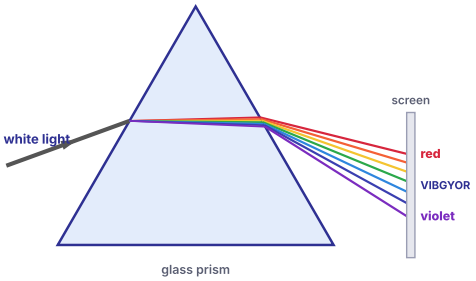
8 Refraction through a glass prism



i, e: angles of incidence and emergence; r_1, r_2: angles of refraction

- A prism has two triangular bases and three rectangular side faces. The angle between the two refracting faces is the **angle of the prism (A)**.
- The ray bends **towards the normal** on entering glass (at E) and **away from the normal** on leaving it (at F). Since the faces are not parallel, the emergent ray is **bent towards the base**.
- **Angle of deviation (D):** the angle between the incident ray produced forward and the emergent ray produced backward.

9 Dispersion of white light

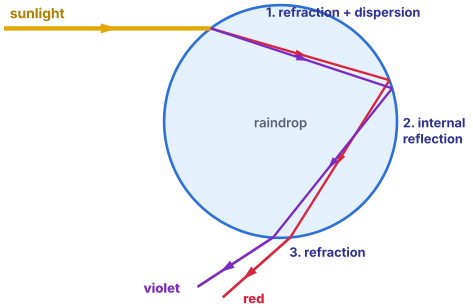


A prism splits white light into a spectrum (spread shown larger than real)

Dispersion: the splitting of white light into its component colours. The band of colours is the **spectrum**: **V I B G Y O R** (violet, indigo, blue, green, yellow, orange, red).

- **Cause:** different colours bend through **different angles** with respect to the incident ray. **Red bends the least, violet the most.**
- **Newton's experiment:** a second identical prism placed **upside down** next to the first recombines the colours, and **white light** comes out. So sunlight is made of seven colours. Any light that gives a spectrum like sunlight is called white light.

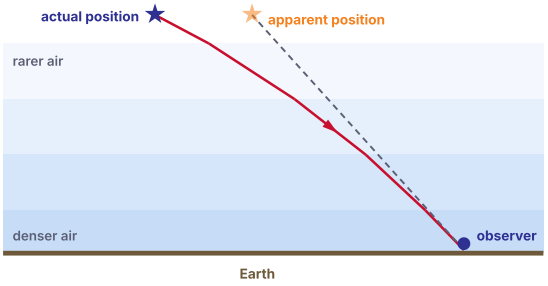
10 The rainbow



Formation of a rainbow in a raindrop (red and violet shown)

- A rainbow is a **natural spectrum** seen in the sky after a rain shower.
- Tiny water droplets act like small prisms. Sunlight is (1) **refracted and dispersed** on entering the drop, (2) **internally reflected** at the back, and (3) **refracted again** on coming out. The colours reach the observer's eye.
- A rainbow is always formed in the direction **opposite to the sun**: the sun must be **behind** the observer.
- It can also be seen on a sunny day through a waterfall or a water fountain, with the sun behind us.

11 Atmospheric refraction



Starlight bends in the atmosphere: the star looks higher than it is

- Air layers of different temperatures have different optical densities, so light passing through them is refracted. Objects seen through **hot air above a fire** appear to **waver**, as the hot air keeps changing.
- **Twinkling of stars:** starlight bends towards the normal as it enters denser layers, so the star appears **slightly higher** than it is. The air keeps changing, so the apparent position keeps shifting and the amount of light entering the eye **flickers** – the star twinkles. A star is so far away that it acts as a **point source**.
- **Planets do not twinkle:** they are much closer and act as **extended sources** – a collection of many point sources whose variations cancel out.
- **Advance sunrise and delayed sunset:** the sun is seen about **2 minutes before** it actually rises and about 2 minutes after it sets.

12 Scattering of light

- **Tyndall effect:** the scattering of light by colloidal particles, which makes the path of a beam visible – sunlight through a small hole in a smoky room, or through the canopy of a dense forest where mist has tiny water droplets.
- The **colour of scattered light depends on particle size**: very fine particles scatter mainly **blue** light; larger particles scatter longer wavelengths; large enough particles scatter all colours, so the light looks **white** (as from clouds).
- **Blue sky:** air molecules and fine particles are smaller than the wavelength of visible light, so they scatter **blue** (shorter wavelength) much more than red. Red light has a wavelength about 1.8 times that of blue.
- Without an atmosphere there is no scattering, so the sky looks **dark** – as seen by astronauts or from very high altitudes.
- **Danger signals are red:** red light is scattered **least** by fog or smoke, so it is seen in the same colour from far away.

The colour of the sun at sunrise and sunset is not in the 2026–27 syllabus.

Explain why – quick answers

Common 1- and 2-mark reasons

We cannot see at once in a dark room – the pupil takes time to widen.

A normal eye cannot read at 10 cm – the focal length of the eye lens cannot go below a minimum.

A myopic person uses a concave lens – it diverges light so the image moves back on to the retina.

A hypermetropic person uses a convex lens – it converges light so the image moves forward on to the retina.

Many older people need bifocals – weak ciliary muscles: they need help for both near and far vision.

A prism splits white light – each colour bends through a different angle.

Red is at the top of a prism spectrum (base down) – red bends the least.

A rainbow is seen opposite the sun – drops refract, disperse and reflect the light back towards us.

Stars twinkle – changing air layers keep refracting light from a point source.

Planets do not twinkle – they are extended sources; the changes average out.

The sky is blue – fine particles of air scatter blue light the most.

Danger lights are red – red is scattered least by fog and smoke.

Exam snapshot

What the board asks, and how to prepare

SYLLABUS 2026–27

- Functioning of a lens in the human eye; defects of vision and their corrections; applications of spherical mirrors and lenses.
- Refraction of light through a prism; dispersion of light; scattering of light; applications in daily life (**excluding** the colour of the sun at sunrise and sunset).

BOARD WEIGHTAGE

25 / 80

Physics = 25 marks (Section C), shared by Chapters 9–12. This chapter got 5 marks in the 2026 paper (an MCQ, an A–R and a 3-mark question on hypermetropia) and carried the 5-mark long answer in the 2026–27 sample paper (accommodation and myopia OR dispersion and the blue sky).

MOST ASKED IN BOARD AND SAMPLE PAPERS, 2025–2027 (5 PAPERS CHECKED)

How often	Question type	Marks	Papers
★★★	Human eye: parts, pupil, accommodation, near and far point	1–5	4 of 5
★★★	Defects of vision and correction; power of the corrective lens	3–5	5 of 5
★★★	Prism, dispersion, spectrum, rainbow	1–5	5 of 5
★★☆	Atmospheric refraction and scattering: twinkling, blue sky, danger signals	1–5	2 of 5

MISTAKES THAT COST MARKS

- Writing that in myopia the image forms behind the retina – it forms **in front of** it; in hypermetropia it forms **behind**.
- Wrong sign of power: a concave lens has **negative** power. Change cm to metres before using P = 1/f.
- Taking u = +25 cm in hypermetropia numericals – the object distance is **–25 cm**.
- Saying violet bends the least – **red** bends least, **violet** most.
- Saying a rainbow is seen facing the sun – the sun must be **behind** you.
- Saying the ciliary muscles relax for near objects – they **contract** and the lens becomes thicker.

HOW TO USE THIS BOOKLET

1. **Day 1:** Read the notes and the key tables; then Part A (NCERT).
2. **Day 2:** Part B (Exemplar) and Part C (board pattern). Do every MUST DO question first.
3. **Day 3:** Part D (case studies) and the real board questions listed in Part E.
4. **Tue 22 Dec (zero period): Physics chapter test – 20 marks, 40 minutes.**
5. Check every answer in the **Answer Booklet**. Write each mistake on the My Mistakes page (Part F).

A

PART A · NCERT PRACTICE

NCERT Practice

The ideas of every NCERT activity, in-text question and exercise, asked in new words. Finish every question.

The human eye

A1. What are the near point and the far point of a normal human eye? MUST DO [2]

A2. What is meant by the power of accommodation of the eye? What happens to the ciliary muscles and the eye lens when we look at (i) a distant object (ii) a near object? MUST DO [3]

A3. Name the part of the eye that (i) controls the size of the pupil (ii) changes the curvature of the eye lens (iii) acts as a screen on which the image forms (iv) carries signals to the brain. [2]

A4. Where does most of the refraction of light entering the eye take place? What is the role of the eye lens? [2]

A5. Why is a normal eye unable to see clearly an object placed closer than 25 cm? MUST DO [2]

A6. What happens to the image distance in the eye when an object is moved farther away from the eye? [1]

A7. What is cataract? How is vision restored? [2]

Defects of vision

A8. A student in the last row cannot read the blackboard clearly but can read her book. Name the defect, give its two causes and the type of lens that corrects it. MUST DO [3]

A9. The near point of a hypermetropic eye is 1 m. What is the power of the lens needed to correct this defect? (Normal near point = 25 cm.) Draw a diagram to show how the defect is corrected. MUST DO [4]

A10. A myopic person cannot see objects beyond 80 cm clearly. What kind of lens, and of what power, will correct the defect? MUST DO [2]

A11. What is presbyopia? Give its causes. How is it corrected when a person has both near and far vision problems? MUST DO [3]

Prism, dispersion and the rainbow

A12. Draw a labelled ray diagram for the refraction of light through a glass prism. Mark the angles of incidence, emergence and deviation. MUST DO [3]

A13. What is dispersion of white light? What is its cause? MUST DO [2]

A14. How did Newton show that sunlight is made of seven colours? [2]

A15. Explain how a rainbow is formed. In which direction should you look to see it? MUST DO [3]

Atmospheric refraction and scattering

A16. Why do stars twinkle? MUST DO [3]

A17. Explain why the planets do not twinkle. [2]

A18. Why does the sun appear to us about two minutes before actual sunrise and stay visible about two minutes after actual sunset? [2]

A19. Why does the clear sky look blue? MUST DO [3]

A20. Why does the sky appear dark instead of blue to an astronaut in space? MUST DO [2]

A21. What is the Tyndall effect? Give two examples. [2]

A22. Why are danger signals red? MUST DO [2]

A23. Objects seen through the hot air above a fire appear to waver. Why? [2]

B · Exemplar Practice

PART B · EXEMPLAR PRACTICE

Exemplar-style questions, one step harder. Give a reason with every short answer.

Multiple choice

1 mark each

B1. The human eye forms the image of an object on its: [1]

(a) cornea (b) iris (c) pupil (d) retina

B2. The focal length of the eye lens is changed by the action of the: [1]

(a) pupil (b) retina (c) ciliary muscles (d) iris

B3. The least distance of distinct vision for a young adult with normal vision is about: [1]

(a) 25 m (b) 2.5 cm (c) 25 cm (d) 2.5 m

B4. A person cannot see clearly objects beyond 2 m. The lens needed is: [1]

(a) convex, +0.5 D (b) concave, −0.5 D
(c) convex, +0.2 D (d) concave, −0.2 D

B5. Which colour of white light is deviated the most by a glass prism? [1]

(a) Red (b) Yellow (c) Green (d) Violet

B6. Danger signals are red because red light: [1]

(a) is scattered most by fog (b) is scattered least by fog and smoke
(c) has the shortest wavelength (d) is absorbed by air

B7. The twinkling of stars is due to: [1]

(a) reflection of light (b) dispersion of light
(c) atmospheric refraction (d) scattering by dust

B8. A glass prism splits white light into colours because: [1]

(a) glass absorbs some colours (b) different colours bend through different angles
(c) the prism reflects light (d) glass adds colours to light

B9. One cause of myopia is: [1]

(a) elongation of the eyeball (b) shortening of the eyeball
(c) weakening of ciliary muscles (d) a cloudy eye lens

B10. The clear sky looks blue because: [1]

(a) blue light is absorbed by air

(b) fine particles in air scatter blue light more than red

(c) red light is scattered the most

(d) the sea reflects blue light

Short answer

2–3 marks

B11. On entering a dark cinema hall from bright sunlight, we cannot see the seats for a short while, but slowly we can. Explain. [2]

B12. A person needs a lens of power −4.5 D for distant vision and +3.5 D for near vision. Find the focal lengths of the two lenses. Name the defect. MUST DO [3]

B13. In the spectrum formed by a prism kept with its base down, name the colours at the top and at the bottom. Which colour travels fastest in glass? [2]

B14. Is the position of a star as seen by us its true position? Justify your answer. [2]

B15. Why do clouds look white while the clear sky looks blue? [2]

B16. The near point of a hypermetropic person is 50 cm. Find the power of the lens needed so that the person can read a book at 25 cm. MUST DO [3]

C

PART C · BOARD PATTERN

Board Pattern Practice

Question types from the 2025 and 2026 board papers and the CBSE sample papers. ★★★ = asked in 3 or more of the 5 papers checked · ★★ = 2 papers · ★ = 1 paper.

ASSERTION–REASON: HOW TO ANSWER

(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.

The human eye

★★★ 4 of 5 papers · 1–5 marks

C1. When we look at a nearby object, the ciliary muscles ___ and the eye lens becomes ___. [1]

(a) relax; thinner

(b) contract; thicker

(c) contract; thinner

(d) relax; thicker

C2. The dark muscular diaphragm that controls the size of the pupil is the: [1]

(a) cornea (b) iris (c) ciliary muscle (d) retina

C3. ASSERTION–REASON [1]

Assertion (A): A normal eye can see objects clearly from 25 cm to infinity.

Reason (R): The ciliary muscles can change the focal length of the eye lens.

C4. ASSERTION–REASON [1]

Assertion (A): We cannot see an object clearly if it is held 10 cm from the eye.

Reason (R): The focal length of the eye lens cannot be decreased below a certain minimum.

C5. State the function of (a) the iris (b) the pupil. How does the pupil change in dim light? [2]

C6. What is the range of vision of a normal eye? What is cataract and how is it treated? [3]

Defects of vision

★★★ 5 of 5 papers · 3–5 marks

C7. A person's near point is 1 m. The defect and the correcting lens are: [1]

(a) myopia; concave (b) hypermetropia; convex
(c) myopia; convex (d) hypermetropia; concave

C8. An optician prescribes a lens of power +2.0 D. The lens is: [1]

(a) convex, f = +50 cm (b) concave, f = –50 cm
(c) convex, f = +20 cm (d) convex, f = +2 m

C9. ASSERTION–REASON [1]

Assertion (A): A myopic person uses spectacles with concave lenses.

Reason (R): A concave lens diverges the rays so that the eye lens can focus them on the retina.

C10. ASSERTION–REASON [1]

Assertion (A): Bifocal lenses are used by many older people.

Reason (R): In presbyopia a person may need correction for both near and distant vision.

C11. Give two differences between myopia and hypermetropia. MUST DO [2]

C12. A student can read a far-off board but finds it hard to read a book. Name the defect. Give its two causes and draw ray diagrams of the defect and its correction. MUST DO [3]

C13. A person cannot see clearly beyond 2.5 m. Name the defect, and find the nature and power of the lens needed. [3]

C14. The near point of a person is 75 cm. Find the power of the lens that will let the person read at 25 cm. MUST DO [3]

Prism, dispersion and the rainbow

★★★ 5 of 5 papers · 1–5 marks

C15. In the spectrum of white light, the colour that is deviated the least is: [1]

(a) violet (b) blue (c) green (d) red

C16. The correct order of colours in the spectrum, from least deviated to most deviated, is: [1]

(a) V I B G Y O R (b) R O Y G B I V
(c) R Y O G B V I (d) V B I G Y R O

C17. ASSERTION–REASON [1]

Assertion (A): In the spectrum formed by a prism kept with its base down, red is at the top and violet at the bottom.

Reason (R): Red light bends the least and violet the most.

C18. ASSERTION–REASON [1]

Assertion (A): A rainbow is seen in the part of the sky opposite the sun.

Reason (R): Raindrops refract, disperse and internally reflect sunlight back towards the observer.

C19. A ray of light passes through a glass prism. What is the angle of deviation? On what side of the incident ray does the emergent ray bend, and why? [2]

C20. Describe Newton's experiment with two prisms. What does it show? [3]

C21. Why does a glass prism give a spectrum, while a rectangular glass slab does not? [2]

C22. What is a rainbow? Explain its formation with a labelled diagram. MUST DO [3]

Atmospheric refraction and scattering

★★☆ 2 of 5 papers · 1–5 marks

C23. The sky looks dark to an astronaut in space because: [1]

(a) there is no atmosphere to scatter light (b) the sun is too far
(c) blue light is absorbed (d) the eyes adjust to darkness

C24. Stars twinkle but planets do not, because planets: [1]

(a) are extended sources close to us (b) give out their own light
(c) are not affected by the atmosphere (d) are farther than stars

C25. ASSERTION–REASON [1]

Assertion (A): Danger signals are made red.

Reason (R): Red light has the longest wavelength of visible light and is scattered the least by fog and smoke.

C26. ASSERTION–REASON [1]

Assertion (A): The path of a beam of light becomes visible in a room full of smoke.

Reason (R): Smoke particles scatter the light (Tyndall effect).

C27. Explain: (a) the clear sky is blue; (b) the sky looks dark at very high altitudes; (c) danger signals are red. MUST DO [3]

C28. Explain why stars twinkle but planets do not. How does atmospheric refraction change the time of sunrise? [3]

Long answer

5 marks

C29. (a) What is the power of accommodation? (b) A student can see near objects clearly but not distant ones. Name the defect, give two causes and draw ray diagrams of the defect and its correction. (c) The student's far point is 1.5 m. Find the power of the lens needed. MUST DO [5]

C30. (a) Draw a diagram to show the dispersion of white light by a glass prism and label the spectrum. (b) Why do the colours separate? (c) Explain how a rainbow is formed. (d) What did Newton's second prism show? MUST DO [5]

C31. (a) What is the Tyndall effect? Give one example. (b) Why is the sky blue? (c) Why do stars twinkle? (d) Why do planets not twinkle? (e) Why are danger signals red? [5]

PART D · SECTION C CASE STYLE

D Case-Based Questions

Each case carries 4 marks (1 + 1 + 2), as in the case-based questions of the board paper.

D1. Case Study · The Eye Camp [4]

At a school eye camp, Rohan could read his book easily but not the chart on the far wall. The optometrist gave him glasses of power −2.0 D. His grandfather holds the newspaper at arm's length to read it, and also finds road signs blurred. He was given glasses whose upper and lower halves are different lenses.

(i) Name Rohan's defect of vision. [1]

(ii) Find the focal length of Rohan's lens. [1]

(iii) Name the grandfather's defect and give its causes. How do his glasses help? [2]

OR

(iii) What is Rohan's far point without glasses? Explain how his concave lens helps him see the chart. [2]

D2. Case Study · The Prism Lab [4]

In a dark room, students passed a narrow beam of sunlight through a glass prism. A band of seven colours appeared on a white screen. When they placed an identical prism upside down after the first one, a patch of white light appeared on the screen instead.

(i) Name the phenomenon that produced the band of colours. [1]

(ii) Which colour was deviated the most? [1]

(iii) Why did the colours separate in the first prism, and what does the second prism show? [2]

OR

(iii) Explain how nature produces the same band of colours in the sky after rain. [2]

D3. Case Study · Sky Watch [4]

On a trek to a high mountain pass, Ananya noticed that the sky looked a much deeper, darker blue than at home. At night the stars twinkled, but Jupiter shone steadily. On the drive back through fog, she saw that the warning lights on the road were red.

(i) Name the phenomenon that makes the sky blue. [1]

(ii) Why did the sky look darker at the high pass? [1]

(iii) Why do stars twinkle? [2]

OR

(iii) Why did Jupiter not twinkle, and why are warning lights red? [2]

E

PART E · REAL BOARD QUESTIONS

Board PYQ Index

Real questions from recent Science board papers and CBSE sample papers, by type. Open the official paper and solve the listed questions.

Frequency	Question type	Marks	Where asked (year: paper code, question number)	Practise here
★★★	**Human eye: parts, pupil, accommodation, near and far point**	1–5	**2026:** 31/1/1 Q31 (ciliary muscles and lens, near object) · **2025:** OD Set 1 Q14 (iris and pupil) · **2025:** Delhi Set 1 Q20 (A–R, ciliary muscles) · **SQP 2026–27:** Q39 (accommodation, near point)	A1–A7, B1–B3, B11, C1–C6, C29
★★★	**Defects of vision and correction; power of the corrective lens**	3–5	**2026:** 31/1/1 Q35 (hypermetropia: identify, diagrams, correction) · **2025:** OD Set 1 Q32 (+2.0 D lens: defect, causes) · **2025:** Delhi Set 1 Q25 OR (presbyopia lens) · **SQP 2024–25:** Q31 (hypermetropia vs myopia) · **SQP 2026–27:** Q39 (myopia)	A8–A11, B4, B9, B12, B16, C7–C14, C29, D1
★★★	**Prism, dispersion, spectrum, rainbow**	1–5	**2026:** 31/1/1 Q32 (A–R, dispersion) · **2025:** OD Set 1 Q25 OR (rainbow) · **2025:** Delhi Set 1 Q25 (prism ray diagram, deviation), Q39 (case: dispersion, rainbow) · **SQP 2024–25:** Q14 (colours in dispersion) · **SQP 2026–27:** Q39 OR (dispersion by a prism)	A12–A15, B5, B8, B13, C15–C22, C30, D2
★★☆	**Atmospheric refraction and scattering: twinkling, blue sky, danger signals**	1–5	**2025:** OD Set 1 Q25 (dark sky at high altitude; red danger signals) · **SQP 2026–27:** Q39 OR (blue sky)	A16–A23, B6–B7, B10, B14–B15, C23–C28, C31, D3

PAPERS CHECKED (5)

- 2026 board paper 31/1/1 (Set 1) – first paper with separate Biology, Chemistry and Physics sections
- 2025 board paper, Outside Delhi Set 1
- 2025 board paper, Delhi Set 1
- CBSE Sample Question Paper 2024–25
- CBSE Sample Question Paper 2026–27 (the pattern for your exam)

★★★ = asked in 3 or more of the 5 papers checked · ★★ = 2 papers · ★ = 1 paper. Codes: OD = Outside Delhi. Each paper was read question by question; questions from the 2026–27 Sample Paper after Q20 were checked from a summary of the paper. Download the official papers from cbse.gov.in → Previous Year Question Papers and cbseacademic.nic.in → Sample Question Papers, and solve the exact questions listed.

F

PART F · YOUR RECORD

My Mistakes

Write down each mistake from this chapter, including the chapter test.

Every wrong answer is a free lesson. Write it here, find the rule you missed, and redo the question after three days. Bring this page to class before the chapter test.

Date	Part & Q No.	What went wrong	Correct rule or method	Redone ✓