

CBSE CLASS X
Science (086)**QUESTION PAPER***From previous CBSE Board Exam questions***Code: MG8JFE****Questions: 65****Maximum Marks: 122****Generated: 2026-06-15 13:05****SELECTIONS USED**

Source	Previous-year board
Subject	Science
Lessons	The Human Eye and the Colourful World
Year	2022-2026
Questions selected	65

Composition — Types: 25 Short · 18 MCQ · 14 Very short · 6 Assertion–reason · 2 source_based

Q1. § 10.3 REFRACTION OF LIGHT THROUGH A PRISM § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[1]**

The colour of light for which the refractive index of glass is minimum, is :

- (A) Red
- (B) Yellow
- (C) Green
- (D) Violet

Previously asked in: 2024 31/5/1 Q13

♦ The Human Eye and the Colourful World

Refractive index and colour of light (dispersion)

Q2. § 10.1 THE HUMAN EYE**[1]**

In human eye the part which allows light to enter into the eye is –

- (a) Retina
- (b) Pupil
- (c) Eye lens
- (d) Cornea

Previously asked in: 2023 31/6/1 Q16

♦ The Human Eye and the Colourful World

Structure of the Human Eye – Cornea/Pupil (light entry)

Q3. § 10.1 THE HUMAN EYE**[1]**

The lens system of human eye forms an image on a light sensitive screen, which is called as :

- (a) Cornea
- (b) Ciliary muscles
- (c) Optic nerves
- (d) Retina

Previously asked in: 2024 31/1/1 Q13

♦ The Human Eye and the Colourful World

Structure of the Human Eye – Retina as the light-sensitive screen

Q4. § 10.1 THE HUMAN EYE**[1]**

The part of human eye which controls the amount of light entering into it.

- (A) Iris
- (B) Cornea
- (C) Ciliary muscles
- (D) Pupil

Previously asked in: 2025 31/6/1 Q14

♦ The Human Eye and the Colourful World

Iris and Pupil – Control of Light Entry

Q5. § Chapter Introduction § 10.1 THE HUMAN EYE**[1]**

The pair of eye parts responsible for admitting different amount of light in to the eyes is

- (A) Iris and pupil
- (B) Ciliary muscles and pupil
- (C) Retina and Iris
- (D) Ciliary muscles and cornea

Previously asked in: 2026 31/4/1 Q30

♦ The Human Eye and the Colourful World

Structure of the Human Eye (Iris and Pupil)

Q6. § 10.1 THE HUMAN EYE § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[1]**

Consider the following statements in the context of human eye :

- (a) The diameter of the eye ball is about 2.3 cm.
- (b) Iris is a dark muscular diaphragm that controls the size of the pupil.
- (c) Most of the refraction for the light rays entering the eye occurs at the crystalline lens.
- (d) While focusing on the objects at different distances the distance between the crystalline lens and the retina is adjusted by ciliary muscles.

The correct statements are –

- (A) (a) and (b)
- (B) (a), (b) and (c)
- (C) (b), (c) and (d)
- (D) (a), (c) and (d)

Previously asked in: 2024 31/2/1 Q13

♦ The Human Eye and the Colourful World

Power of Accommodation and Ciliary Muscles

Refraction of Light in the Human Eye (role of cornea vs. crystalline lens)

Structure of the Human Eye (eye ball, iris, pupil, crystalline lens, retina)

Q7. § 10.1.1 Power of Accommodation**[1]**

Assertion (A) : When ciliary muscles contract, eye lens becomes thin.

Reason (R) : Ciliary muscles control the power of the eye lens.

- (a) Both, Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both, Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2025 31/4/1 Q20

♦ The Human Eye and the Colourful World

Accommodation of the Eye – Role of Ciliary Muscles

Q8. § 10.1 THE HUMAN EYE § 10.1.1 Power of Accommodation

[3]

Answer the following :

- (a) State one important function of the following parts of the human eye : (i) Retina (ii) Pupil
- (b) State the role of ciliary muscles in focussing objects at varying distances from the eye.

Previously asked in: 2023 31/5/1 Q31

♦ The Human Eye and the Colourful World

Accommodation – Role of ciliary muscles in focusing

Structure and function of the human eye – Retina and Pupil

Q9. § 10.1.1 Power of Accommodation

[2]

How does the focal length of eye lens change as the distance of the object from the eyes is altered ? Explain.

Previously asked in: 2026 31/2/1 Q34 (a)

♦ The Human Eye and the Colourful World

Accommodation of the Eye – Change in Focal Length with Object Distance

Q10. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[3]

State reasons for Myopia. With the help of ray diagrams, show the

- (a) image formation by a myopic eye, and
- (b) correction of myopia using an appropriate lens.

Previously asked in: 2023 31/6/1 Q31

♦ The Human Eye and the Colourful World

Correction of Myopia using a concave lens – Ray diagram

Myopia (Short-sightedness) – Causes

Ray diagram – Image formation by a myopic eye

Q11. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[2]

When do we say that a particular person is suffering from hypermetropia ? List two causes of this defect. Name the type of lens used to correct this defect.

Previously asked in: 2024 31/3/1 Q24

♦ The Human Eye and the Colourful World

Hypermetropia – Definition, Causes, and Correction

Q12. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[1]

Assertion (A) : Myopic eye cannot see distant objects distinctly.

Reason (R) : For the correction of myopia converging lenses of appropriate power are prescribed by eye-surgeons.

- (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.

Previously asked in: 2024 31/2/1 Q19

♦ The Human Eye and the Colourful World

Myopia (Short-sightedness) – Cause and Correction

Q13. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[3]

Study the diagram given below and answer the questions that follow :

- (i) Name the defect of vision represented in the diagram. Give reason for your answer.
- (ii) List two causes of this defect.
- (iii) With the help of a diagram show how this defect of vision is corrected.

Previously asked in: 2024 31/1/1 Q31

♦ The Human Eye and the Colourful World

Causes of Defects of Vision

Correction of Myopia using Concave Lens

Defects of Vision – Myopia (Short-sightedness)

Q14. § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[1]

The possible way to restore clear vision of those people whose eyeball has elongated is the use of suitable

- A bifocal lens
- B concave lens
- C converging lens
- D convex lens

Previously asked in: 2025 31/5/1 Q14

♦ The Human Eye and the Colourful World

Myopia (Short-sightedness) – Correction using Concave Lens

Q15. § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[2]

Name the type of lenses required by the persons for the correction of their defect of vision called presbyopia. Write the structure of the lenses commonly used for the correction of this defect giving reason for such designs.

Previously asked in: 2025 31/4/1 Q25(B)

♦ The Human Eye and the Colourful World

Presbyopia – causes, correction, and bifocal lenses

Q16. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[2]

Observe the following diagram showing an image formation in an eye :

- (a) Identify the defect of vision shown in the figure.
- (b) List its two causes and suggest a suitable corrective lens to overcome this defect.

Previously asked in: 2023 31/5/1 Q25

♦ The Human Eye and the Colourful World

Corrective Lenses for Vision Defects

Defects of Vision – Myopia/Hypermétropia/Presbyopia

Q17. § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[2]

(A) Observe the following diagram and answer the questions following it :

- (i) Identify the defect of vision shown.
- (ii) List its two causes.
- (iii) Name the type of lens used for the correction of this defect.

Previously asked in: 2023 31/4/1 Q25 (A)

♦ The Human Eye and the Colourful World

Correction of Defects of Vision using Lenses

Defects of Vision – Myopia (Short-sightedness)

Q18. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION

[1]

Assertion (A) : A person suffering from myopia cannot see the distant objects clearly.

Reason (R) : A converging lens is used for the correction of myopic eye as it can form real as well as virtual images of the objects placed in front of it.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2023 31/2/1 Q19

♦ The Human Eye and the Colourful World

Correction of Myopia using Concave Lens

Myopia (Short-sightedness) – Cause and Correction

Q19. § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

Study the diagram given below and answer the questions that follow :

- (i) Name the defect of vision depicted in this diagram stating the part of the eye responsible for this condition.
- (ii) List two causes of this defect.
- (iii) Name the type of lens used to correct this defect and state its role in this case.

Previously asked in: 2024 31/5/1 Q31 (a)

♦ The Human Eye and the Colourful World

Causes of Defects of Vision

Corrective Lenses for Vision Defects

Defects of Vision – Myopia or Hypermetropia

Q20. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

A student has difficulty in reading his textbooks but can read the blackboard clearly while sitting in the last row. Name the defect of vision the student is suffering from. List two reasons due to which this defect arises. Write the nature of the lenses required to correct this defect.

Previously asked in: 2025 31/3/1 Q25(a)

♦ The Human Eye and the Colourful World

Hypermetropia (Far-sightedness) – causes and correction

Q21. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[1]**

An old person is suffering from an eye defect caused by weakening of ciliary muscles and diminishing flexibility of the eye lens. If the defect of vision is 'a' which can be corrected by lens 'b', then 'a' and 'b' respectively are :

- (A) hypermetropia and convex lens
- (B) presbyopia and bifocal lens
- (C) myopia and concave lens
- (D) myopia and bifocal lens

Previously asked in: 2025 31/1/1 Q14

♦ The Human Eye and the Colourful World

Presbyopia and its correction

Q22. § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

Study the given diagram and answer the questions that follow :

- (a) Write the name of the eye defect shown in the diagram. Where is the image formed in this eye defect with respect to the retina of the eye ?
- (b) List two causes of this eye defect.
- (c) With the help of a diagram, show how this eye defect of vision is corrected.

Previously asked in: 2026 31/3/1 Q35

♦ The Human Eye and the Colourful World

Defects of Vision and their Correction

Myopia (Near-sightedness) – causes, image formation, and correction

Q23. § 10.1 THE HUMAN EYE § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

Why is the concave lens used as a corrective lens for a myopic eye ?

Previously asked in: 2026 31/2/1 Q34 (b)

♦ The Human Eye and the Colourful World

Myopia (Short-sightedness) and correction using concave lens

Q24. § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[1]**

To restore clear vision in persons whose size of the eye ball has reduced, he/she is suggested to use suitable

- (A) Converging lens
- (B) Diverging lens
- (C) Bifocal lens
- (D) Cylindrical lens

Previously asked in: 2026 31/5/1 Q31

♦ The Human Eye and the Colourful World

Hypermetropia (Far-sightedness) – correction using convex lens

Q25. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

A person is unable to read a book placed closer than 1 meter from his eyes. Identify the defect of vision in his eyes. Draw the ray diagrams to show the defect of vision and its correction.

Previously asked in: 2026 31/1/1 Q35

♦ The Human Eye and the Colourful World

Hypermetropia (far-sightedness) and its correction using convex lens

Q26. § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[1]**

The vision defect which arises due to gradual weakening of the ciliary muscles and diminishing flexibility of eye lens is :

- (A) Myopia
- (B) Hypermetropia
- (C) Presbyopia
- (D) Myopia and hypermetropia both

Previously asked in: 2026 31/4/1 Q31

♦ The Human Eye and the Colourful World

Presbyopia (Defects of Vision)

Q27. § 10.3 REFRACTION OF LIGHT THROUGH A PRISM**[2]**

Draw a ray diagram to show the refraction of a ray of light passing through an equilateral glass prism. Mark the angle through which the emergent ray bends from the direction of the incident ray and also name it.

Previously asked in: 2025 31/4/1 Q25(A)

♦ The Human Eye and the Colourful World

Refraction through a glass prism – ray diagram and angle of deviation

Q28. § 10.3 REFRACTION OF LIGHT THROUGH A PRISM**[3]**

Answer the following:

- (a) Draw the ray diagram for refraction of light through a glass prism and mark angle of refraction and angle of deviation.
- (b) When the path of a light ray refracted through a glass prism is reversed how will the angle of deviation change ? Explain.

Previously asked in: 2026 31/5/1 Q35

♦ The Human Eye and the Colourful World

Refraction of light through a glass prism – ray diagram, angle of refraction, and angle of deviation

Reversibility of light path through a prism and its effect on angle of deviation

Q29. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[1]

In the following diagram showing dispersion of white light by a glass prism, the colours 'P' and 'Q' respectively are –

- (a) Red and Violet
- (b) Violet and Red
- (c) Red and Blue
- (d) Orange and Green

Previously asked in: 2023 31/6/1 Q13

♦ The Human Eye and the Colourful World

Dispersion of White Light by a Glass Prism

Q30. § 10.3 REFRACTION OF LIGHT THROUGH A PRISM § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[2]

A narrow beam XY of white light is passing through a glass prism ABC as shown in the diagram. Trace it on your answer sheet and show the path of the emergent beam as observed on the screen PQ. Name the phenomenon observed and state its cause.

Previously asked in: 2023 31/1/1 Q25(a)

♦ The Human Eye and the Colourful World

Cause of dispersion – different refractive indices for different colours (wavelengths)

Dispersion of white light through a glass prism

Q31. § Chapter Introduction § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[3]

Draw a ray diagram to show the formation of a rainbow in the sky. On this diagram mark A – where dispersion of light occurs, B – where internal reflection of light occurs and C – where refraction of light occurs. List two necessary conditions to observe a rainbow.

Previously asked in: 2024 31/2/1 Q31(b)

♦ The Human Eye and the Colourful World

Conditions necessary to observe a rainbow

Formation of a Rainbow – ray diagram showing dispersion, internal reflection, and refraction

Q32. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[1]

Assertion (A) : The rainbow is a natural spectrum of sunlight in the sky.

Reason (R) : Rainbow is formed in the sky when the sun is overhead and water droplets are also present in air.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2024 31/1/1 Q20

♦ The Human Eye and the Colourful World

Formation of rainbow – conditions and mechanism

Rainbow as a natural spectrum of sunlight

Q33. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[2]

What is a rainbow ? "We see a rainbow in the sky only after the rainfall." Why ?

Previously asked in: 2025 31/6/1 Q25(b)

♦ The Human Eye and the Colourful World

Rainbow – formation and explanation

Q34. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[4]**

The students in a class took a thick sheet of cardboard and made a small hole in its centre. Sunlight was allowed to fall on this small hole and they obtained a narrow beam of white light. A glass prism was taken and this white light was allowed to fall on one of its faces. The prism was turned slowly until the light that comes out of the opposite face of the prism appeared on the nearby screen. They studied this beautiful band of light and concluded that it is a spectrum of white light.

Read the source and answer the questions that follow.

- (i) Give any one more instance in which this type of spectrum is observed. [1]
- (ii) What happens to white light in the above case? [1]
- (iii) List two conditions necessary to observe a rainbow. [2]

Previously asked in: 2025 31/4/1 Q39

♦ The Human Eye and the Colourful World

Atmospheric refraction and natural spectrum instances

Dispersion of white light through a glass prism

Rainbow formation and conditions for observing a rainbow

Q35. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[2]**

(a) When and where does a rainbow appear in the sky ? Draw a labelled ray diagram to show its formation.

Previously asked in: 2023 31/2/1 Q24 (a)

♦ The Human Eye and the Colourful World

Formation of Rainbow

Q36. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[3]**

What is dispersion of white light ? State its cause. Draw a diagram to show dispersion of a beam of white light by a glass prism.

Previously asked in: 2024 31/5/1 Q31 (b)

♦ The Human Eye and the Colourful World

Dispersion of White Light by a Glass Prism

Q37. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[1]**

The phenomena of light involved in the formation of rainbow are :

- (A) Refraction, reflection and dispersion
- (B) Refraction, dispersion and internal reflection
- (C) Reflection, dispersion and internal reflection
- (D) Refraction, dispersion, scattering and total internal reflection

Previously asked in: 2024 31/5/1 Q12

♦ The Human Eye and the Colourful World

Formation of Rainbow – Dispersion, Refraction, and Total Internal Reflection

Q38. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[3]**

What is a rainbow ? Draw a labelled diagram to show its formation.

Previously asked in: 2025 31/3/1 Q31

♦ The Human Eye and the Colourful World

Rainbow – Formation and Diagram

Q39. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[4]**

A person allowed a narrow beam of white light from the sun to enter a dark room through a small aperture and placed a glass prism in its path in such a manner that the beam falls on the face AB of the prism as shown in the figure. A screen S is placed on the other side of the prism, facing AC. On turning the prism slowly, a beautiful band of colours is obtained on the screen. It is the spectrum of sunlight.

Read the case carefully and answer the questions that follow.

- (a) Name the phenomenon due to which a prism splits the incident white light into a band of colours. [1]
- (b) State the reason of getting a band of seven colours in the above case. [1]
- (c) (i) Explain with the help of a labelled ray diagram, an experimental arrangement to show the recombination of the spectrum of white light. [2]

Previously asked in: 2025 31/2/1 Q39

♦ The Human Eye and the Colourful World

Dispersion of white light through a prism

Formation of spectrum – different refractive indices for different colours

Recombination of spectrum of white light – ray diagram

Q40. § Chapter Introduction § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM § 10.6 SCATTERING OF LIGHT**[2]**

With the help of a ray diagram, explain any phenomenon of formation of spectrum in nature.

Previously asked in: 2026 31/3/1 Q34 (b)

♦ The Human Eye and the Colourful World

Formation of Rainbow – Dispersion of Light in Nature

Q41. § 10.3 REFRACTION OF LIGHT THROUGH A PRISM § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[1]**

Observe the given ray diagram showing refraction through a prism and choose the correct option for colour of rays 1 and 2 :

- (A) Colour of ray 1: Blue; Colour of ray 2: Red
- (B) Colour of ray 1: Green; Colour of ray 2: Yellow
- (C) Colour of ray 1: Red; Colour of ray 2: Violet
- (D) Colour of ray 1: Violet; Colour of ray 2: Red

Previously asked in: 2026 31/3/1 Q31

♦ The Human Eye and the Colourful World

Dispersion of light through a prism – identifying colours by angle of deviation

Q42. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[1]**

A thin beam of white light falls on a face of a glass prism and a spectrum is obtained on a screen. Which of the following options is the correct sequence of colours from top to bottom on the screen ?

- (A) Red, Green, Yellow, Violet, Blue
- (B) Red, Yellow, Green, Blue, Violet
- (C) Violet, Blue, Green, Yellow, Red
- (D) Violet, Red, Green, Yellow, Blue

Previously asked in: 2026 31/2/1 Q31

♦ The Human Eye and the Colourful World

Dispersion of white light through a prism – sequence of colours in spectrum

Q43. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[1]**

Assertion (A) : When rays of white light pass through a prism, on emerging they give spectrum of seven colours.

Reason (R) : It is due to the scattering of light that red light bends minimum and violet light bends the maximum.

A Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

B Both, Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

C Assertion (A) is true, but Reason (R) is false.

D Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2026 31/1/1 Q32

♦ The Human Eye and the Colourful World

Dispersion of white light by a prism

Q44. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM**[3]**

Explain the phenomenon of rainbow formation in the sky. Draw the labelled ray diagram in support of your explanation.

Previously asked in: 2026 31/4/1 Q36

♦ The Human Eye and the Colourful World

Rainbow Formation (Dispersion of Light by Water Droplets)

Q45. § 10.5 ATMOSPHERIC REFRACTION § 10.6 SCATTERING OF LIGHT

Give reasons for the following : The sky appears dark to the passengers flying at very high altitudes.

Previously asked in: 2023 31/1/1 Q31 (b)

♦ The Human Eye and the Colourful World

Scattering of Light and Appearance of the Sky

Q46. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM § 10.5 ATMOSPHERIC REFRACTION

Give reasons for the following : Danger signals installed at airports and at the top of tall buildings are of red colour.

Previously asked in: 2023 31/1/1 Q31 (a)

♦ The Human Eye and the Colourful World

Scattering of Light – Red colour has least scattering and maximum visibility

Q47. § 10.6 SCATTERING OF LIGHT**[3]**

Name and explain the phenomenon of light due to which the path of a beam of light becomes visible when it enters a smoke filled room through a small hole. Also state the dependence of colour of the light we receive on the size of the particle of the medium through which the beam of light passes.

Previously asked in: 2024 31/3/1 Q31

♦ The Human Eye and the Colourful World

Dependence of scattered light colour on particle size

Scattering of Light (Tyndall Effect)

Q48. § Chapter Introduction § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM § 10.6 SCATTERING OF LIGHT**[1]**

Assertion (A) : Red light signals are used to stop the vehicles on the road. Reason (R) : Red coloured light is scattered the most so as to be visible from a large distance.

A Both (A) and (R) are true and (R) is the correct explanation of (A).

B Both (A) and (R) are true and (R) is not correct explanation of (A).

C (A) is true, but (R) is false.

D (A) is false, but (R) is true.

Previously asked in: 2024 31/3/1 Q19

♦ The Human Eye and the Colourful World

Scattering of Light and Use of Red Light for Danger Signals

Q49. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM

[1]

The Phenomena of light involved in the formation of a rainbow in the sky are

- A Refraction, dispersion and reflection
- B Refraction, dispersion and total internal reflection
- C Dispersion, scattering and reflection
- D Dispersion, refraction and internal reflection

Previously asked in: 2024 31/3/1 Q13

♦ The Human Eye and the Colourful World

Dispersion of Light

Formation of Rainbow

Total Internal Reflection and Refraction in Rainbow

Q50. § 10.4 DISPERSION OF WHITE LIGHT BY A GLASS PRISM § 10.5 ATMOSPHERIC REFRACTION § 10.6 SCATTERING OF LIGHT

[2]

Give reasons :

- (i) The sky appears dark to passengers flying at very high altitude.
- (ii) 'Danger' signal lights are red in colour.

Previously asked in: 2025 31/6/1 Q25(a)

♦ The Human Eye and the Colourful World

Scattering of light – Red colour for danger signals (least scattered colour)

Scattering of light – Tyndall effect and blue sky/dark sky at high altitude

Q51. § 10.6 SCATTERING OF LIGHT

[2]

(B) The colour of clear sky from the earth appears blue but from the space it appears black. Why ?

Previously asked in: 2023 31/4/1 Q25 (B)

♦ The Human Eye and the Colourful World

Scattering of Light – Blue colour of sky and black appearance from space

Q52. § 10.6 SCATTERING OF LIGHT

[2]

(b) What is scattering of light ? Why does the clear sky appear blue ?

Previously asked in: 2023 31/2/1 Q24 (b)

♦ The Human Eye and the Colourful World

Blue Colour of the Sky (Rayleigh Scattering)

Scattering of Light

Q53. § 10.6 SCATTERING OF LIGHT

[1]

When a beam of white light passes through a region having very fine dust particles, the colour of light mainly scattered in that region is :

- A Red
- B Orange
- C Blue
- D Yellow

Previously asked in: 2024 31/4/1 Q12

♦ The Human Eye and the Colourful World

Scattering of Light by Fine Particles

Q54. § 10.6 SCATTERING OF LIGHT**[1]**

When a beam of white light passes through a region of very fine dust particles, the colour of light that scatters the most in that region is :

- (A) red
- (B) orange
- (C) blue
- (D) yellow

Previously asked in: 2025 31/3/1 Q12

♦ The Human Eye and the Colourful World

Scattering of Light – Tyndall Effect and colour scattering by fine particles

Q55. § 10.6 SCATTERING OF LIGHT**[2]**

What happens when light is scattered from (i) very fine particles and (ii) very large size particles of medium ? Justify your answer in each case.

Previously asked in: 2026 31/3/1 Q34 (a)

♦ The Human Eye and the Colourful World

Scattering of light – dependence on particle size (Tyndall effect and large particle scattering)

Q56. § 10.6 SCATTERING OF LIGHT**[3]**

What is scattering of light ? How is scattering of light different from reflection of light ? Explain.

Previously asked in: 2026 31/2/1 Q36

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Difference between Scattering and Reflection of Light

Scattering of Light

Q57. § Chapter Introduction § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

Define the term power of accommodation of human eye. Write the name of the part of eye which plays a major role in the process of accommodation and explain what happens when human eye focuses (i) nearby objects and (ii) distant objects.

Previously asked in: 2024 31/2/1 Q31(a)

♦ The Human Eye and the Colourful World

Focusing Nearby and Distant Objects – Mechanism of Accommodation

Power of Accommodation of the Human Eye

Role of Ciliary Muscles in Accommodation

Q58. § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

Define the term power of accommodation of human eye. What happens to the image distance in the eye when we increase the distance of an object from the eye ? Name and explain the role of the part of human eye responsible for it in this case.

Previously asked in: 2024 31/4/1 Q31

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Power of Accommodation of the Human Eye

Role of the Ciliary Muscles and Crystalline Lens in Accommodation

Q59. § 10.1.1 Power of Accommodation**[2]**

Answer the following:

- (i) How does the change in curvature of the eye lens helps us in the process of seeing the nearby objects clearly ?
- (ii) State the range of the power of accommodation of a normal human eye.

Previously asked in: 2026 31/5/1 Q34 ((A))

♦ The Human Eye and the Colourful World

Accommodation of the eye lens – change in curvature for near vision

Power of accommodation of the normal human eye

Q60. § 10.1 THE HUMAN EYE § 10.1.1 Power of Accommodation § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[1]**

When you look at an object very close to your eyes, the :

- A Ciliary muscles of your eye contract and the eye lens becomes thick.
- B Ciliary muscles of your eye get relaxed and the eye lens becomes thick.
- C Ciliary muscles of your eye contract and the eye lens becomes thin.
- D Ciliary muscles of your eye get relaxed and the eye lens becomes thin.

Previously asked in: 2026 31/1/1 Q31

♦ The Human Eye and the Colourful World

Accommodation and Power of the Eye

Q61. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

It is observed that the power of an eye to see nearby objects as well as far off objects diminishes with age.

- (i) Give reason for the above statement.
- (ii) Name the defect that is likely to arise in the eyes in such a condition.
- (iii) Draw a labelled ray diagram to show the type of corrective lens used for restoring the vision of such an eye.

Previously asked in: 2023 31/1/1 Q25(b)

♦ The Human Eye and the Colourful World

Correction of presbyopia using bifocal lens – ray diagram

Presbyopia – causes and age-related loss of accommodation

Presbyopia – defect of vision in old age

Q62. § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

A person uses lenses of +2.0 D power in his spectacles for the correction of his vision.

- (a) Name the defect of vision the person is suffering from.
- (b) List two causes of this defect.
- (c) Determine the focal length of the lenses used in the spectacles.

Previously asked in: 2025 31/6/1 Q32

♦ The Human Eye and the Colourful World

Hypermetropia (Far-sightedness) – defect, causes, and correction

Power of a lens and focal length relationship ($P = 1/f$)**Q63.** § Chapter Introduction § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[3]**

The power of a lens is -0.25 D. Based on this information, find out

- (a) The type of lens and its focal length.
- (b) The eye defect for which it may be used as a corrective lens.
- (c) The nature and size of the image formed by this lens when an object is placed between F and 2F from the optical centre of this lens.

Previously asked in: 2025 31/5/1 Q31

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Defects of vision – Myopia and corrective lens

Image formation by a concave lens (object between F and 2F)

Power of a lens and focal length calculation

Q64. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

A person suffering from presbyopia needs bifocal lens. If he needs two lens of power -4.0 dioptre and $+2.0$ dioptre, which one of these two lenses is for the correction of distant vision and what is its focal length ?

Previously asked in: 2024 31/4/1 Q25

♦ The Human Eye and the Colourful World

Correction of defects of vision – myopia (concave lens for distant vision)

Power of a lens and focal length relationship ($P = 1/f$)

Presbyopia and bifocal lenses

Q65. § 10.2 DEFECTS OF VISION AND THEIR CORRECTION**[2]**

Draw a ray diagram to show the correction of eye defect of an old man who can not see an object placed closer than 1 m from his eye, clearly.

Previously asked in: 2026 31/5/1 Q34 ((B))

♦ The Human Eye and the Colourful World

Presbyopia – correction using convex lens (ray diagram)

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