Worksheet 11.1

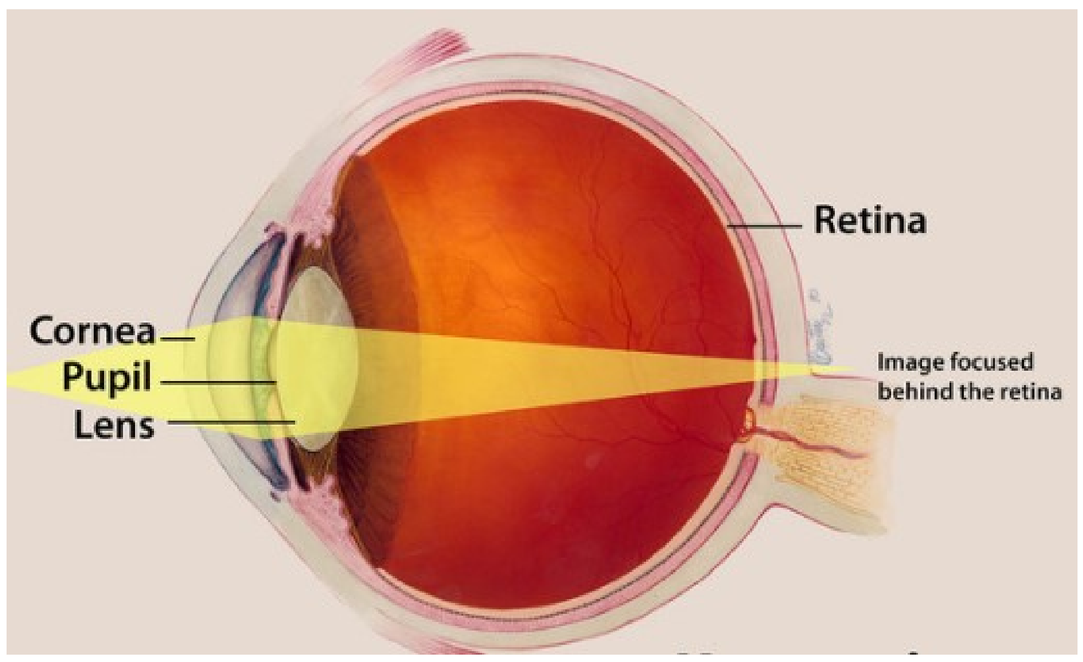
Marks - 25

Case study based questions

10th Science

Human Eye and Colourful World

Passage - 1 **5 Marks**



Pinky needs a lens of power 5.5 D for correcting her distant vision. For correcting her near vision she needs a lens of power +1.5 D. Few questions came to her mind. Give answers to the below questions:

Q 1. What is the focal length of the lens required for correcting distant vision?

(1) -0.181 m
(2) 0.667 m
(3) 0.567 m

Q 2. What is the focal length of the lens required for correcting near vision?

(1) -0.181 m
(2) 0.667 m
(3) 0.567 m

Q 3. What is the formula for finding the focal length of the lens?

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(1) $\frac{1}{P^2}$
(2) $\frac{1}{P}$
(3) P

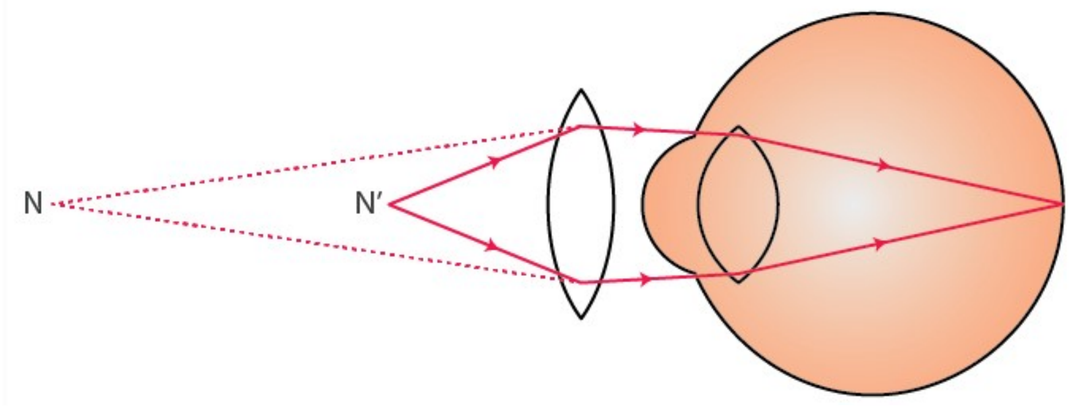
Q 4. What is the unit for measuring the power of the lens?

(1) Dioptre
(2) Millimeter

Q 5. What is the unit for measuring the focal length of the lens?

(1) Dioptre
(2) Millimeter

Passage - 2 **5 Marks**



The near point of a hypermetropic eye is 1 m. Assume that the near point of the normal eye is 25 cm. Pinky has seen the above image in her classroom with the given details. Few questions came to her mind. Give answers to the below questions:

Q 1. Is the above diagram showing the correction of hypermetropic eye?

(1) YES
(2) NO

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Q 2. What is the power of the lens required to correct this defect?

(1) $+3.0D$
(2) $+4.0D$
(3) $+5.0D$
(4) $+6.0D$

Q 3. What is the object distance (u) in the above data?

(1) -24 cm
(2) – 25 cm
(3) – 29 cm
(4) – 28 cm

Q 4. What is the focal length (f) in the above data given?

(1) 0.73 m
(2) 0.33 m
(3) 1.33 m
(4) 2.33 m

Q 5. What is the image distance (v) in the above data given?

(1) – 1 m
(2) – 2 m
(3) – 7 m
(4) – 100 m

Passage - 3

5 Marks

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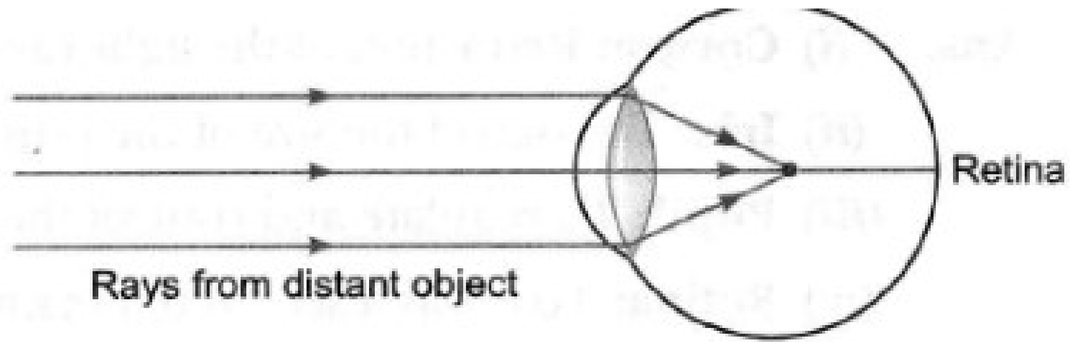


Pinky sees that the far point of a myopic person is 80 cm in front of the eye. Few questions came to her mind. Give answers to the below questions:

Q 1. What is the nature of the lens needed to correct the problem?

(1) Convex lens
(2) Concave lens

Q 2. What is the power of the lens required to correct the problem?

(1) – 3.25 D
(2) – 1.25 D
(3) – 6.25 D
(4) – 8.25 D

Q 3. Where is the image formed in myopia?

(1) In front of the retina
(2) Beyond the retina

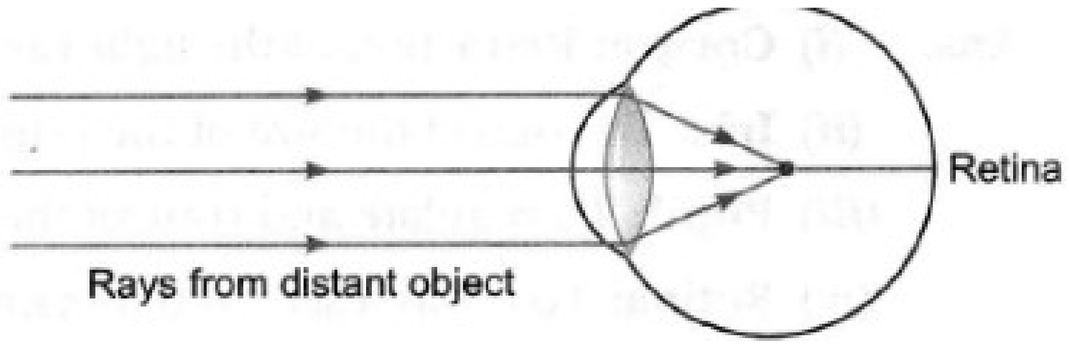
Q 4. What is the object distance (u) in the above problem?

(1) Infinity
(2) 80 cm

Q 5. What is the image distance (v) in the above problem?

(1) Infinity
(2) 80 cm
(3) -80 cm

Passage - 4 **5 Marks**



Balu observes that a 14-year old student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him. Few questions came to his mind. Give answers to the below questions:

Q 1. Name the defect of vision he is suffering from.

(1) Myopia
(2) Hypermetropia

Q 2. Name the type of lens used to correct this defect.

(1) Convex Lens
(2) Concave Lens

Q 3. What is the correct labelled ray diagram of myopia?

(1)
(2)

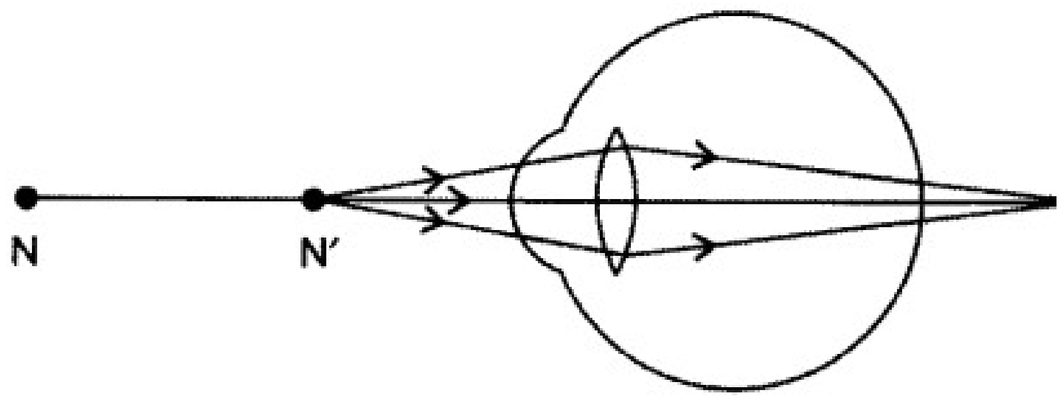
Q 4. What is the correct labelled ray diagram of his defect which can be corrected?

(1)
(2)

Q 5. What is the other name of myopia?

(1) Long-sightedness
(2) Short-sightedness

Passage - 5 **5 Marks**



Pinky has seen the above diagram in her classroom and she had few doubts in her mind. Study the diagram given above and answer the questions that follow it:

Q 1. Which defect of vision is represented in this case?

(1) Hypermetropia
(2) Myopia

Q 2. What could be the causes of this defect?

(1) Due to greater focal length of the lens
(2) As eyeball becomes smaller
(3) Both A and B
(4) None of these

Worksheet 11.1

Marks - 25

Q 3. What is the correct diagram to show how this defect can be corrected?

(1)
(2)

Q 4. Which lens is used for correcting the defect?

(1) Convex lens
(2) Concave lens

Q 5. Where is the image formed in hypermetropia?

(1) In front of the retina
(2) Beyond the retina

Worksheet 11.2

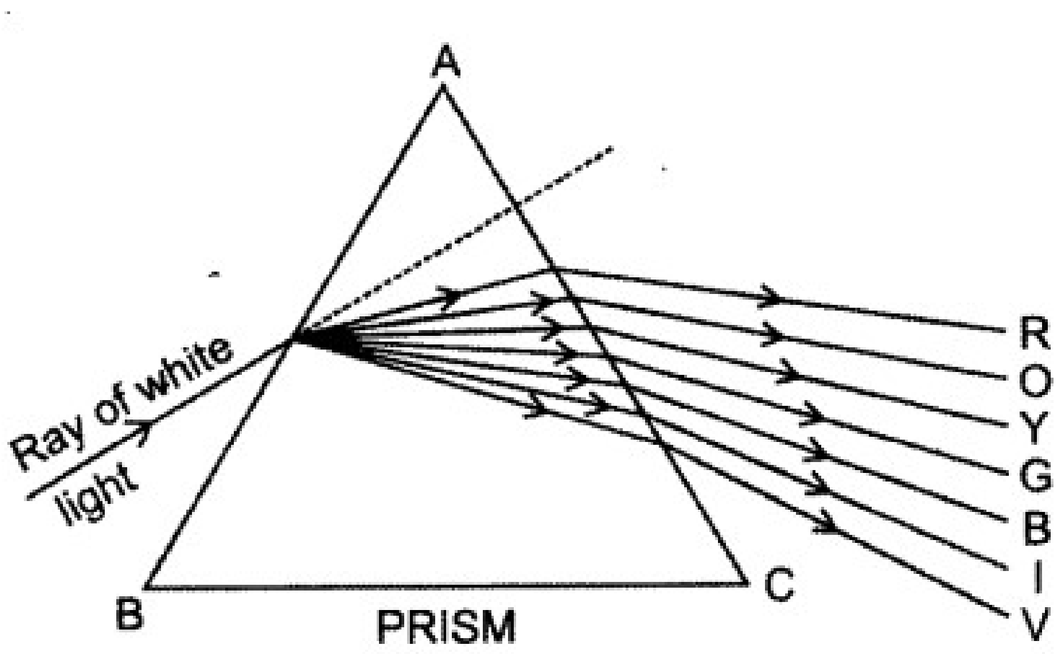
Marks - 25

(1) Condition in which you can see distant objects clearly, but nearby objects may be blurry.
(2) Condition in which you can see nearby objects clearly, but distant objects may be blurry.

Q 5. Astigmatism can be corrected by using which lens?

(1) Concave lens
(2) Cylindrical lens

Passage - 2 **5 Marks**



Pinky has seen the above diagram in her classroom and she had few doubts in her mind. Study the diagram given above and answer the questions that follow it:

Q 1. What does the above diagram represent?

(1) Dispersion of white light by a glass prism.
(2) Dispersion of white light by a plastic prism.

Q 2. Which Option defines the term dispersion of white light.

(1) Merging component colours of to give white light.

(2) Splitting up of white light into its component colours

Q 3. What is the colour which bends the least while passing through a glass prism?

(1) Orange
(2) Violet
(3) Red
(4) Green

Q 4. What is the colour which bends the most while passing through a glass prism?

(1) Orange
(2) Violet
(3) Red
(4) Green

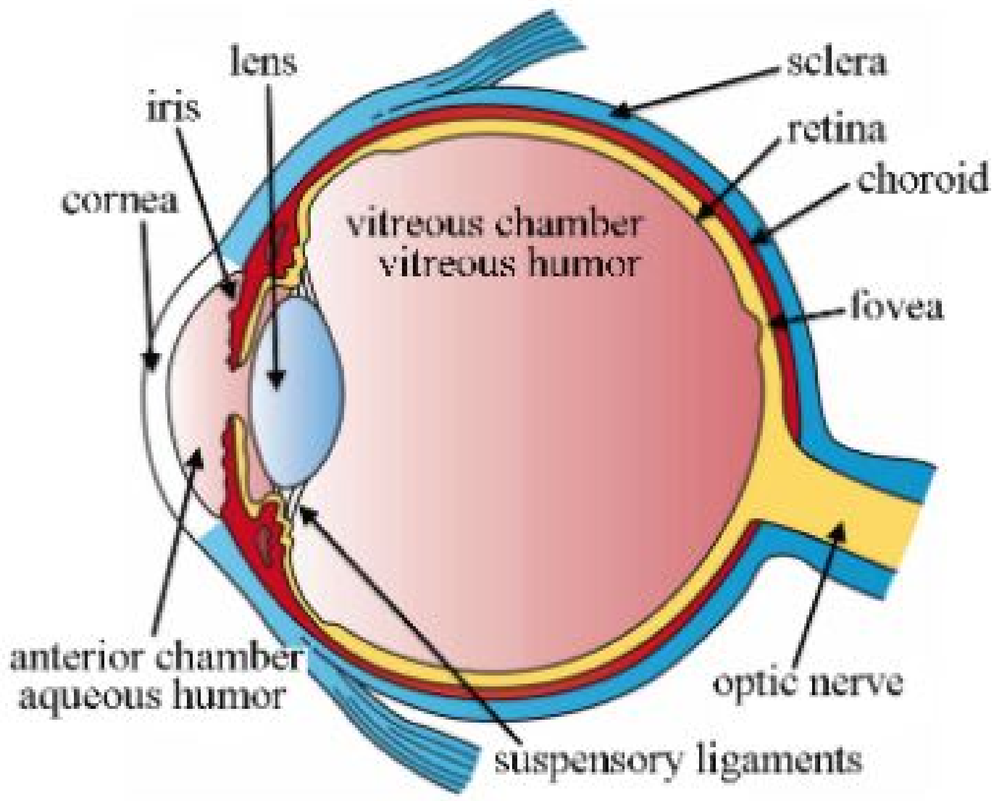
Q 5. Which color has maximum speed in glass prism?

(1) Orange
(2) Violet
(3) Red
(4) Green

Passage - 3 **5 Marks**

Worksheet 11.2

Marks - 25



A teacher is teaching her students certain concepts related to the human eye. See the above image and answer the below questions.

Q 1. Name the labelled part 1.

(1) Cornea
(2) Retina
(3) Lens
(4) Optic nerve

Q 2. Name the labelled part 2 of the above diagram.

(1) Lens
(2) Retina
(3) Cornea
(4) Optic nerve

Q 3. Name the labelled part 3.

(1) Cornea
(2) Retina

(3) Lens
(4) Optic nerve

Q 4. Which part of our eye helps us to focus near and distant objects?

(1) Lens
(2) Ciliary muscles
(3) Retina
(4) Optic nerve

Q 5. Name the labelled part 6.

(1) Optic nerve
(2) Retina
(3) Lens
(4) Cornea

Passage - 4

5 Marks

Worksheet 11.2

Marks - 25

A boy uses spectacles of focal length −60cm. He had few doubts in his mind and consults doctor for clearing them. Answer the below questions by using the above information.

Q 1. Name the defect of vision he is suffering from.

(1) Myopia
(2) Hypermetropia

Q 2. Which lens is used for correction of this defect?

(1) Concave lens
(2) Convex lens

Q 3. What is the power of this lens?

(1) -1.667 D
(2) -9.667 D
(3) 10 D

Q 4. What is the focal length of this lens?

(1) -0.60 cm
(2) -0.60 m
(3) -10.60 m

Q 5. What does the negative sign of focal length indicates ?

(1) Concave lens
(2) Convex lens

Worksheet 11.2

Marks - 25

Passage - 5

5 Marks

Ravi is a student of class VII. During summer vacation, his parents planned a visit to Haridwar by their car. During the journey from Delhi to Haridwar, Ravi sat on the front seat and his father was driving the car. Ravi observed that the road ahead on the highway appears to be wet but when the car reached the spot, road is found to be dry. He was perplexed by this observation. He asked his father. His father advised Ravi not to disturb him during driving and said that he will discuss the problem on reaching Haridwar. In the evening, when they were settled in a hotel at Haridwar, Ravi's father told him that the illusion observed by ravi was on account of atmospheric refraction. Now, Ravi was happy as he knew the real explanation of his observation.

Q 1. When the light rays pass through the atmosphere then refraction of light takes place. The refraction of light caused by the earth's atmosphere is called as _____.

(1) Atmospheric refraction
(2) Reflection

Q 2. Name the phenomena based on atmospheric refraction

(1) Twinkling of stars at night
(2) Early sunrise and delayed sunset
(3) Both A and B

Worksheet 11.2

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Q 3. What characteristic was shown by ravi during his journey?

(1) Curiosity and an urge to learn are shown
(2) Anger and sadness to learn are shown

Q 4. What advice was given by Ravi's father to him?

(1) Not to disturb him during driving
(2) Ask him more questions during driving

Q 5. Why the advice was given by Ravi's father to him?

(1) One should not drive very carefully and should not be distracted for a safe journey.
(2) One should drive very carefully and should not be distracted for a safe journey.