Worksheet 11.5

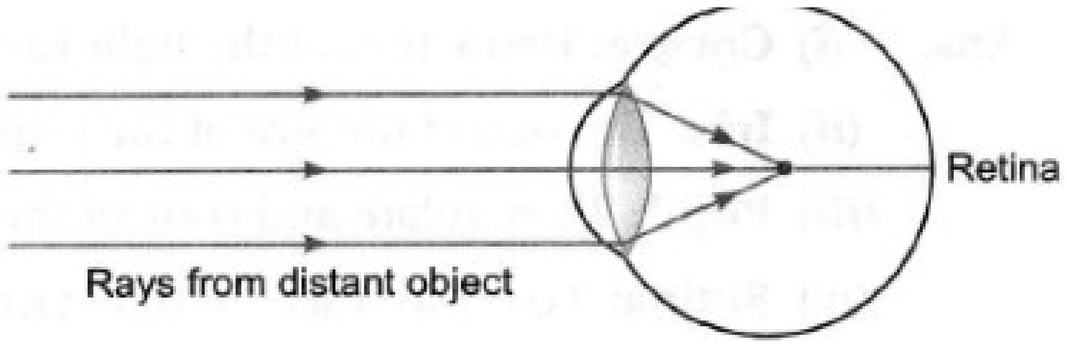
Marks - 25

Case study based questions

10th Science

Human Eye and Colourful World

Passage - 1 **5 Marks**



Anita has started facing difficulty reading the blackboard while sitting in the last row of her class. Using the information given, answer the following questions.

Q 1. What could be the defect Anita is suffering from?

(1) Myopia
(2) Hypermetropia

Q 2. How can her defect be corrected?

(1) By using convex lens of suitable focal length
(2) By using concave lens of suitable focal length

Q 3. Can she use a convex lens of suitable focal length?

(1) YES
(2) NO

Q 4. The ability of the eye lens to focus near and far objects clearly on the retina by adjusting its focal length is known as?

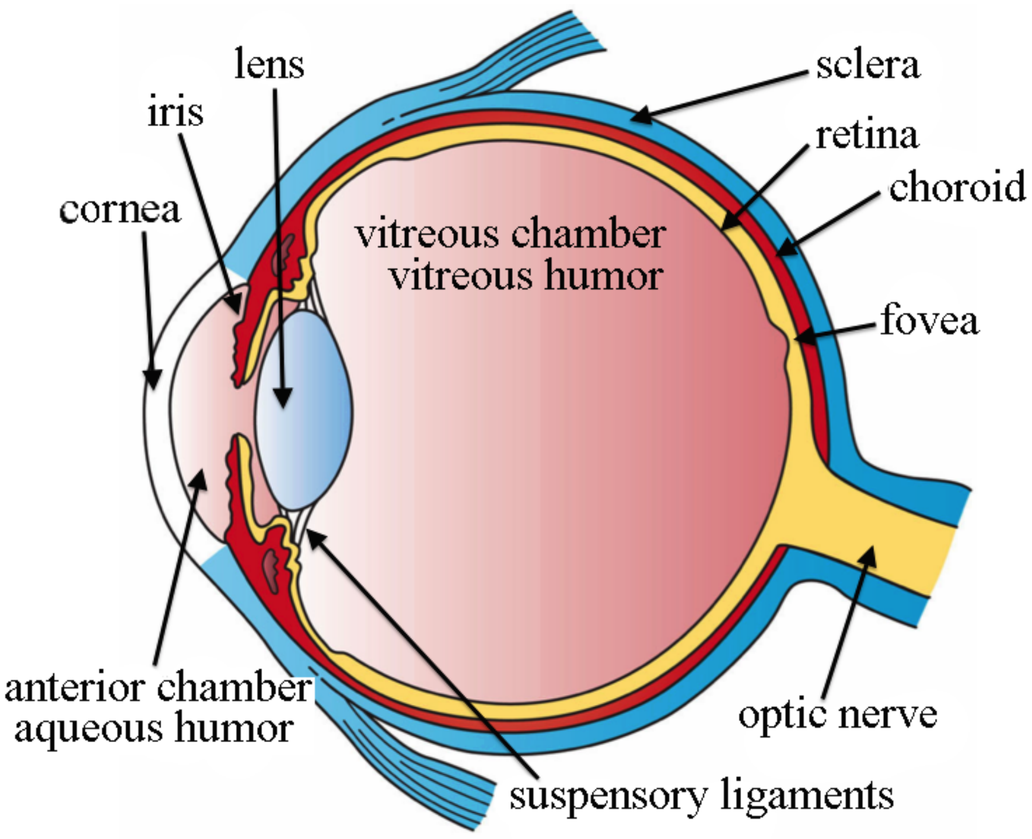
(1) Refraction
(2) Power of accommodation

Q 5. Where is the image formed with respect to retina for Anita?

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

Passage - 2

5 Marks



Shivani cannot see objects placed closer than 25cm clearly. She goes to an optician to get her eyes checked, however she does not seem to have any power. Use this information to answer the questions given below:

Q 1. Shivani cannot see the objects clearly as the normal human eye cannot see clearly the objects placed closer than 25cm. True or false?

(1) TRUE
(2) FALSE

Q 2. On which layer of the eye is the object focused?

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

Q 3. The least distance of distinct vision for a young adult with normal vision is about 2.5cm. True or False?

(1) TRUE
(2) FALSE

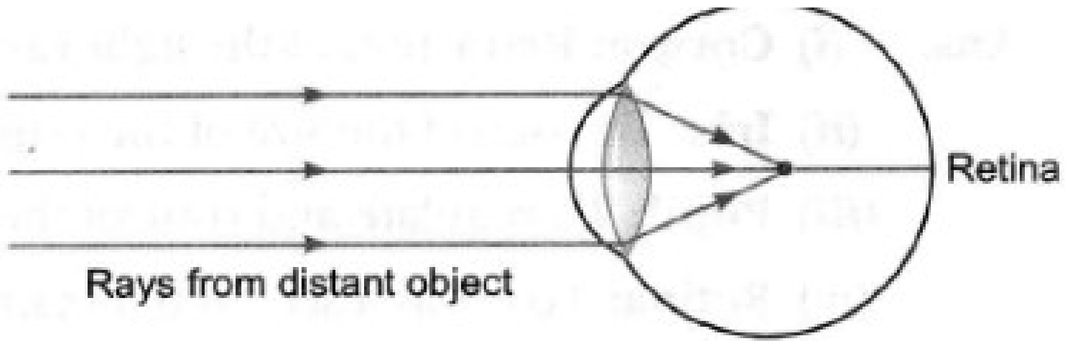
Q 4. Which part of the eye is responsible for the change in focal length of an eye lens?

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

Q 5. The image is formed on the retina when we increase the distance of an object from the eye. True or false?

(1) TRUE
(2) FALSE

Passage - 3 **5 Marks**



Worksheet 11.5

Marks - 25

Ryan cannot see objects beyond 1.2m distinctly. He now needs to go and purchase a corrective lens in order to be able to see these objects clearly. Use this information to answer the questions below:

Q 1. What is the defect that Ryan is facing?

(1) Myopia
(2) Hypermetropia

Q 2. What is the far point of the human eye with normal vision?

(1) Infinity
(2) 25 cm

Q 3. What formula is used to determine the power of the lens?

(1) Reciprocal of its focal length
(2) Same as focal length

Q 4. What is the formula for finding the focal length of the lens?

(1)
(2)
(3) 

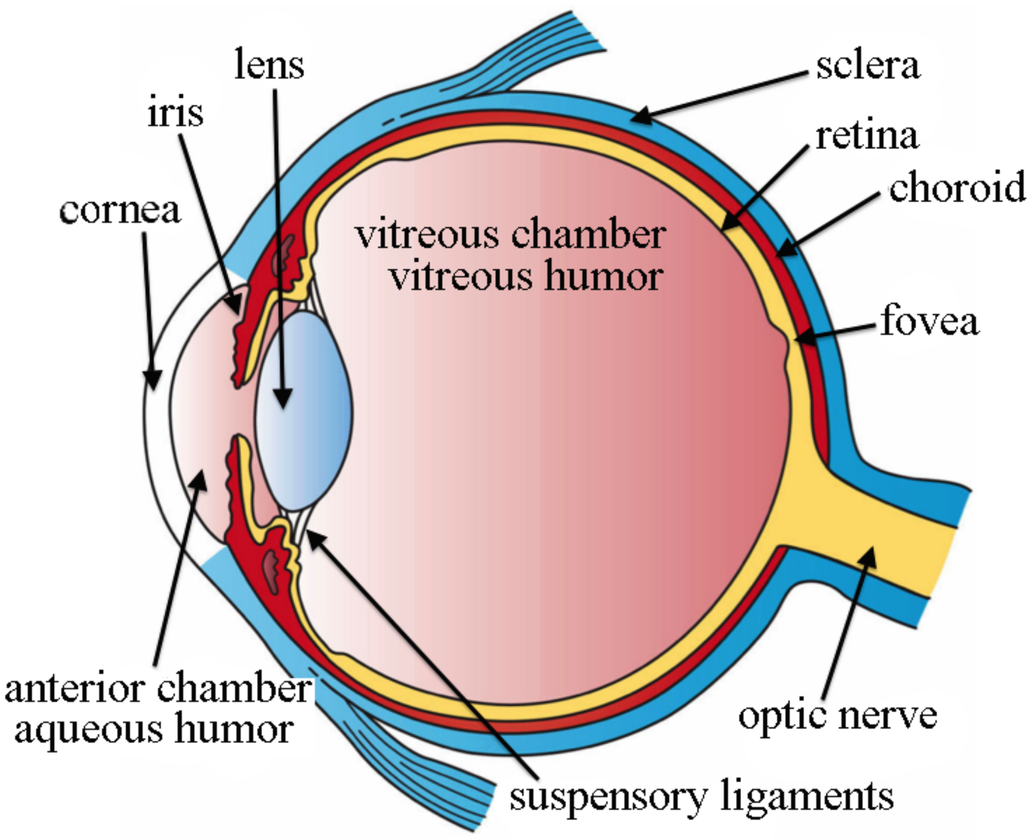
Q 5. What is the unit for measuring the power of the lens?

(1) Dioptre
(2) Millimeter

Passage - 4 **5 Marks**

Worksheet 11.5

Marks - 25



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

Q 1. The vascular layer of the eye, containing connective tissues, and lying between the retina and the sclera is known as?

(1) Choroid
(2) Retina
(3) Cornea
(4) Iris

Q 2. Which part of the eye detects light stimulus?

(1) Choroid
(2) Retina
(3) Cornea
(4) Iris

Q 3. Which part of the eye helps to focus light as it enters the eye?

(1) Choroid

(2) Retina
(3) Cornea
(4) Iris

Q 4. Which part of the eye controls the size of the pupil?

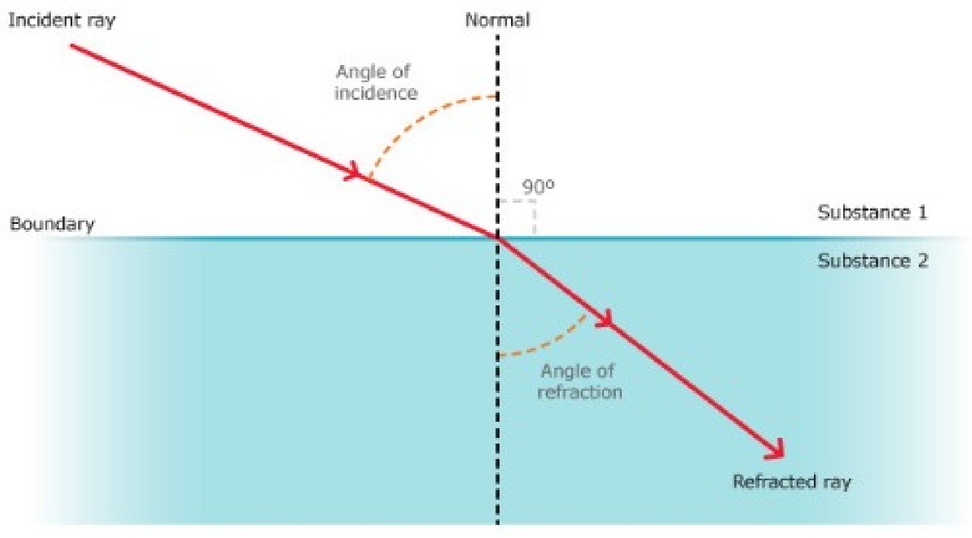
(1) Choroid
(2) Retina
(3) Cornea
(4) Iris

Q 5. Which part of our eye helps us to focus near and distant objects?

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

Passage - 5

5 Marks



Sonu observes that the absolute refractive indices of two substance '1' and '2' are 2.0 and 1.5 respectively and the speed of light in medium '2' is 2×10^8 m/s. Observe the above figure and read the information. Answer the below questions:

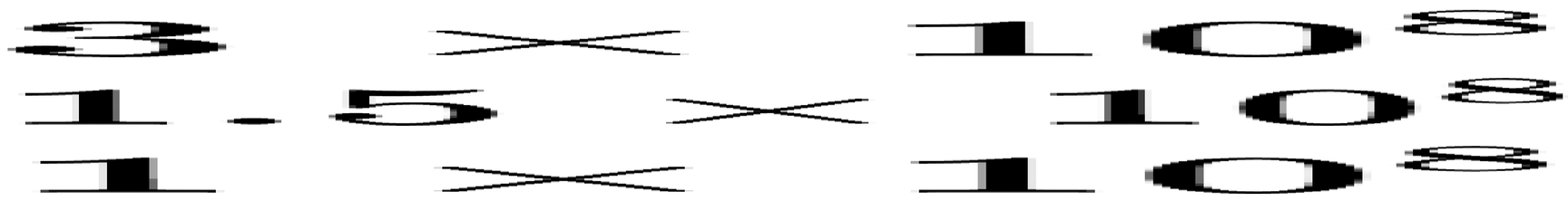
Worksheet 11.5

Marks - 25

Q 1. Calculate the speed of light in vacuum?

(1)  m/s
(2) m/s
(3) m/s

Q 2. Calculate the speed of light in medium '1'?

(1)  m/s
(2) m/s
(3) m/s

Q 3. The incident ray, the refracted ray and the normal to the interface of two media at the point of incidence all lie in the same plane. True/False

(1) TRUE
(2) FALSE

Q 4. The value of refractive index of a medium with respect to the vacuum is known as?

(1) Absolute refractive index
(2) Snell's law

Q 5. The ratio of the sine of the angle of incidence to the sine of the angle of refraction is constant is known as?

(1) Absolute refractive index
(2) Snell's law

Worksheet 11.6

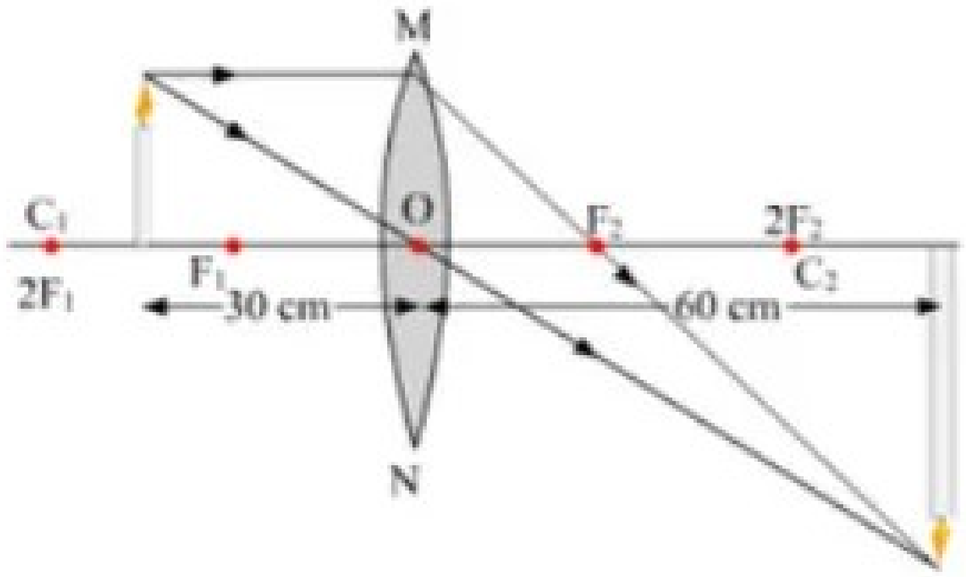
Marks - 25

Case study based questions

10th Science

Human Eye and Colourful World

Passage - 1 **5 Marks**



Sonu observes that the image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed on the other side of the lens at a distance of 60 cm from the optical centre of the lens. Few questions came to her mind. Give answers to the below questions:

Q 1. What is the type of the lens?

(1) Convex lens
(2) Concave lens

Q 2. What is the focal length of the lens?

(1) 10 cm
(2) 20 cm

Q 3. If the height of the flame is 3 cm, find the height of its image.

(1) -6 cm

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(2) -2 cm

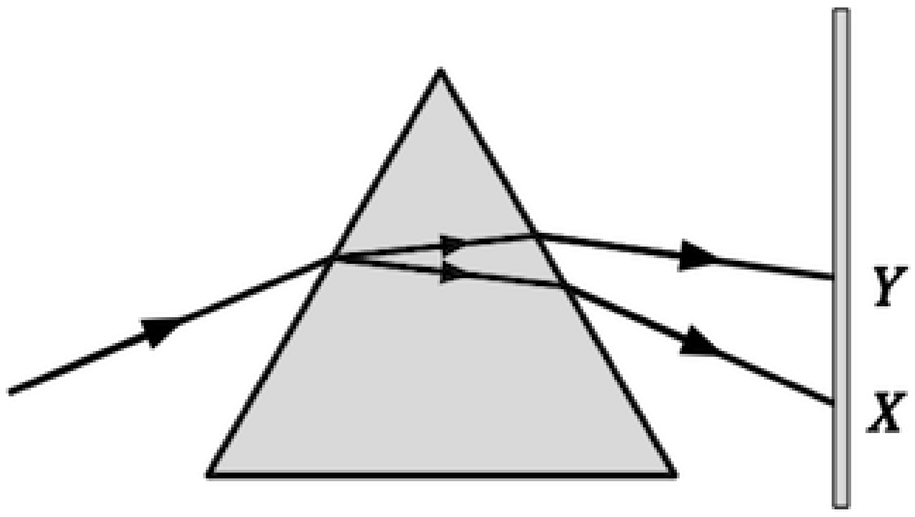
Q 4. What is the formula for finding the focal length of the lens?

(1)
(2)
(3)

Q 5. What is the magnification of convex lens?

(1) -2
(2) -9

Passage - 2 **5 Marks**



A teacher is teaching the students certain concepts related to the dispersion of light. In the above figure, a narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism it produces a spectrum XY on a screen.See the above image and answer the below questions.

Q 1. State the colour seen at X.

(1) Violet
(2) Red

(3) Orange
(4) Green

Q 2. Why do different colours of white light bend through different angles with respect to the incident beam of light?

(1) Due to difference in speed of light.
(2) Due to difference in speed of air.

Q 3. State the colour seen at Y.

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

Q 4. The process of white light splitting into its constituent colours is termed as?

(1) Dispersion of light
(2) Snell's law

Q 5. Which colour ray is least deviated by a prism?

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

Passage - 3 **5 Marks**

Worksheet 11.6

Marks - 25

Sonu consults the doctor for the need of a lens of power -4.5D for correction of his vision. Few questions came into his mind. Answer the below questions by using the above data.

Q 1. What could be the defect sonu is suffering from?

(1) Myopia
(2) Hypermetropia

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

(1) -22 cm
(2) 0.667 m
(3) 0.567 m

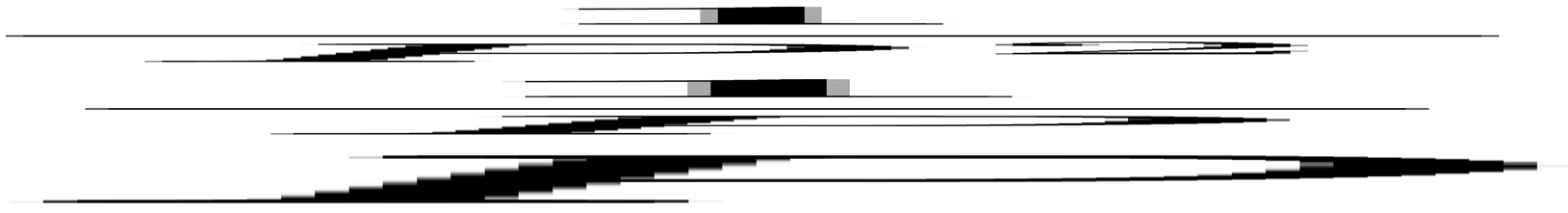
Q 3. What is the nature of corrective lens?

(1) Positive
(2) Negative

Worksheet 11.6

Marks - 25

Q 4. What is the formula for finding the focal length of the lens?

(1) 
(2)
(3)

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

(1) Dioptre
(2) Millimeter

Passage - 4 **5 Marks**

Sania observes that the danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance among all other colours.Few questions came into her mind. Answer the below questions by using the above data.

Q 1. Why the red light is used for indication?

(1) Most absorbed by smoke or fog
(2) Least scattered by smoke or fog
(3) Most scattered by smoke or fog

Worksheet 11.6

Marks - 25

Q 2. The amount of scattering is inversely proportional to the fourth power of wavelength. True or False?

(1) TRUE
(2) FALSE

Q 3. Red colour has the longest wavelength? Yes or No?

(1) YES
(2) NO

Q 4. If wavelength is more, the amount of scattering becomes smaller? True or False?

(1) TRUE
(2) FALSE

Q 5. Which color has the shortest wavelength?

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

Passage - 5 **5 Marks**

Worksheet 11.6

Marks - 25

Manu cannot see objects kept beyond 2 m distinctly. He consults the doctor to know about his defect. Few questions came into his mind. Answer the below questions by using the above data.

Q 1. What is the power of the lens to be used to correct the defect?

(1) -2.5 D
(2) -3.5 D
(3) -0.5 D
(4) -6.5 D

Q 2. What is the defect that Manu is suffering from?

(1) Myopia
(2) Hypermetropia

Q 3. Which lens is used to correct the defect?

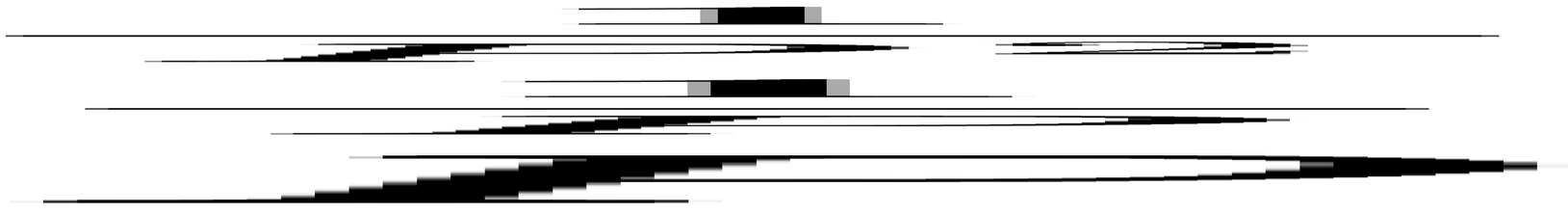
(1) Convex lens
(2) Concave lens

Worksheet 11.6

Marks - 25

Q 4. What is the formula for finding the focal length of the lens?

(1)
(2)
(3)



Q 5. What is the nature of corrective lens?

(1) Negative
(2) Positive