Worksheet 11.3

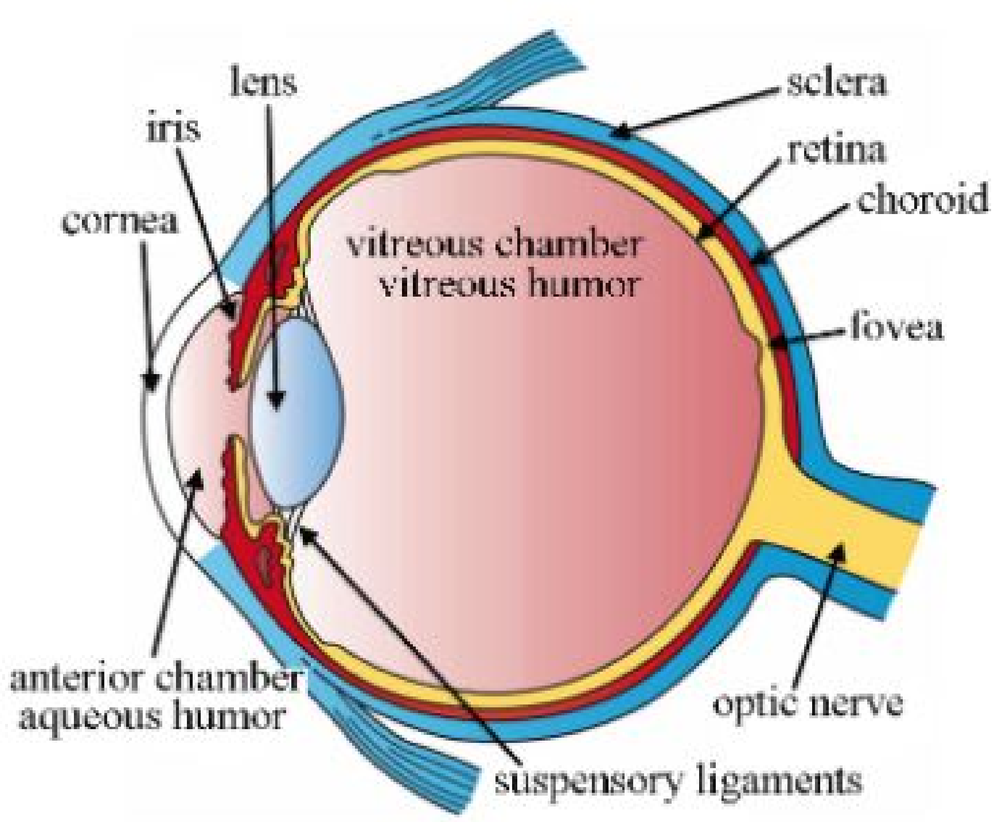
Marks - 25

Case study based questions

10th Science

Human Eye and Colourful World

Passage - 1 **5 Marks**



Balu observes that the minimum power of the eye lens is 40 D. If the far point of the normal eye is infinity. Answer the below questions by reading the above information.

Q 1. What is the formula for radius of curvature in terms of focal length, f?

(1) 4f
(2) 2f
(3) 3f

Q 2. What is the diameter of the eye ball?

(1) 5 cm
(2) 6 cm
(3) 2.5 cm

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Q 3. What is the focal length of the lens?

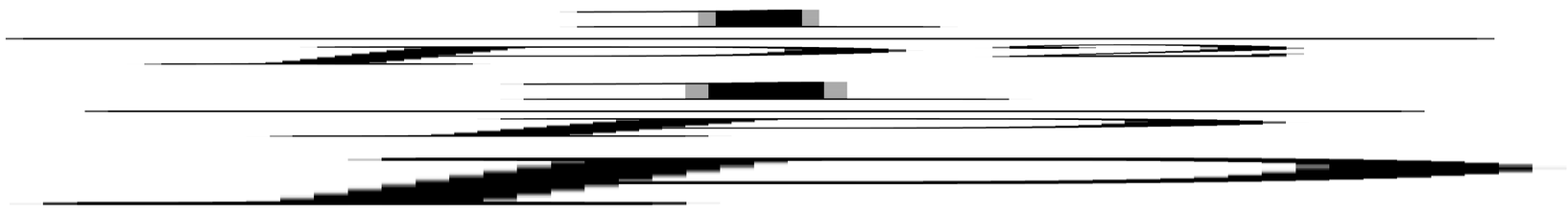
(1) 5 cm
(2) 6 cm
(3) 2.5 cm

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

(1) Dioptre
(2) Millimeter

Q 5. What is the formula for finding the focal length of the lens?

(1)
(2)
(3)



Passage - 2

5 Marks

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Ravi got his eyes tested. The optician prescription for the spectacle read: Left eye = -3 D and right eye = -3.5 D. Answer the below questions by reading the above information.

Q 1. Powers of the spectacles required to correct both the eyes are negative. Which lens should be used to correct?

(1) Concave lens
(2) Convex lens

Q 2. Name the defect of vision he is suffering from.

(1) Myopia
(2) Hypermetropia

Q 3. What is the far point of an eye suffering from myopia?

(1) Zero
(2) Infinity

Q 4. A person with myopia defect of vision cannot see which objects?

(1) Distant objects
(2) Near objects

Q 5. Why the far point of an eye suffering from myopia is infinity?

(1) Due to eye ball being too short
(2) Due to eye ball being too long

Passage - 3 **5 Marks**

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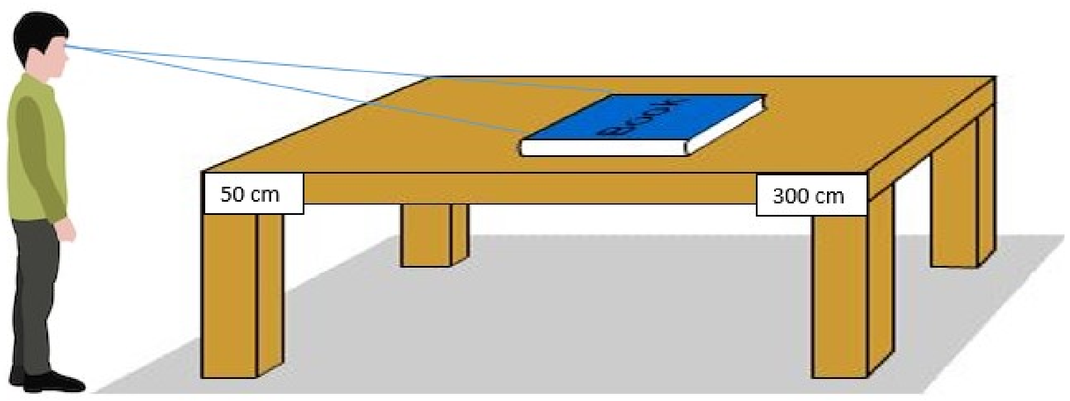

A person is able to see objects clearly only when these are lying at distance between 50 cm and 300 cm from his eyes. Answer the below questions by reading the above information.

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

(1) Myopia
(2) Hypermetropia
(3) Both A and B

Q 2. The far point of the person is 300 cm that's less than infinity so he will be suffering from which defect?

(1) Myopia
(2) Hypermetropia

Q 3. The near point of the person is 50 cm that is more than 25 cm so he will be suffering from which defect?

(1) Myopia
(2) Hypermetropia

Q 4. What is the term bifocal lenses mean?

(1) Lenses with upper concave and lower convex surface.

(2) Lenses with lower concave and upper convex surface.

Q 5. Which lens is used for the clear vision of a person who is suffering from both myopia and hypermetropia?

(1) Cylindrical lens
(2) Bifocal lens

Passage - 4

5 Marks

A near sighted person wears eye glass of power 5.5D for distant vision. His doctor prescribes a correction of + 1D in near vision part of his bifocals, which is measured relative to the main part of the lens.

Q 1. What is the focal length of his near vision part of the lens?

(1) - 22.22 cm
(2) -32.3 cm
(3) -22.22m

Q 2. Name the defect of vision he is suffering from.

(1) Myopia
(2) Hypermetropia
(3) Both A and B

Q 3. What is the total power of this lens after the near vision is increased?

(1) -1.667 D
(2) -4.5 D
(3) 10 D

Q 4. Which lens is used for correction of this defect?

(1) Concave lens
(2) Convex lens

Q 5. What does the negative sign of power indicates ?

(1) Concave lens
(2) Convex lens

Passage - 5 **5 Marks**

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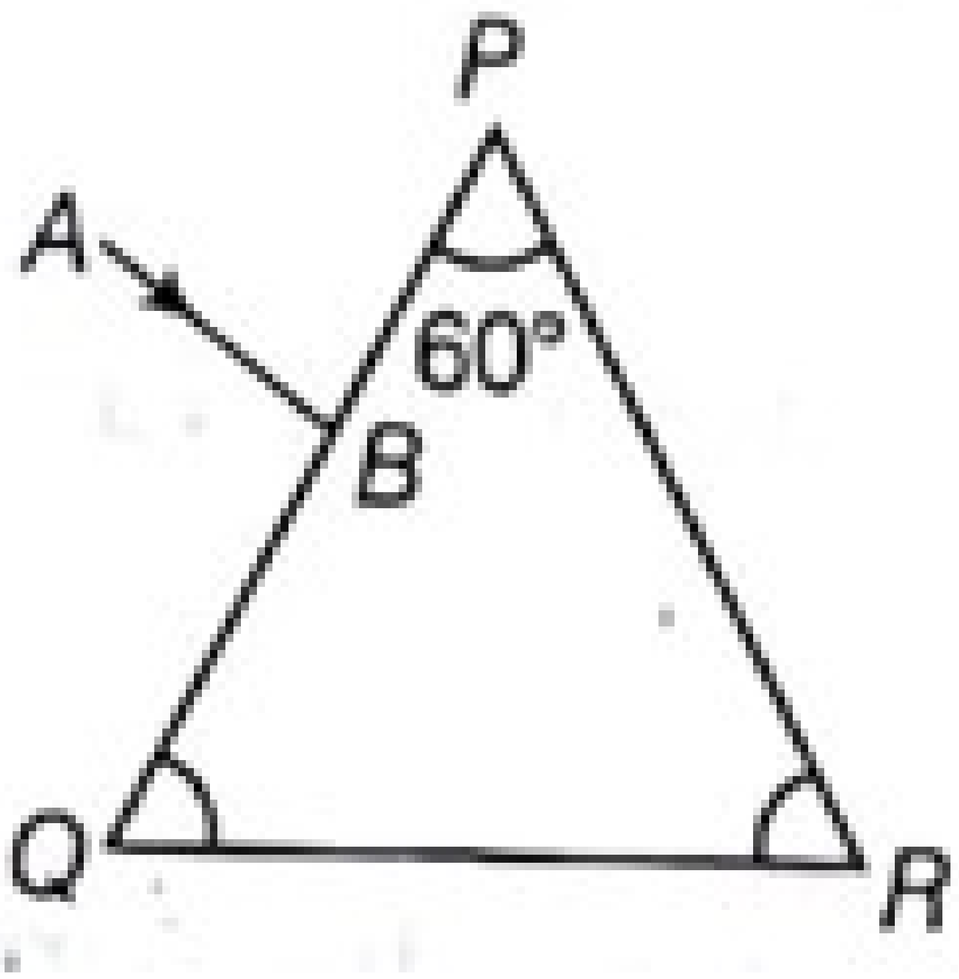
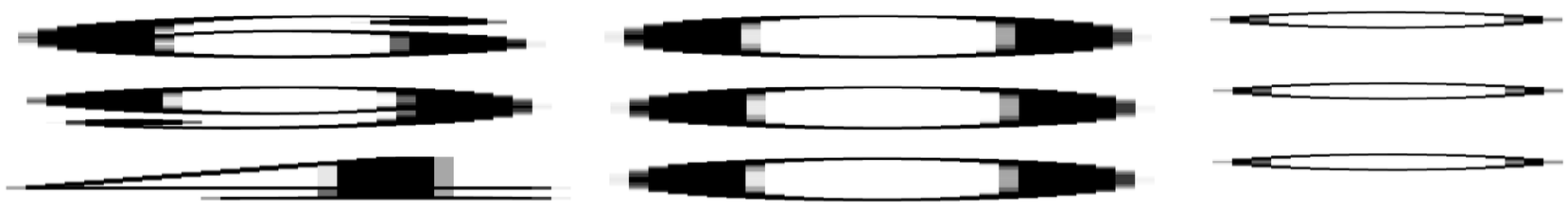
Marks - 25



In given figure, a light ray AB is incident normally on one face PQ of an equilateral glass prism. Answer the below questions by reading the above information.

Q 1. Find out the angles at faces PQ and PR.

(1)
(2)
(3)



Q 2. What is the formula for angle of prism?

(1) $A = 2r_1 + r_2$
(2) $A = r_1 + r_2$
(3) $A = 6r_1 + r_2$

Q 3. What is the formula for angle of refraction?

(1) r = sin(i)×n
(2) r = sin(i)×3n
(3) r = 2sin(i)×n

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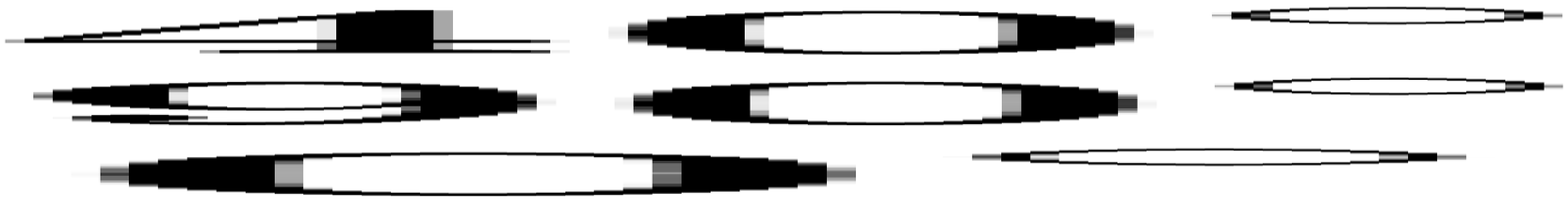
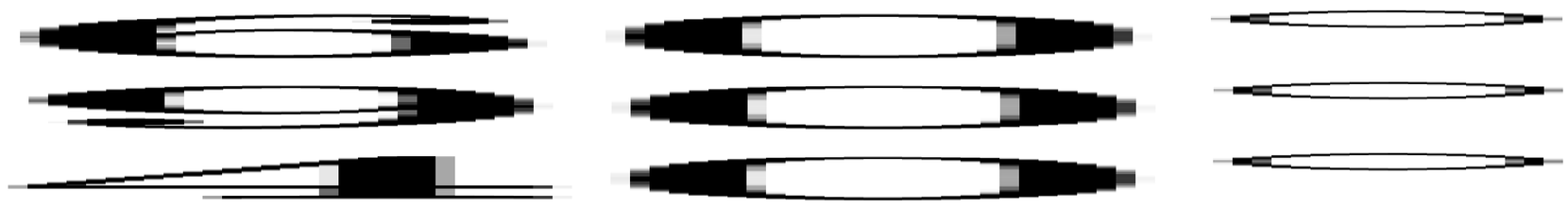
Q 4. What is the value of angle of refraction at PQ?

(1)
(2)
(3)



Q 5. What is the value for angle of prism?

(1)
(2)
(3)



(1) Produce dispersion with deviation
(2) Produce dispersion without deviation

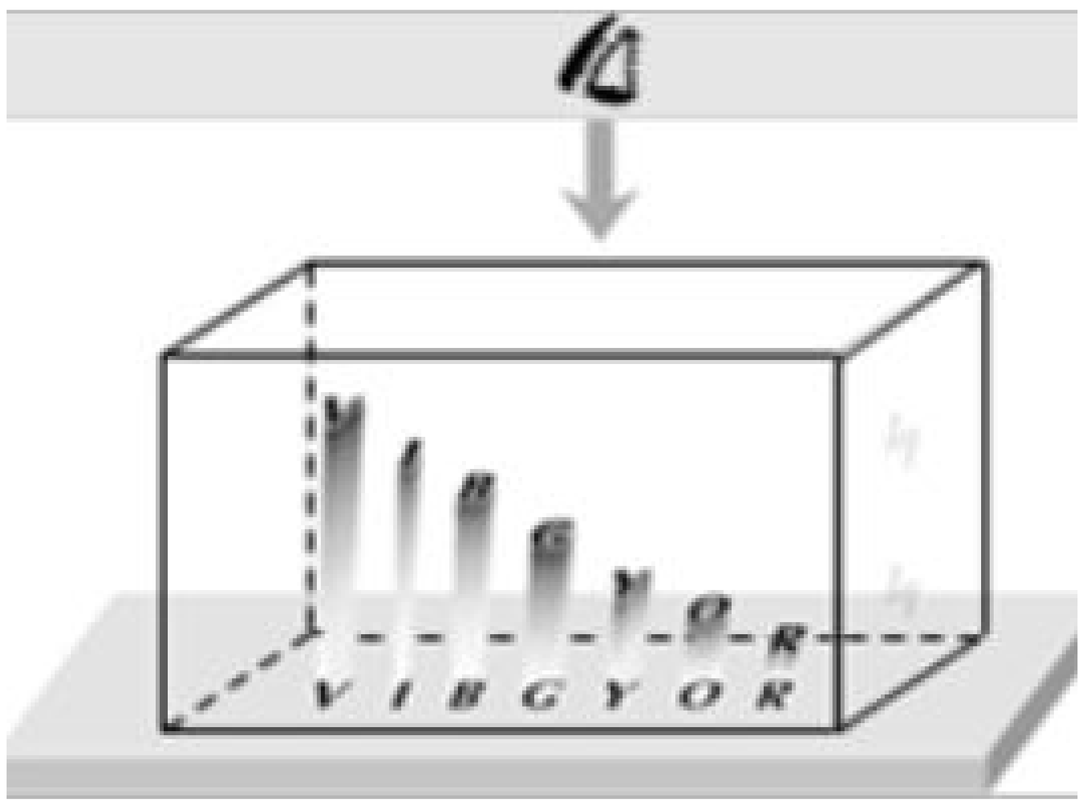
Q 4. What is the refractive index of first prism?

(1) 2.54
(2) 1.54
(3) 1.92

Q 5. What is the refractive index of second prism?

(1) 2.54
(2) 1.54
(3) 1.92

Passage - 2 **5 Marks**



Seema observe a glass slab is placed over a page on which the word VIBGYOR is printed with each letter in corresponding colour. Answer the below questions by reading the above information.

Q 1. Which of the following is correct?

(1) The image of all the letters will be in the same place as that on paper
(2) Letter V is raised more
(3) Letter R is raised more

Q 2. For which color the refractive index (n) is maximum?

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

Q 3. Which light slows down more than red light?

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

Q 4. For which color apparent depth is minimum?

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

Q 5. What is the formula for apparent depth?

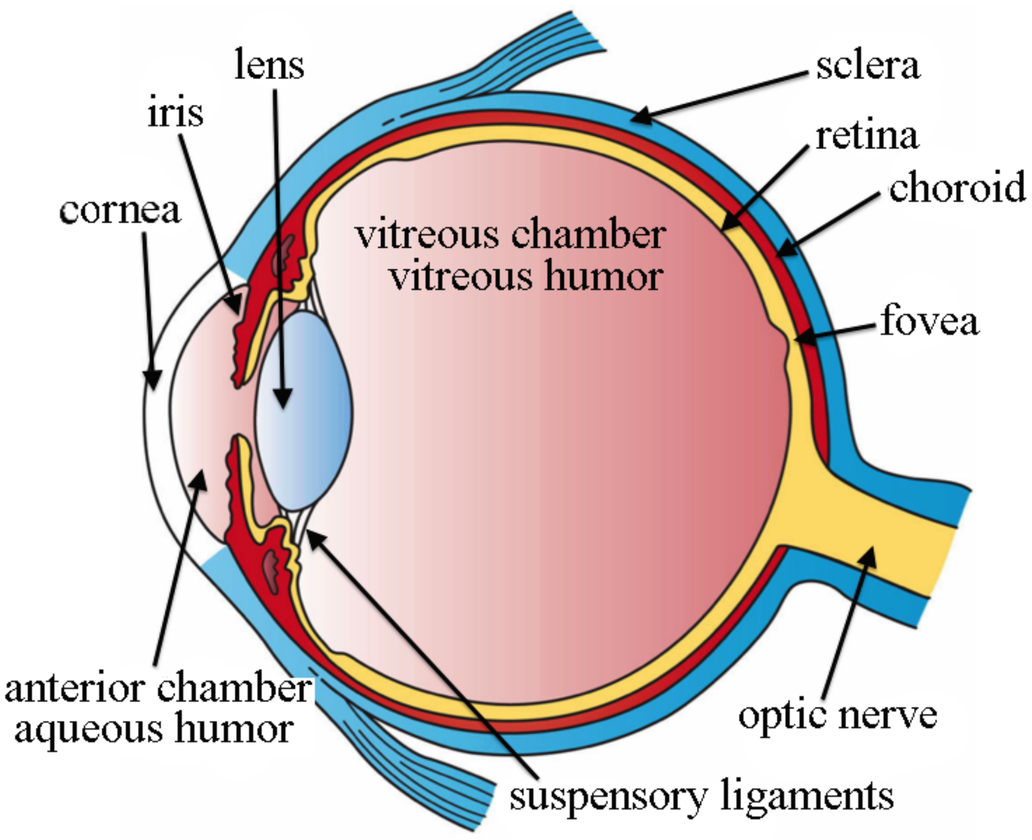
(1) $\frac{real\ depth}{refractive\ index}$
(2) $\frac{real\ depth}{refractive\ index^2}$

Passage - 3

5 Marks

Worksheet 11.4

Marks - 25



Jyothi observe the above human eye.Few questions came to her mind. Give answers to the below questions:

Q 1. Which part of the eyes refracts light entering the eye from external objects?

(1) Lens
(2) Cornea
(3) Iris
(4) Pupil

Q 2. The amount of light entering the human eye is controlled by

(1) Lens
(2) Cornea
(3) Iris
(4) Pupil

Q 3. The phenomena of light responsible for the working of the human eye is

(1) Reflection
(2) Refraction

(3) Power of accommodation

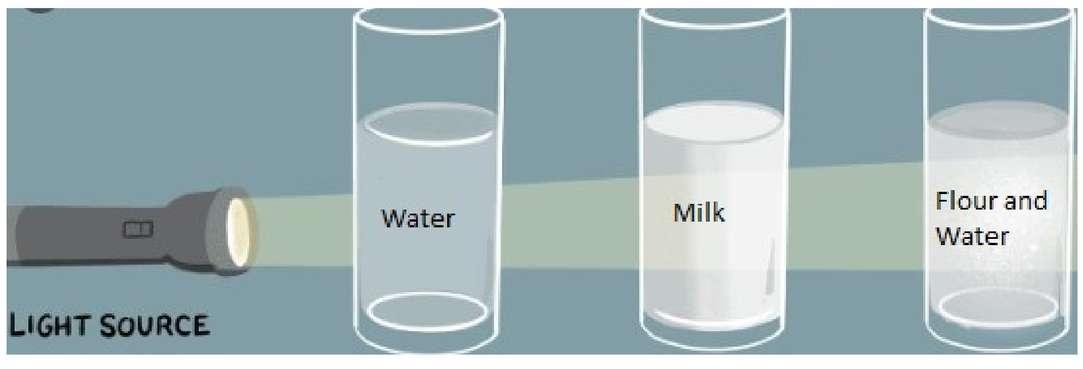
Q 4. The persistence of vision for human eye is

(1) 1/10th of a second
(2) 1/16th of a second
(3) 1/15th of a second
(4) 1/14th of a second

Q 5. The light sensitive cell present on retina that is sensitive to the intensity of light is:

(1) Cones
(2) Rods
(3) Both A and B

Passage - 4 **5 Marks**



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

Q 1. The scattering of light by coarse and colloidal dispersed systems is known as?

(1) Tyndall effect
(2) Reflection
(3) Refraction

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Q 2. What is the diameter of the particles that cause the Tyndall effect?

(1) 39 to 700 nanometers
(2) 40 to 900 nanometers
(3) 90 to 900 nanometers

Q 3. Is light beam visible in the water(solution)?

(1) YES
(2) NO

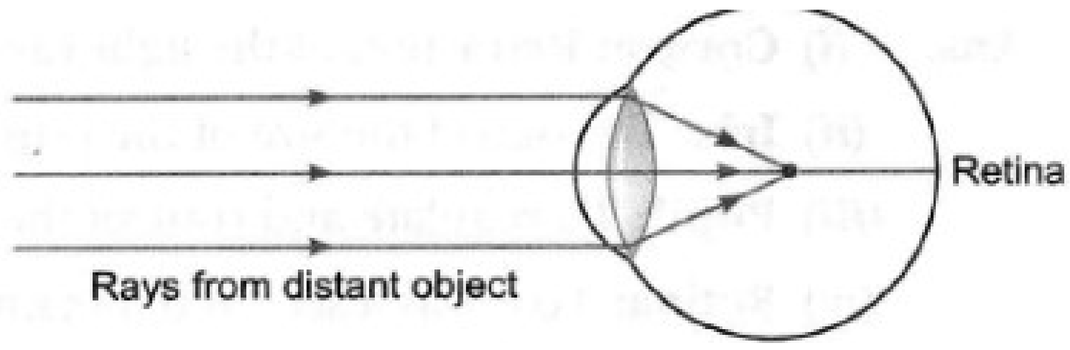
Q 4. Is light beam visible in milk(colloid)?

(1) YES
(2) NO

Q 5. Is light beam visible in the flour and water which is a suspension?

(1) YES
(2) NO

Passage - 5 **5 Marks**



Geetha observes that a person needs a lens of power −4.5 D for correction of her vision. Few questions came to her mind. Give answers to the below questions:

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Q 1. What kind of defect in vision is she suffering from?

(1) Myopia
(2) Hypermetropia

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

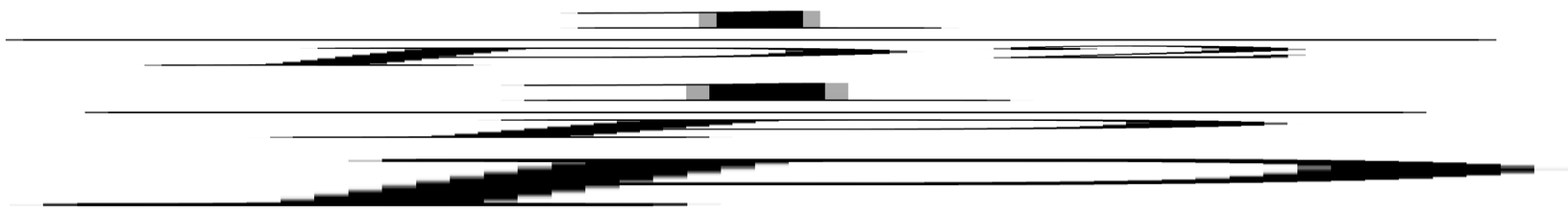
(1) 0.9 m
(2) 0.22 m

Q 3. What is the nature of the corrective lens?

(1) Convex lens
(2) Concave lens

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
