

Board –CBCE

Class –8th

Topic – Light

EACH QUESTION 1 MARKS

1. **Define dispersion of light.**

Ans. Splitting white into seven colors when it passes through a glass prism is known as dispersion of light.

1. **Name the colors in the order they appear in the spectrum of light.**

Ans. VIBGYOR - Violet, Indigo, Blue, Green, Yellow, Orange and Red.

3. **What is the angle of incidence of a ray if the reflected ray is at an angle of 90° to the incident ray?**

Ans. The angle of incidence = 45° .

1. **What are the two factors responsible for an object being seen?**

Ans. To be seen as an object, the sense of vision and light are required.

1. **Why can we not see an object in a dark room?**

Ans. We cannot see an object in a dark room because no light is reflected from the object.

1. **What is meant by normal?**

Ans. The perpendicular drawn at the point of incidence is known as normal.

1. **What name is given to the angle between the normal and the reflected ray?**

Ans. The angle of reflection.

1. **What is an illuminated object?**

Ans. Objects which reflect the light falling on them and can be seen are known as illuminated objects.

1. **Give one example of natural dispersion.**

Ans. Formation of a rainbow.

1. **What type of lens is present in the eye?**

Ans. Convex lens.

Each Question 2 Marks

1. Which kind of spherical mirrors are used in vehicles? Why?

Ans. A convex mirror is used in vehicles because it gives the driver a larger field of view.

2. Why is it important to take care of our eyes? Mention any two activities that may cause damage to our eyes.

Ans. Eyes are the most wonderful gift of nature to us, and they must serve us for whole life.

3. Suppose you are in a dark room. Can you see an object in the room? Can you see objects outside the room? Explain.

Ans. The objects cannot be seen inside the room because there is no light. The objects outside the room can only be seen if there is light outside.

4. State the laws of reflection.

Ans. Laws of reflection :

(i) The incident ray, the reflected ray and the normal at the point of incidence lie in the same plane.

(ii) The angle of incidence is equal to the angle of reflection.

5. Distinguish between real and virtual images.

Ans. Differences :

Real Image	Virtual image
(a) The rays actually meet at a point	(a) The rays donot meet at a point.
(b) The image can be obtained on a screen.	(b) The image cannot be obtained on a screen.

6. How many plane mirror strips do we use in a kaleidoscope. At what angle are they inclined with respect to each other?

Ans. The kaleidoscope uses a set of three equal size plane mirror strips. The three strips are inclined to each other at angles of 60° each.

2. Why should children take the milk and eat carrots?

Ans. Milk, carrots and yellow fruits are rich in vitamin A, which is essential for maintaining good vision.

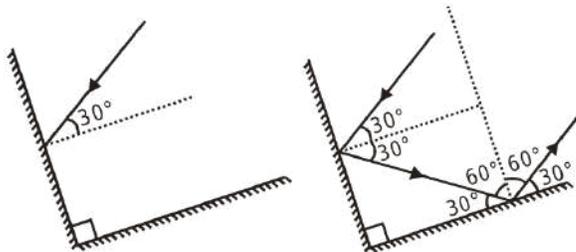
3. Is the moon a luminous body? How are we able to see the moon?

Ans. The moon is non-luminous. We can see the moon because it reflects the sunlight falling on it.

Each Question 3 Marks

1. Two mirrors meet at right angles. A ray of light is incident on one at an angle of 30° , as shown in fig. Draw the reflected ray from the second mirror.

Ans.



2. How are we able to see objects?

Ans. The lens focuses the light on the back of the eye on the retina. The retina contains several nerve cells which transmit the sensations to the brain through the optic nerve. We are then able to see the objects.

3. What are cones and rods? What is their function?

Ans. Cones are nerve endings that are sensitive to colour light. They help us to distinguish between colours. Rods are nerve endings that are sensitive to bright light.

4. (i) In a periscope, two mirrors are arranged parallel, but they do not form multiple images. Why?

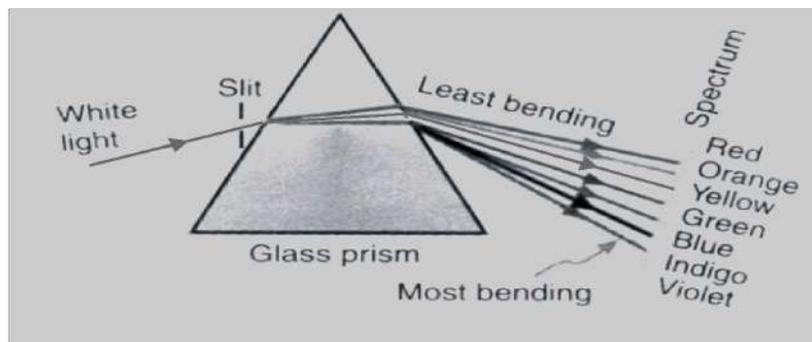
(ii) What is the use of periscope?

Ans. (i) In a periscope, two mirrors are placed parallel and facing each other but are in an inclined position at an angle of 45° so that it does not form multiple images.

(ii) Uses of periscope – In submarines to view the happening on the surface to view objects behind the wall.

5. Draw a diagram to show the dispersion of light.

Ans.



6. (i) What is spectrum?

(ii) What is the meaning of VIBGYOR?

Ans. (i) Spectrum is the band of seven colours obtained on the screen when white light splits on, passing through a prism.

(ii) VIBGYOR represents the seven colours of the spectrum, i.e. violet, indigo, blue, green, yellow, orange and red.

7. How is a rainbow formed?

Ans. The water droplets suspended in the air after the rain act as prisms. When the sun is towards the horizon, the inclined rays pass through the water drops to disperse into the seven colours of the spectrum.

8. Why does white light disperse when it passes through a glass prism?

Ans. White light is a combination of seven colours of light. The speed of each colour is different. So, while passing through the glass prism, each colour deviates in different amounts. Therefore, dispersion of light into a spectrum takes place.

9. (i) Which part of the human eye makes a person 'blue eyed'?

(ii) What role is played by ciliary muscles?

(iii) What is the importance of the retina in the eye?

Ans. (i) Iris is responsible for making the person blue-eyed.

(ii) Ciliary muscles help adjust the lens's focal length to view all objects.

(iii) The image of the object is formed on the retinal of the eye.

10. What is the difference between the eye of the night birds and day birds?

Ans. The day birds can see clearly during the day but not at night. The day birds have more cones and fewer rods. The cones are sensitive to bright light and can sense colours. Night birds can see clearly at night but not during the day. Their eyes have a large cornea and pupil to allow more light to pass. Also, their retinal has mostly rods and a few cones. Rods are more sensitive to dim light.

Each Question 5 Marks

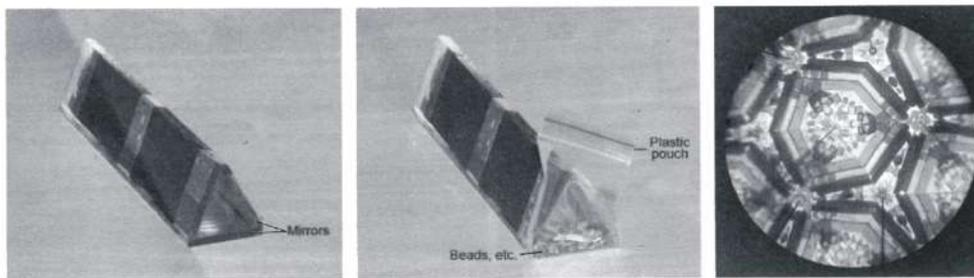
1. How can you compare the human eye with a photographic camera? Ans.

ANS: -

Human Eye	Photographic Camera
(a) Real, Inverted image is formed on retina.	(a) Real, inverted image is formed on a film.
(b) The image cannot be stored as a photograph	(b) The image can be stored as a photograph
(c) The focal length of convex lens can be adjusted by ciliary muscles.	(c) The focal length of the lens cannot be adjusted.

2. Describe the construction of a kaleidoscope.

Ans. To make a kaleidoscope, get three rectangular strips of glass 15 cm long and 4 cm wide each. Join them together to form a prism. Fix them with a few thick chart papers in a slightly long circular tube. Close one end of the tube by a cardboard disc having a hole in the centre. At the other end touching the mirrors fix a circular plane glass sheet. Invert the tube and place some broken small pieces of coloured bangles on the glass plate. Close this end of the tube with a ground glass plate.



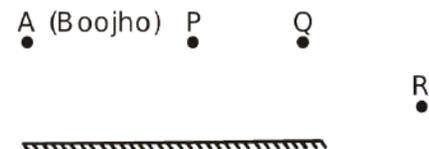
(a)-(b) Making a kaleidoscope (c) A pattern formed by a kaleidoscope

3. Explain how you can take care of your eyes.

Ans. We can take care of our eyes in the following ways –

- (a) have a regular check-up.
- (b) if advised, use suitable spectacles.
- (c) avoid too much or too little sight.
- (d) wash your eyes frequently with clean water.
- (e) always read at the normal distance for vision.

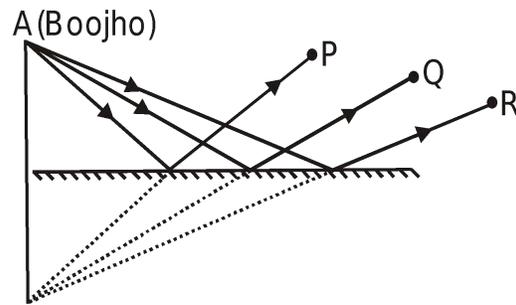
4. Boojho stands at A just on the side of a plane mirror, as shown in the figure. Can he see himself in the mirror?



Also,

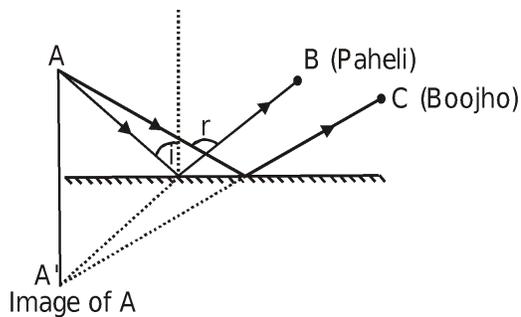
can he see the image of objects situated at P, Q and R?

Ans. Yes, Boojho can see his image. Yes, he can see the objects situated at P, Q and R.



5. (i) Find out the position of the image of an object situated at A in the plane mirror (fig).
 (ii) Can Paheli at B see this image?
 (iii) Can Boojho at C see this image?
 (iv) When Paheli moves from B to C, where does the image of A move?

Ans. (i)



- (ii) Yes, Paheli can see the image of A.
 (iii) Yes, Boojho can see this image.
 (iv) When Paheli moves from B to C, A's image will move from B to C.

