

Physics Worksheet Class X

The Human Eye and its Colourful World

1. 'The human eye is like a camera'. Justify the statement.
2. The eye lens forms an inverted real image of the object on the retina. But we perceive objects as they are. How is it possible?
3. We are not able to see objects clearly for some time when we enter from bright light to a room with dim light. After sometime, however, we are able to see things in the dimly lit room. Why is it so?
4. A person is not able to read the book comfortably but is able to read the matter written at far-off distance.
 - a. Name the defect of vision he is suffering from.
 - b. What is the cause for this defect?
 - c. With the help of the ray diagram show that how can this defect be corrected.
5. Why is a normal eye not able to see clearly the objects placed at 10 cm?
6. What is hypermetropia? Draw ray diagrams to show the image formation of an object by:
 - a. Hypermetropic eye,
 - b. Correction made with a suitable lens for hypermetropic eye.
7. The ciliary muscles of a normal eye are there in:
 - a. most relaxed
 - b. most contracted state
 - c. In which of the two cases is the focal length of the lens more. Explain
8. What is cataract? How is it corrected?
9. The power of accommodation of the eye usually decreases with ageing. Why does it happen? How is it corrected?
10. Which angle in a prism is known as the angle of the prism.
11. Why do we see the seven colours when white light disperses? Which colour deviates the least?
12. Trace the path of a ray of light passing through a glass prism and label it.

13. A monochromatic beam of light does not split when it passes through a prism while a beam of White light does. How are the two cases different from each other? Explain.
14. Name the scientist who used a glass prism to obtain the spectrum of sunlight for the first time.
15. A person is able to see objects clearly when these are lying at a distance between 50 cm and 30cm from his eye.
 - a. What kind of defect of vision is he suffering from?
 - b. What kind of lenses will he require to increase the range of vision from 25cm to infinity. Explain
16. The near point of a hypermetropic person is 75cm. Calculate the focal length and power of the lens used in his spectacles.
17. Far point of a normal human eye is at infinity. Will the far point of a myopic person be at infinity or less than infinity?
18. The far point of a myopic person is 150cm in front of eye. What is the nature and power of the lens required to correct this problem?
19. With the help of a diagram show the arrangement of prisms so that a beam of light entering into the arrangement emerges out as a beam of white light.
20. A glass prism splits a beam of white light into seven colours but a glass slab does not. Why?
21. Name the three phenomena of light responsible for the formation of rainbow. Draw a labeled diagram for the same.
22. Can we also see a rainbow on a sunny day? Give a situation to support your answer. .
23. Where is the rainbow formed in the sky with respect to sun? Diagrammatically support your answer.
24. We generally observe the apparent random wavering or flickering of objects seen through a turbulent stream of hot air rising above a fire or a radiator. Explain the phenomenon.
25. Why does the sun appear red at sunrise and sunset?
26. A person wants to read a book placed at 20 cm, whereas near point of his eye is 30 cm. calculate the power of the lens required.
27. The far point distance of a shortsighted person is 1.5meters. Find the focal length, power and nature of the remedial lens?