CHAPTER -2
The Human Eye and the Colourful World

MULTIPLE CHOICE QUESTIONS

1. The image formed by the retina of the human eye is
   (i)Virtual and erect
   (ii)Real and inverted
   (iii)Virtual and inverted
   (iv)Real and erect
2. The change in the focal length of the human eye is caused due to
   (i)Ciliary muscles
   (ii)Pupil
   (iii)Cornea
   (iv)Iris
3. The least distance of distinct vision for a young adult with normal vision is
   (i)25m
   (ii)20m
   (iii)25cm
   (iv)20cm

FILL IN THE BLANKS

4. Most of the refraction of light rays entering the eye occurs at the outer surface of the----.
5. The part of eye sensitive to light is-----.
6. The part of the eye which alters the size of the pupil is----.

ONE MARK QUESTIONS

7. Name the part of an eye which is equivalent to
   (i)Diaphragm
   (ii)Camera
8. A person is advised to wear spectacles with concave lenses. What type of defect of vision is he suffering from?
9. Why does it take some time to see in a dim room when you enter the room from the bright sunlight?

ASSERTIONS AND REASONS

For the question numbers 10, 11 and 12, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

10. Assertion: The Blue colour of the sky appears due to the scattering of light.

Reason: Blue colour has the shortest wavelength among all the colours of the white light.

11. Assertion: A normal human eye can see all the objects beyond a certain minimum distance.
Reason: The human eye can suitably adjust the focal length of its lens to a certain extent.

12. Assertion: Owls can move freely during the night.
Reason: They have a large number of rods on their retina.

THREE MARK QUESTIONS

13. A person is unable to read a book clearly when kept at a distance of 25cm from his eye. Name the defect. How can it be corrected? Draw ray diagrams for
(i) Defective eyes
(ii) Corrected eyes.

14. (a)Mention the names of two phenomena due to which a rainbow is formed.
(b)Explain with the help of a diagram of how a rainbow is formed.

15. Draw a labelled diagram of the human eye. What is the significance of the blind spot and yellow spot?

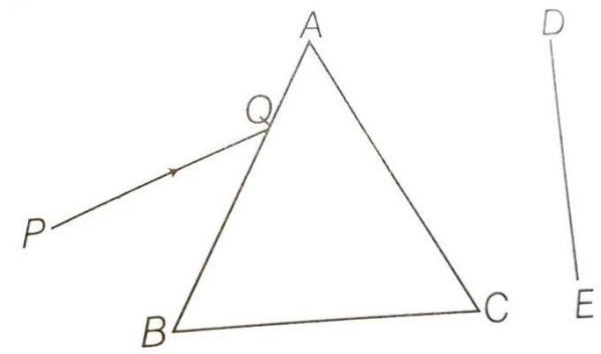
16. (i)Demonstrate an activity with a labelled diagram to prove that white light is made up of seven colours.
(ii)Why do different colours get separated when white light passes through a prism?
(iii)How can we recombine the components of white light after a prism has separated them?
Explain with the help of a diagram.

FIVE MARK QUESTIONS

17. (a)A child reads words of a book with the help of a convex lens keeping it close at the book. He finds words enlarged and erect then he gradually withdraws the lens away from the book. At one position the words again become distinctly visible but this time these are enlarged and inverted. Explain this difference with the help of a ray diagram for both the cases.
(b)A concave lens has a focal length of 15cm. At what distance should the object from the lens be placed so that it forms an image at 10cm from the lens? Also, find the magnification.

18. (a)Ravi is given lenses with powers+5D,-5D, +10D,-10D and -20D.Considering a pair of lenses at a time, which two lenses will he select to have a combination of total focal length when two lenses are kept in contact in each case. (i)-10cm (ii)20cm (iii)-20cm
(b) A person having presbyopia uses a bifocal lens to restore proper vision. Which part of the lens is convex and which part is concave?

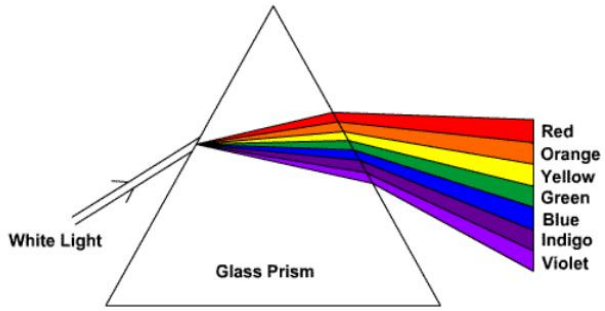
19. A narrow beam PQ of white light is passing through a glass prism ABC as shown in the diagram.



Trace it on your answer sheet and show the path of the emergent beam as observed on the screen DE.
(i)Write the name and cause of the phenomenon observed. (ii)Where else in nature is this phenomenon observed?
(iii)Based on this observation, state the conclusion which can be drawn about the constituent of white light.

20. **CASE STUDY**-
Answer question numbers 20(a) to 20(d) based on your understanding of the following paragraph and the related studied concepts.
When light falls on the prism it splits the incident light into a band of colours. The sequence of colours observed is VIBGYOR (Violet, Indigo, Blue, Green, Yellow, Orange and Red). This band of colour is known as

Spectrum. So, this splitting of incident light into different colours is known as Dispersion. This splitting is due to the bending of light rays at different angles.



(a)Which colour has the highest wavelength?
(b)Which colour has the highest velocity?
(c)Which colour has the highest refractive index?
(d)Why the dispersion of light takes place.