

## Chapter-2

### Worksheet-3

#### Section 1

Q1. What eye defect is hypermetropia? Describe with a ray diagram how this defect of vision can be corrected by using an appropriate lens.

Q2. A star sometimes appears brighter and some other times fainter. What is this effect called?

State the reason for this effect.

Q3. A student cannot see a chart hanging on a wall placed at a distance of 3 m from him. Name the defect of vision he is suffering from. How can it be corrected?

Draw ray diagrams for the (i) defect of vision and also (ii) for its correction

Q4. Why is red color selected for danger signal lights?

Q5. (a) A person cannot read newspaper placed nearer than 50 cm from his eyes. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this defect. List its two possible causes. Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.

(b) We see advertisements for eye donation on television or in newspapers. Write the importance of such advertisement.

Q6. Explain giving reason why the sky appears blue to an observer from the surface of the earth? What will the color of the sky be for an astronaut staying in the international space station orbiting the earth? Justify your answer giving reason.

Q7. (a) List three common refractive defects of vision. Suggest the way of correcting these defects.

(b) About 45 lac people in the developing countries are suffering from corneal blindness. About 30 lac children below the age of 12 years suffering from this defect can be cured by replacing the defective cornea with the cornea of a donated eye. How and why can students of your age involve themselves to create awareness about this fact among people?

Q8. With the help of a labeled diagram, explain why the sun appears reddish at the sun-rise and the sunset.

Q9. (a) What is dispersion of white light? What is the cause of this dispersion? Draw a diagram to show the dispersion of white light by a glass prism.

(b) a glass prism is able to produce a spectrum when white light passes through it but a glass slab does not produce any spectrum. Explain why?

Q10. Make a diagram to show how hypermetropia is corrected. The near point of a hypermetropic eye is 1 m. What is the power of the lens required to coma this defect? Assume that the near point of the normal eye is 25 cm.

## Section 2

Q11. How long does the impression of an image remain on the human brain?

- a)  $\frac{1}{4}$ th to  $\frac{1}{8}$ th of a second
- b)  $\frac{1}{16}$ th to  $\frac{1}{20}$ th of a second
- c)  $\frac{1}{20}$ th to  $\frac{1}{24}$ th of a second
- d)  $\frac{1}{6}$ th to  $\frac{1}{10}$ th of a second

**Answer: b**

Q12. What is the average refractive index of the material of the lens in our eyes?

- a) 1.369
- b) 1.196
- c) 1.296
- d) 1.149

**Answer: a**

Q13. Which of the following can correct the refractive defects in human eyes?

- a) Contact lenses
- b) Laser treatment
- c) Spectacles
- d) All of the above

**Answer: d**

Q14. The blind spot on the retina has

- a) numerous nerve endings.
- b) no nerve endings.
- c) few nerve endings.
- d) nerve endings which increase in number as age advances.

**Answer: b**

Q15. What does the colour of a star indicate?

- a) Its weight
- b) Its distance
- c) Its temperature

d) Its size

**Answer: c**

Q16. Myopia may arise due to

a) excessive curvature of the eye lens

b) elongation of the eyeball

c) both (a) and (b)

d) none of these

**Answer: c**

Q17. What is the approximate diameter of the eye ball?

a) 2.0 cm

b) 2.8 cm

c) 2.6 cm

d) 2.3 cm

**Answer: d**

Q18. Which type of lenses are used, if a person suffers from both myopia and hypermetropia?

a) Univocal

b) Concavo-Convex

c) Bi-focal

d) Convexo-concave

**Answer: c**

Q19. Why does white sunlight appear yellow?

a) Due to reflection

b) Due to refraction

c) Due to atmospheric refraction

d) Due to deviation

**Answer: c**

Q20. Which of the following is a natural optical instrument?

a) A magnifying glass

b) An eye

c) A piece of glass

d) A plane mirror

**Answer: b**