

Maxprap. Chapter wise Series Class 10th - Physics

Class : 10th

Topic : Human Eyes and Colourful World

Max. Marks : 50

Duration : 2 Hrs

Sections: A (MCQs), B (Short Answer-I), C (Short Answer-II), D (Long Answer), E (Case-Based).

General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 23 questions divided into five Sections A, B, C, D and E. (iii). Section A comprises of 10 MCQs of 1 mark each. Section B comprises of 5 questions of 2 marks each. Section C comprises of 4 questions of 3 marks each. Section D comprises of 2 question of 5 marks each and Section E comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.

Section A

Questions 1 to 10 carry 1 mark each

1. An old person is unable to see clearly nearby objects as well as distant object. To correct the vision, what kind of lens will he require?
a) Concave lens
b) Convex lens
c) Bifocal lens whose upper portion is convex lens and lower portion is concave lens
d) Bifocal lens whose upper portion is concave lens and lower portion is convex lens
2. The lens system of human eye forms an image on a light sensitive screen, which is called as:
a) Ciliary muscles b) Optic nerves c) Cornea d) Retina
3. Twinkling of stars is due to atmospheric
a) scattering of light by dust particles
b) refraction of light by different layers of varying refractive indexes
c) internal reflection of light by clouds
d) dispersion of light by water droplets
4. The defect of vision in which a person is able to see nearby objects clearly, but not far objects is called:
a) Astigmatism b) Short - sightedness or myopia
c) Cataract d) Long - sightedness or Hypermetropia
5. The amount of light entering the human eye is controlled by:
a) Pupil b) Iris c) Ciliary muscles d) Cornea
6. Which of the following colours is least scattered by fog, dust or smoke?
a) Blue b) Yellow c) Violet d) Red

7. The change in the focal length of an eye lens in human beings is caused by the action of
a) optic nerves b) cornea c) retina d) ciliary muscles
8. Rainbow is a phenomenon due to
a) Refraction alone b) Combined effect of dispersion, refraction and reflection.
c) Reflection alone d) Dispersion alone

Assertion(A)/Reason(R) Based (9-10): In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- 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.

9. Assertion (A): Danger signals are made of red colour.

Reason (R): Velocity of red light in air is maximum, so signals are visible even in dark.

10. Assertion (A): The angle through which a ray of light bends on passing through a prism is called the angle of deviation.

Reason (R): The peculiar shape of a prism makes the emergent ray bend at an angle to the direction of the incident ray.

SECTION – B

Questions 11 to 15 carry 2 marks each

11.
a) White light is dispersed into seven visible coloured components by a glass prism. Name the colour which bends (i) the most and (ii) the least.
b) How can the coloured components of white light be recombined after a prism has separated them? Draw a labelled diagram to justify your answer.
12. Why do clouds appear white? Explain.
13. What is the difference in colours of the Sun observed during sunrise/sunset and noon? Give explanation for each.
14. When and where do we see a rainbow? How is a rainbow formed? Draw a labelled diagram to illustrate the formation of a rainbow.
15. The far point of a myopic person is 120 cm in front of the eye. What is the nature and power of the lens required to correct the problem?

SECTION – C

Questions 16 to 19 carry 3 marks each

16. What are the common defects of vision that can be corrected by the use of suitable eyeglasses or spectacles?

17.

- a) Write the function of each of the following parts of human eye : cornea, iris, crystalline lens, ciliary muscles.
- b) Millions of people of the developing countries of world are suffering from corneal blindness. These people can be cured by replacing the defective cornea with the cornea of a donated eye.

A charitable society of your city has organised a campaign in your neighbourhood in order to create awareness about this fact.

If you are asked to participate in this mission how would you contribute in this noble cause?

- a. State the objective of organising such campaigns.
- b. List two arguments which you would give to motivate the people to donate their eyes after death.

List two values which are developed in the persons who actively participate and contribute in such programme.

18. When one enters a less lighted room from a place of intense light, he is not able to see anything for sometime, but after sometime the things become somewhat visible. Explain how this happens?

19. How can changes of size of eyeball be one of the reason for

- a) myopic and
- b) hypermetropic eye?

Compare the size of eyeball with that of a normal eye in each case. How does this changes of size affect the position of image in each case?

SECTION – D

Questions 20 to 21 carry 5 marks each

20. What is atmospheric refraction? Use this phenomenon to explain the following natural events.

- a) Twinkling of stars.
- b) Advanced sunrise and delayed sunset.

Draw diagrams to illustrate your answers.

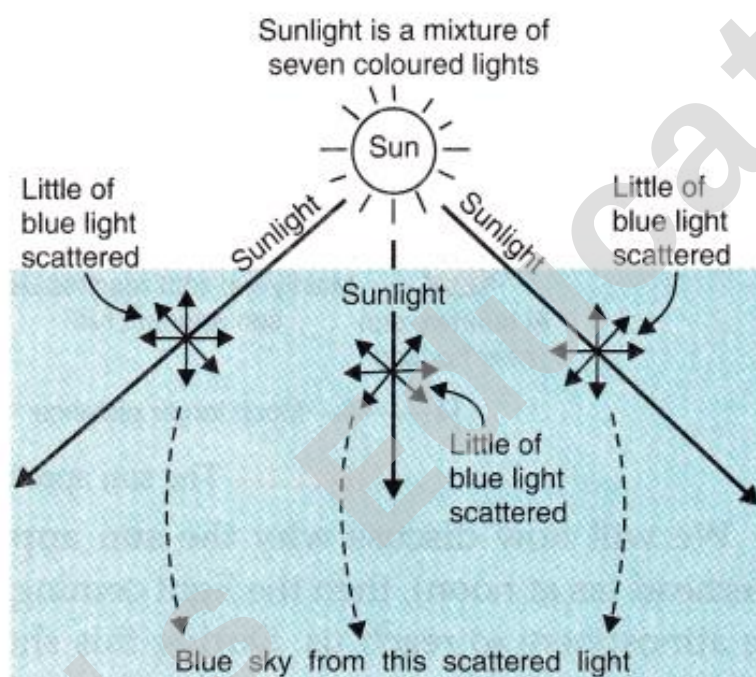
21. Due to gradual weakening of ciliary muscles and diminishing flexibility of the eye lens, a certain defect of vision arises. Write the name of this defect. Name the type of lens required by such persons to improve the vision. Explain the structure and function of such a lens.

SECTION – E (Case Study Based Questions)

Questions 22 & 23 carry 4 marks each

22. Read the following text carefully and answer the questions that follow:

The spreading of light by the air molecules is called the scattering of light. The light having the least wavelength scatters more. The sun appears red at sunrise and sunset, the appearance of the blue sky is due to the scattering of light. The colour of the scattered light depends on the size of the particles. The smaller the molecules in the atmosphere scatter smaller the wavelengths of light. The amount of scattering of light depends on the wavelength of light. When light from the sun enters the earth's atmosphere, it gets scattered by the dust particles and air molecules present in the atmosphere. The path of sunlight entering in the dark room through a fine hole is seen because of the scattering of the sunlight by the dust particles present in its path inside the room.

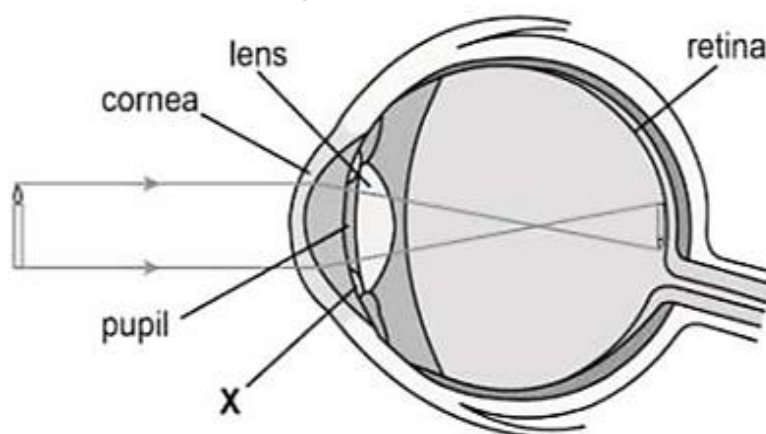


- c) Does the color of Earth appear different to an astronaut in a spaceship? (1)
- d) Why does the sky appear blue? (1)
- e) Why at sunrise or sunset, the sun appears to be reddish white? (2)

OR

Why is the red color selected for danger signal lights? (2)

23. The diagram shows how a human eye sees a candle.



- a) What is X?
- b) Which part of the eye produces maximum refraction of light rays?
 a. Lens b. Pupil c. Retina d. Cornea
- c) What type of image is formed on the retina?
 a. Virtual and inverted
 b. Real and inverted
 c. Virtual and erect
 d. Real and erect
- d) What would the size of the image formed on the retina depend on?
 a. Age of the person
 b. Curvature of the lens
 c. focal length of the lens
 d. Distance of the candle from the eyes
-

Human Eyes and Colourful World Paper Details – Analysis		
Objective Questions		
MCQ	1 marks x 8 question = 8	
Assertion Reason	1 marks x 2 question = 2	
Subjective		
Short type I	2 marks x 5 question = 10	
Short type II	3 marks x 4 question = 12	
Long Type	5 marks x 2 question = 10	
Case Studies Based		
Case 1	4 marks	
Case 2	4 marks	

Total = 50 marks Your Score =