



# INDIAN SCHOOL AL WADI AL KABIR

<b>Class: X</b>	<b>Department: SCIENCE 2020 - 2021</b> <b>SUBJECT : PHYSICS</b>	<b>Date of submission:</b> <b>15.04.20</b>
<b>Worksheet No:</b> <b>01</b>	<b>Topic: HUMAN EYE AND THE COLOURFUL WORLD.</b>	<b>Note:</b> <b>A4 FILE FORMAT</b> <b>( PORTFOLIO)</b>
<b>NAME OF THE STUDENT</b>	<b>CLASS &amp; SEC:</b>	<b>ROLL NO.</b>

## **OBJECTIVE TYPE QUESTIONS ( One mark each)**

- In a human eye , the thin membrane which allows light to enter the eyes is
  - Retina
  - eye lens
  - ciliary muscles
  - cornea
- The term “accommodation” as applied to the eye, refers to its ability to:
  - Control the light intensity falling on the retina
  - Erect the inverted image formed on the retina
  - Adjust the focal length of the lens
  - Vary the distance between the lens and retina
- How eyes adjust in order to focus the image of near or distant objects on retina?
  - The lens moves in or out according to the position of the object
  - The retina moves in or out according to the position of the object
  - The lens becomes thicker or thinner according to the position of the object
  - The pupil gets larger or smaller according to the position of the object
- The change in focal length of an eye is caused by the action of the
  - Pupil
  - Retina
  - Iris
  - Ciliary muscles

5. The size of the pupil is adjusted by  
a. Cornea b. Retina c. Iris d. Eye lens
6. When we enter a dark room from bright light, we cannot see properly for a short time. This is because  
a. Pupil is fully closed b. Pupil is fully closed c. Adjustment of the size of the pupil takes some time. d. Covering of the pupil by the Iris.
7. When we go out in bright light , the pupil of the eye  
a. Contracts b. Expands  
c. Sometimes contracts and sometimes expands d. Neither contracts nor expands.
8. Eye lens is a  
a. Double convex lens b. Double concave lens  
c. Plano convex lens d. Plano concave lens
9. A man finds it difficult to read the odometer on the dashboard of the car but is able to clearly read a distant road sign. Which of the following statement is correct about this man?  
(a) The near point of his eyes has receded away.  
(b) The near point of his eyes has come closer to him.  
(c) The far point of his eyes has receded away.  
(d) The far point of his eyes has come closer to him.
10. When a beam of white light falls on a glass prism, the colour of light which will deviate least is:  
(a) Violet  
(b) Red  
(c) Green  
(d) Blue
- 11) The image distance from the eye lens in the normal eye when we increase the distance of an object from the eye (BBQ-2020)  
a) Increases  
b) Decreases  
c) Remains unchanged  
d) Depends on the size of the eye ball.

### **VERY SHORT ANSWER QUESTIONS ( 1 mark each)**

12) The human eye can focus objects at different distances by adjusting the focal length of the eye lens. This is due to

13) Why is a normal eye not able to see clearly the objects placed closer than 25cm?  
(BBQ)

(There is a limit for the eye lens to decrease its focal length by contracting the ciliary muscles)

14) State the type of corrective lens which is required by a person who can neither see objects clearly at the near point or at infinity. (BBQ) (Bi focal lens)

15) Mention the role of optic nerve in the human eye. (Ans. It transmits the visual information in the form of electrical signals generated at retina to the brain)

16) Give an example in nature which shows that sunlight may be made of different colours. (Formation of rainbow)

17) Name the phenomena which causes twinkling of stars.

### **Assertion & Reasoning**

- A) If both, Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
- B) If both, Assertion and Reason are true but Reason is not a correct explanation of the Assertion.
- C) If Assertion is true but the Reason is false.
- D) If both, Assertion and Reason are false.

18) Assertion: A normal human eye can clearly see all the objects beyond a certain minimum distance.

Reason: The human eye has the capacity to suitably adjust the focal length of its lens to a certain extent.

19) Assertion: Focal length of the eye lens can be changed so as to see nearby as well as far off objects.

Reason: Iris can contract and expand according to the amount of light entering the eye.

### SHORT QUESTIONS (3 MARKS EACH)

20) A student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him.

Name the defect of vision he is suffering from. With the help of the labelled diagram explain in brief how this defect can be corrected?

21)(a) What is Presbyopia? State the cause of presbyopia. How is presbyopia of a person corrected?

(b) What is meant by power of accommodation of the eye of a person?

22) Give reasons (BBQ-2020)

(i) Red colour is selected for danger signals.

(ii) The sky appears dark in space.

(iii) The time difference between actual sunset and apparent sunset is about 2 minutes.

23) A student uses spectacles of focal length  $-2.5\text{m}$ . (BBQ-2020)

a) Name the defect of vision he is suffering from.

b) Which lens is used for the correction of this defect?

c) List two main causes of developing this defect.

d) Compute the power of this lens.

24)(i) Light of two colours A and B pass through a prism. A deviates more than B from its path of incidence. Which colour has higher wavelength? ( B has more wavelength than A)

(ii) What is a spectrum? Write the seven colours in the spectrum in the increasing order of wavelength.

25) State the reason for the following observations recorded from the surface of moon.

a) Sky appears dark

b) Rainbow is never formed  
(lack of atmosphere)

(BBQ-2018)

26) What is the cause of dispersion of white light through a glass prism?

Draw a ray diagram to show the path of light when two identical glass prisms are arranged together in inverted position with respect to each other and a narrow beam of white light is allowed to fall obliquely on one of the faces of the prisms.(BBQ-2019)

OR

What is scattering of light? Use this phenomenon to explain why (i) the Sun appears reddish at sun-rise and (ii) the clear sky appears blue. (BBQ-2019)

### **LONG ANSWER QUESTIONS (5 MARKS EACH)**

27) A person is unable to see objects distinctly placed within 50cm from his eyes.

- a) Name the defect of vision the person is suffering from and list its two possible causes.
- b) Draw a ray diagram to show the defect in the above case.
- c) Mention the type of lens used by him for the correction of the defect and calculate its power. Assume the near point for the normal eye is 25cm.
- d) Draw a labelled diagram for the correction of the defect in the above case.(BBQ-2019)

Give reasons for the following

- a. Colour of clear sky is blue
- b. White colour of the cloud.
- c. Rainbow formation.
- d. Stars appears to twinkle
- e. Planets do not twinkle

- 28) How will you use two identical prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light? Draw the diagram.
- 29) (a) What is the cause of dispersion of white light through (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 it is so.
- 30) (a) A student is unable to see clearly the words written on the black board placed at a distance of approximately 3m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.
- b) Also find the focal length and the power of the lens to be used to correct his defect.  
(BBQ)
- 31) A person suffering from myopia was advised to wear corrective lens of power -2.5D. A spherical lens of same focal length was taken in the laboratory. At what distance should a student place an object from this lens so that it forms an image at a distance of 10cm from the lens? (BBQ-2020)

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