

Time : 1 Hour 30 Minute

STD 10 Science  
Chapter Based Test

Total Marks : 50

SECTION A

\* Select and write one most appropriate option out of the four options given [7]  
for each of the questions

1. In the case of hypermetropia:

- |  |  |  |   |
|--|--|--|---|
| (A) The image of a near object is formed behind the retina | (B) The image of a distant object is formed in front of the retina | (C) A concave lens should be used for correction | (D) Abifocal lens should be used for correction |
|--|--|--|---|

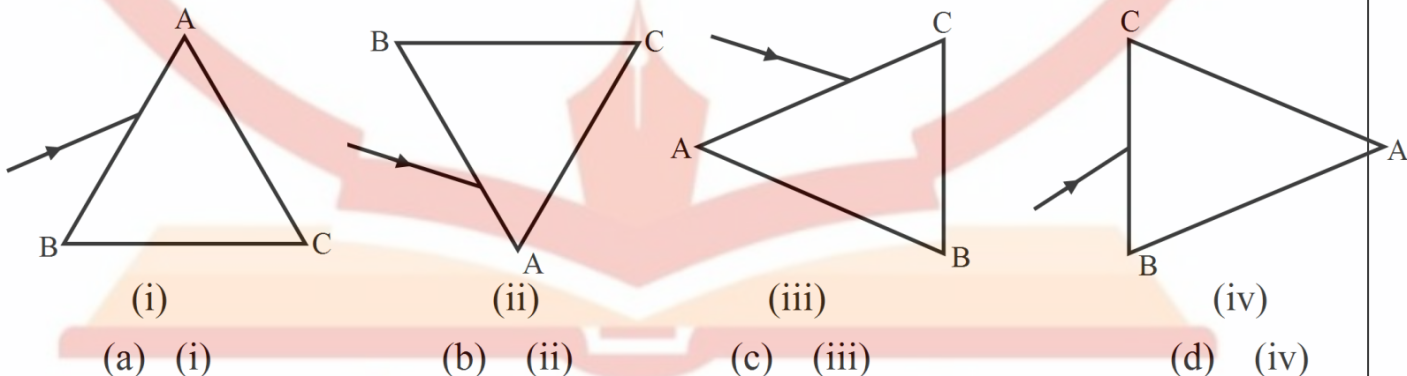
2. The human eye forms the image of an object at its:

- |            |          |           |            |
|------------|----------|-----------|------------|
| (A) Cornea | (B) Iris | (C) Pupil | (D) Retina |
|------------|----------|-----------|------------|

3. The defect of vision in which the eye-lens of a person gets progressively cloudy resulting in blurred vision is called:

- |             |                 |                      |               |
|-------------|-----------------|----------------------|---------------|
| (A) Myopia. | (B) Presbyopia. | (C) Colourblindness. | (D) Cataract. |
|-------------|-----------------|----------------------|---------------|

4. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



- |         |         |         |         |
|---------|---------|---------|---------|
| (A) (a) | (B) (c) | (C) (c) | (D) (d) |
|---------|---------|---------|---------|

5. To focus the image of a nearby object on the retina of an eye:

- |  |  |   |   |
|--|--|---|---|
| (A) The distance between eye-lens and retina is increased. | (B) The distance between eye-lens and retina is decreased. | (C) The thickness of eye-lens is decreased. | (D) The thickness of eye-lens is increased. |
|--|--|---|---|

6. The change in focal length of an eye-lens is caused by the action of the:

- Pupil.
- Retina.
- Ciliary muscles.
- Iris.

7. As light from a far off star comes down towards the earth:
- It bends away from the normal.
  - It bends towards the normal.
  - It does not bend at all.
  - It is reflected back.

**\* Assertion - Reasoning based questions.**

**[3]**

8. For 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:
- Both A and R are true, and R is correct explanation of the assertion.
  - Both A and R are true, but R is not the correct explanation of the assertion.
  - A is true, but R is false.
  - A is false, but R is true.

**Assertion:** Higher the refractive index of the prism material, lower is the angle of deviation.

**Reason:** The angle of deviation is directly proportional to the angle of prism.

9. For 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:
- Both A and R are true, and R is correct explanation of the assertion.
  - Both A and R are true, but R is not the correct explanation of the assertion.
  - A is true, but R is false.
  - A is false, but R is true.

**Assertion:** Rainbow is an example of the dispersion of sunlight by the water droplets.

**Reason:** Light of shorter wavelength is scattered much more than light of larger wavelength.

10. In the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as:
- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
  - If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
  - If Assertion is true, but Reason is false.
  - If Assertion is false, but Reason is true.
  - If Assertion and Reason both are false.

**Assertion:** Rainbow is an example of the dispersion of sunlight by the water droplets.

**Reason:** Light of shorter wavelength is scattered much more than light of larger wavelength.

**\* Fill in the blank with correct answer.[1 Mark each]**

**[2]**

11. White light is composed of \_\_\_\_ | The colour of white light deviated through the largest angle by a prism is \_\_\_\_.
12. To bring light from a near object to a focus on the retina of the eye, the convex eye-lens needs to be made \_\_\_\_.

**\* Answer the questions.[1 Mark each]**

**[2]**

13. Shape of the eye lens can be modified by ciliary muscles.

14. What is the other name for:
- Myopia.
  - Hypermetropia.

**SECTION B**

\* **Answer the following question. :**

**[10]**

- Five persons A, B, C, D and E have diabetes, leukaemia, asthma, meningitis and hepatitis, respectively.
  - Which of these persons can donate eyes?
  - Which of these persons cannot donate eyes?
- In a certain murder investigation, it was important to discover whether the victim was long-sighted or short-sighted. How could a detective decide by examining his spectacles?
- What are the advantages of having two eyes instead of just one?
- Name the cells on the retina of an eye which are sensitive to
  - Bright light.
  - Dim light.
  - Sensation of colour.
- Why do stars seem higher than they actually are? Illustrate your answer with the help of a diagram.

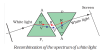
**SECTION C**

\* **Answer short answer questions. [3 Mark each]**

**[12]**

- When is a person said to have developed cataract in his eye ? How is the vision of a person having cataract restored?
- 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.

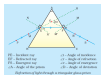
(A) For this, one prism is placed near another prism so that one prism is in erect position and another prism is in inverted position. When ray of white light enters the first prism, dispersion of light takes place. When lights of different colours pass through the second prism, they recombine to make a ray of white light.



3.

Explain the refraction of light through a triangular glass prism using a labelled ray diagram. Hence define the angle of deviation.

(A)



The light ray PE enters from air to glass (rarer to denser medium) at surface AB and therefore, bends towards the normal. The refracted ray EF now exits from glass and enters air (from denser to rarer medium) and therefore, bends away from the normal. Extrapolation of incident and emergent ray gives the angle of deviation.

4. Describe the working of the human eye with the help of the above diagram.

#### SECTION D

\* Long answer questions [5 Mark each]

[10]

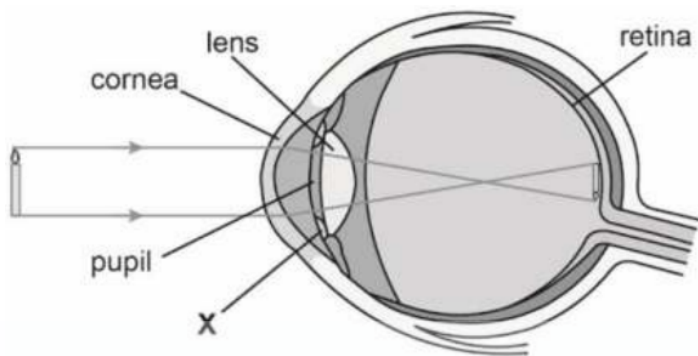
1. Differentiate between myopia and hypermetropia. What type of spectacles should be worn by a person having the defects of myopia as well as hypermetropia? How does it help?
2.
  - a. List three common refractive defects of vision. Suggest the way of correcting these defects.
  - b. About 45 lac people 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?

#### SECTION E

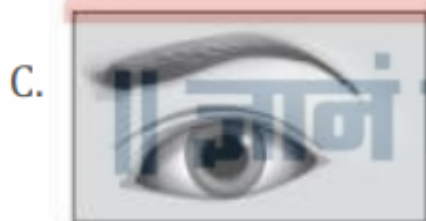
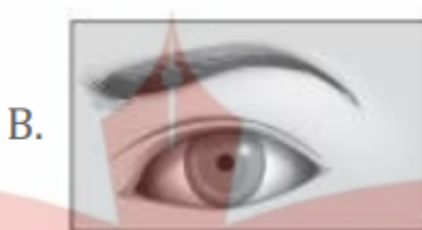
\* case - based/data -based questions

[4]

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



1. What is X?<
2. Which part of the eye produces maximum refraction of light rays?
  - A. Lens
  - B. Pupil
  - C. Retina
  - D. Cornea
3. 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
4. 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
5. Which eye is likely to be in the brightest light?



6. Which part of the eye controls the size of the pupil?
7. Presbyopia is a defect in vision.  
What is the primary cause of presbyopia?
8. A young person can clearly see nearby objects but not distant objects.  
Which of these statements is true for the person?  
Circle 'Yes' or 'No' to mark your responses.

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Is this statement correct?	Yes or No
His eye lens is not lexible.	Yes/No
His eyeballs are elongated.	Yes/No
All chromosomes in human cells are found in pairs.	Yes/No

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