

BUDHA DAL PUBLIC SCHOOL PATIALA

CLASS X SCIENCE CHAPTER- Human Eye and the colorful world

Session: 2020/21

Subject: PHYSICS

Term 2 : NOVEMBER/DECEMBER 2020

UNIT : NATURAL PHENOMENON

TOPIC : THE HUMAN EYE

Pre-Requisite Knowledge:

- Students must know the concepts of the visibility of objects around them
- Phenomenon of reflection and refraction of light

TEACHING AIDS

General teaching tools like chalk, duster, white board, marker of different color, smart class, etc the teacher will use a convex lens ,a prism .

References:

- Text book NCERT Science class X
- Living Science by Dhiren Doshi

METHODOLOGY (PEDAGOGY)

- Demonstration cum lecture method.
- Activity based teaching in which active participation of students.

GENERAL OBJECTIVES:

- To inculcate the spirit of scientific method and scientific reasoning among the students.
- To make students aware of the working of human eye.

SPECIFIC OBJECTIVES:

- To make students aware of converging nature of convex lens.
- Functions of various part of human eye.
- To make them understand dispersion of white light
- To make them able to answer the reason behind the natural phenomenon behind the natural light

How to draw ray diagram of refraction through a glass prism:

SKILLS: Scientific Aptitude, Concept of Knowledge, Presentation, Correctness, Thinking skills, Reasoning skills, Attentiveness, Listening skills.

PROCEDURE:

TOPIC EXPLANATION:

- Introduction
- Explain the construction of human eye by giving function of the parts
- The concept of far and near point along with power of accommodation
- How image is formed with reference to persistence of vision
- The concept of refraction when the two surfaces are inclined at an angle(glass prism)
- The splitting of white light-dispersion
- Recombination of spectrum of white light
- Cause of dispersion
- Formation of rainbow
- The concept atmospheric refraction with reference to the color of the sky and twinkling the stars
- Scattering of light(Tyndall effect)
- Applications of scattering phenomenon of light

LEARNING OUTCOMES:

- Students will be able to:
 - Understand the behavior of light
 - Functioning of the human eye
 - Understand the reason behind the natural phenomenon

ASSIGNMENT:

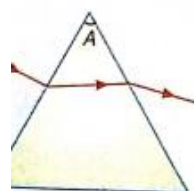
The splitting of white light into a band of seven colours on passing through a glass prism is called (a) scattering of light (b) Tyndall effect (c) dispersion of light (d) refraction of light

Which of the following statements is correct regarding the propagation of light of different colours of white light in air?

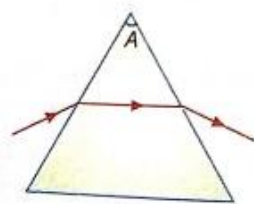
[Exemplar Problem]

- (a) Red light moves the fastest.
- (b) Blue light moves faster than green light.
- (c) All the colours of the white light move with the same speed.
- (d) Yellow light moves with the mean speed as that of the red and the violet lights.

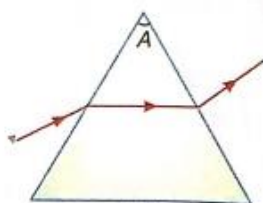
Which of the following diagrams represents refraction of light through a prism correctly?



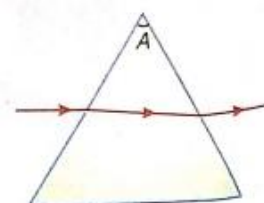
(a) Diagram (i)



(b) Diagram (ii)

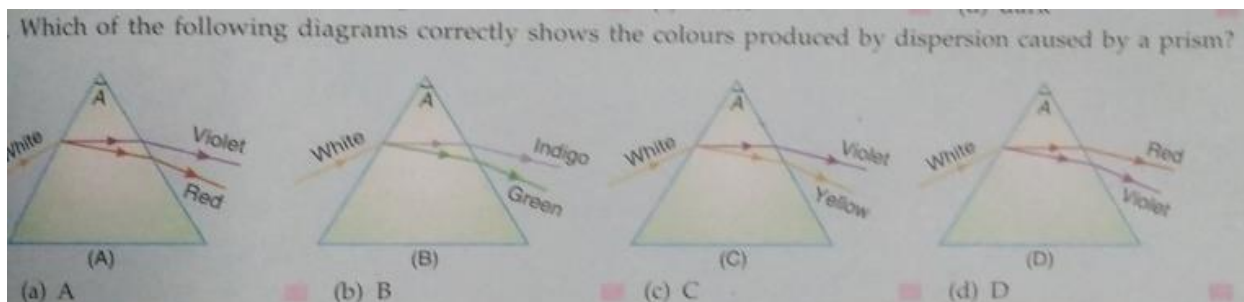


(c) Diagram (iii)



(d) Diagram (iv)

- Which of the following phenomena of light are involved in the formation of a rainbow?
- (a) Reflection, refraction and dispersion ☐ (b) Refraction, dispersion and internal reflection ☐
 (c) Dispersion, scattering and internal reflection ☐ (d) Refraction, dispersion and scattering ☐
- Twinkling of stars is due to atmospheric
- (a) dispersion of light by water droplets ☐
 (b) refraction of light by different layers of varying refractive indices ☐
 (c) scattering of light by dust particles ☐
 (d) internal reflection of light by clouds. ☐
- Due to atmospheric refraction, the time from sunrise to sunset at a place appears to increase by
- (a) 4 minutes ☐ (b) 2 minutes ☐ (c) 12 minutes ☐ (d) $\frac{1}{2}$ minute ☐
- At noon, the sun appears white as
- (a) light is the least scattered ☐
 (b) all the colours of the white light are scattered away ☐
 (c) blue colour is scattered the most ☐
 (d) red colour is scattered the most. ☐
- The bluish colour of water in deep sea is due to
- (a) the presence of algae and other plants found in water ☐
 (b) reflection of sky in water ☐
 (c) scattering of light ☐
 (d) absorption of light by the sea. ☐
- An astronaut lands his spacecraft on the moon's surface and observes the sky. He will find the colour of the sky as
- (a) deep blue ☐ (b) light blue ☐ (c) white ☐ (d) dark ☐
- Which of the following diagrams correctly shows the colours produced by dispersion caused by a prism?



- Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?
- (a) Dispersion of light ☐ (b) Scattering of light ☐
 (c) Total internal reflection of light ☐ (d) Reflection of light from the earth ☐
- The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light
- (a) is scattered the most by smoke or fog ☐ (b) is scattered the least by smoke or fog ☐
 (c) is absorbed the most by smoke or fog ☐ (d) moves fastest in air. ☐

ASSESSMENT OF LEARNING OUTCOMES

The students will be assessed by

- (a) Home Assignments, Worksheets, Oral test, MCQ test etc.

You Tube Links:

https://youtu.be/U_wTfpYK_ms

https://youtu.be/KCfR_iNsW6k

<https://youtu.be/8Xcpq6e8pBY>