6. A student very cautiously traces the path of a ray through a glass slab for different values of the angle of incidence ($\angle i$). He then measures the corresponding values of the angle of refraction ($\angle r$) and the angle of emergence ($\angle e$) for every value of the angle of incidence. On analysing these measurement of angles, his conclusion would be. **[2017] ...[1M]**

(a) $\angle i > \angle r > \angle e$ (b) $\angle i = \angle e > \angle r$

(c) $\angle i < \angle r < \angle e$ (d) $\angle i = \angle e < \angle r$

7. Which of the following statements is not true for scattering of light? **[2021] ...[1M]**

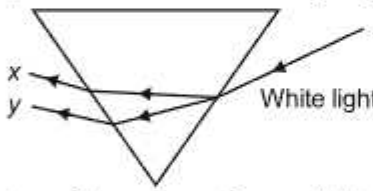
(a) Colour of the scattered light depends on the size of particles of the atmosphere

(b) Red light is least scattered in the atmosphere.

(c) Scattering of light takes place as various colours of white light travel with different speed in air.

(d) The fine particles in the atmospheric air scatter the blue light more strongly than red. So the scattered blue light enters our eyes.

8. In the diagram given below, *x* and *y* are the end colours of the spectrum of white light. The colour of '*y*' represents the **[2021] ...[1M]**



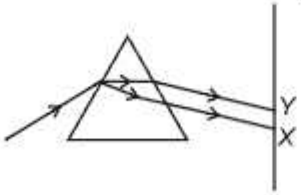
(a) Colour of sky as seen from earth during the day

(b) Colour of the sky as seen from the moon

(c) Colour used to paint the danger signals

(d) Colour of sun at the time of noon

9. In the figure given below a narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism it produces a spectrum *XY* on a screen. **[2010] ...[2M]**



(a) State the colour seen at *X* and *Y*.

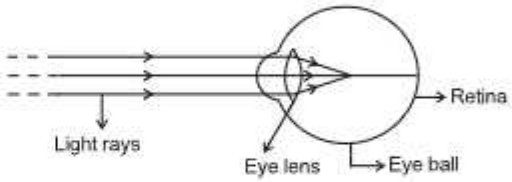
(b) Why do different colours of white light bend through different angles with respect to the incident beam of light?

10. Draw a diagram to show dispersion of white light by a glass prism. What is the cause of this dispersion? **[2011] ...[2M]**

11. When we place a glass prism in the path of a narrow beam of white light, a spectrum is obtained. What happens when a second identical prism is placed in an inverted position with respect to the first prism? Draw a labelled ray diagram to illustrate it. **[2012] ...[2M]**

12. Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly. **[2019] ...[2M]**

13. (A) Observe the following diagram and answer the questions following it : **[2023] ...[2M]**



(i) Identify the defect of vision shown.

(ii) List its two causes.

(iii) Name the type of lens used for the correction of this defect.

OR

(B) The colour of clear sky from the earth appears blue but from the space it appears black. Why?

14. What is hypermetropia? State the two causes of hypermetropia. With the help of ray diagrams, show :

(i) The eye-defect hypermetropia

(ii) Correction of hypermetropia by using a lens

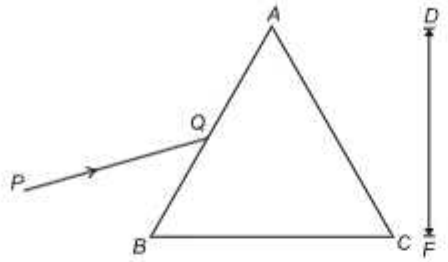
[2009] ...[3M]

15. At what distance should an object be placed from a convex lens of focal length 18 cm to obtain an image at 24 cm from it on the other side. What will be magnification produced in this case? **[2010] ...[3M]**

16. (a) What is meant by the power of accommodation of an eye?

(b) A person with a myopic eye cannot see objects beyond 1.2 m directly. What should be the type of the corrective lens used? What would be its power? **[2011] ...[3M]**

17. A narrow beam *PQ* of white light is passing through a glass prism *ABC* as shown in the diagram. **[2014] ...[3M]**



Trace it on your answer sheet and show the path of the emergent beam as observed on the screen *DE*.

(i) Write the name and cause of the phenomenon observed.

(ii) Where else in nature is this phenomenon observed?

(iii) Based on this observation, state the conclusion which can be drawn about the constituents of white light.

18. Write the importance of ciliary muscles in the human eye. Name the defect of vision that arises due to gradual weakening of the ciliary muscles. What types of lenses are required by the person suffering from this defect to see the objects clearly?

Akshay, sitting in the last row in his class, could not see clearly the words written on the blackboard. When the teacher noticed it, he announced if any student sitting in the front row could volunteer to exchange his seat with Akshay. Salman immediately agreed to exchange his seat with Akshay. He could now see the words written on the blackboard clearly. The teacher thought it fit to send the message to Akshay's parents advising them to get his eyesight checked. In the context of the above event, answer the following questions:

(a) Which defect of vision is Akshay suffering from? Which type of lens is used to correct this defect?

(b) State the values displayed by the teacher and Salman.

(c) In your opinion, in what way can Akshay express his gratitude towards the teacher and Salman? **[2015] ...[3M]**

19. Describe an activity to show that colours of white light splitted by a glass prism can be recombined to get white light by another identical glass prism. Also draw ray diagram to show the recombination of the spectrum of white light. **[2016] ...[3M]**

20. What is "dispersion of white light"? Draw a labelled diagram to illustrate the recombination of the spectrum of white light. Why it is essential that the two prisms used for the purpose should be identical and placed in an inverted position with respect to each other? **[2017] ...[3M]**

21. Trace the sequence of events which occur when a bright light is focussed on your eyes. **[2019] ...[3M]**

22. What is a rainbow? Draw a labelled diagram to show the formation of a rainbow. **[2019] ...[3M]**

23. Why is Tyndall effect shown by colloidal particles? State four instances of observing the Tyndall effect. **[2020]...[3M]**

24. Differentiate between a glass slab and a glass prism. What happens when a narrow beam of (i) a monochromatic light, and (ii) white light passes through (a) glass slab and (b) glass prism? **[2020]...[3M]**

25. (a) Give reasons for the following :

(i) Colour of the clear sky is blue.

(ii) We cannot see an object clearly if it is placed very close to the eyes.

(b) What is Presbyopia? Write two causes of this defect. **[2008] ...[4M]**

26. (a) What is meant by dispersion of white light? Describe the formation of rainbow in the sky with the help of a diagram.

(b) What is hypermetropia? Draw ray diagrams to show the image formation of an object by :

(i) Hypermetropic eye

(ii) Correction made with a suitable lens for hypermetropic eye. **[2008] ...[5M]**

27. (a) A student suffering from myopia is not able to see distinctly the object placed beyond 5 m. List two possible reasons due to which this defect of vision may have arisen. With the help of ray diagrams explain

(i) Why the student is unable to see distinctly the objects placed beyond 5 m from his eyes.

(ii) The type of the corrective lens used to restore proper vision and how this defect is corrected by the use of this lens.

(b) If in this case, the numerical value of the focal length of the corrective lens is 5 m. Find the power of the lens as per the new Cartesian sign convention. **[2017] ...[5M]**