

19. (a) Define the principal focus of a concave mirror. It is desired to obtain an erect image of an object using a concave mirror of focal length 12 cm. What should be the range of the object distance in the above case ?
(b) Why do we prefer a convex mirror as a rear-view mirror in vehicles ? List two reasons. 3
20. An object is kept at a distance of 30 cm in front of a concave mirror of focal length 20 cm. Use mirror formula to determine the position and magnification of the image produced. 3
21. An object is kept at a distance of 18 cm in front of a convex lens of focal length 12 cm. Use lens formula to determine the image distance and magnification of the image produced. 3

Chapter 11: *The human eye and the colourful world*

1. When we enter a dark room coming from outside, immediately the things inside the room do not appear clear to our eyes. This is because 1
i) pupils do not open at all in the dark.
ii) pupils take time to adjust.
iii) light travels slower in a dark room.
iv) pupils open very quickly in the dark.
2. The phenomena of light responsible for the working of the human eye is
i) reflection
ii) refraction
iii) power of accommodation
iv) persistence of vision 1

8. Person suffering from cataract has

- (a) elongated eyeball
- (b) excessive curvature of eye lens
- (c) weakened ciliary muscles
- (d) opaque eye lens

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9. (a) With the help of labelled ray diagram show the path followed by a narrow beam of monochromatic light when it passes through a glass prism.
- (b) What would happen if this beam is replaced by a narrow beam of white light ?

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10. A person is suffering from both myopia and hypermetropia.

- (i) What kind of lenses can correct this defect ?
- (ii) How are these lenses prepared ?

A person needs a lens of power + 3D for correcting his near vision and -3D for correcting his distant vision. Calculate the focal lengths of the lenses required to correct these defects.

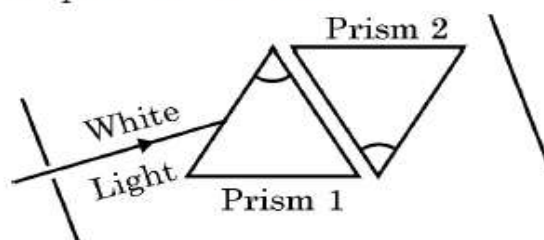
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11. The sky appears dark to passengers flying at very high altitudes mainly because :

- (a) Scattering of light is not enough at such heights.
- (b) There is no atmosphere at great heights.
- (c) The size of molecules is smaller than the wavelength of visible light.
- (d) The light gets scattered towards the earth.

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12. (a) State the relation between colour of scattered light and size of the scattering particle.
- (b) The apparent position of an object, when seen through the hot air, fluctuates or wavers. State the basic cause of this observation.
- (c) Complete the path of white light when it passes through two identical prisms placed as shown :



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13. A person may suffer from both myopia and hypermetropia defects.
- (a) What is this condition called ?
 - (b) When does it happen ?
 - (c) Name the type of lens often required by the persons suffering from this defect. Draw labelled diagram of such lenses.
- 3
14. How will you use two identical glass prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light ? Draw and label the ray diagram.
- 3
15. The image distance from the eye lens in the normal eye when we increase the distance of an object from the eye
- (A) increases.
 - (B) decreases.
 - (C) remains unchanged.
 - (D) depends on the size of the eyeball.
- 1
16. A student uses spectacles of focal length -2.5 m.
- (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.
- 3
17. Give reasons :
- (a) Red colour is selected for danger signals.
 - (b) The sky appears dark in space.
 - (c) The time difference between actual sunset and apparent sunset is about 2 minutes.
- 3
18. (a) A person suffering from myopia (near-sightedness) was advised to wear corrective lens of power -2.5 D. 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 10 cm from the lens ?
- (b) Draw a ray diagram to show the position and nature of the image formed in the above case.
- 5

19. (a) A student is unable to see the words written on the blackboard placed at a distance of approximately 5 m from him clearly. Name the defect of vision the student is suffering from. State the possible causes of this defect and explain in brief the method of correcting this defect.
- (b) Why does the Sun appear reddish during sunrise and sunset ? Will this phenomenon be observed by an astronaut on the moon ? Give reasons to justify your answer.

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Chapter 12 : *Electricity*

1. When a 4V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. The value of the resistance of the resistor is:
- i) 4Ω
 - ii) 40Ω
 - iii) 400Ω
 - iv) 0.4Ω

2. Unit of electric power may also be expressed as: 1
- i) volt-ampere
 - ii) kilowatt-hour
 - iii) watt-second
 - iv) joule-second

3. At the time of short circuit, the electric current in the circuit :
- | | |
|---------------------------|-----------------------|
| (a) vary continuously | (b) does not change |
| (c) reduces substantially | (d) increases heavily |
- 1

4. Two bulbs of 100 W and 40 W are connected in series. The current through the 100 W bulb is 1 A. The current through the 40 W bulb will be :
- | | |
|-----------|-----------|
| (a) 0.4 A | (b) 0.6 A |
| (c) 0.8 A | (d) 1 A |
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