

India's Number 1 Education App

# PHYSICS

# BOOKS - PRADEEP PHYSICS (HINGLISH)

# THE HUMAN EYE AND COLOURFUL WORLD

**Solved Problem** 

**1.** The far point of a myopic eye is at 50*cm*. Calculate the power of the lens to correct his vision.



2. (a) The far point of a myopic person is 80cm.
In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly ?
(b) In what way does the corrective lens help

the person above ? Does the lens magnify very

distant objects ? Explain carefully.

(c) The person above prefers to remove his

spectacles while reading a book. Explain why?



**3.** (a) The near point of a hypermetropic person is at 75cm from the eye. What is the power of the lens required to enable him to read clearly a book held at 25cm from the eye

(b) In what way does the corrective lens helpthe person above ? Does the lens magnifyobjects held near the eye ?( c) The person above prefers to remove hisspectacles while looking at the sky. Explain why

?



**4.** A person cannot see the objects distinctly, when placed at a distance less than 100cm. What is the power of the spectacles that he

should use to see clearly the objects placed at

25cm?



5. (a) A student suffering from myopia is not able to see distinctly the objects placed beyond 5m. 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 5m from his eyes.

(ii) The type of corrective lens used to restore proper vision and how this defect is corrected by the use of this lens.
(b) If in this case, numerical value of focal length of corrective lens is 5m, find the power of the lens as per the new cartesion sign

convention.

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**6.** A child while playing with his father's spectacles, burnt a hole in a piece of tissue

paper by focussing the image of the sun on the paper.

(a) Name the defect of vision his father is suffering from.

(b) List two causes of the defect.

( c) Draw a ray diagram to show this defect

may be corrected using a suitable lens.

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7. Nooper needs a lens of power -4.5D for correction of her vision.

(a) What kind of defect in vision is she suffering from ?

(b) What is the focal length and nature of corrective lens ?

(c) Draw ray diagrams showing the defected eye and correction for the defect.

(d) What are the causes of this defect ?



Ncert Question

1. What is meant by accommodation of the eye

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**2.** A person with a myopic eye cannot see objects beyond 1.2m distinctly. What should be the type of corrective lens to restore proper vision ?



3. What is the far point and near point of the

human eye with normal vision ?



**4.** A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from?

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

A. presbyopia

B. near sightedness

C. Power of accommodation

D. far - sightedness

#### Answer: C



#### 2. The human eye forms the image of an object

at its

A. cornea

B. pupil

C. iris

D. retina

Answer: D



**3.** What is the least distance of distinct vision for a normal eye ? Is it the same as the distance of near point ?

A. 25 m

B. 25 cm

C. 2.5 cm

D. 2.5 m

#### **Answer: B**





4. The change in focal length of an eye lens is

caused by the action of the

A. pupil

B. retina

C. iris

D. ciliary muscles

#### Answer: D

5. A person wears eye glasses with a power of -5.5D for distance viewing. His doctor prescribes a correction of +1.5D for his near vision. What is the focal length of his distance viewing part of the lens and also for near vision section of the lens ?



**6.** (a) The far point of a myopic person is 80*cm*. In front of the eye. What is the power of the lens required to enable him to see very distant objects clearly? (b) In what way does the corrective lens help the person above ? Does the lens magnify very distant objects ? Explain carefully.

( c) The person above prefers to remove his

spectacles while reading a book. Explain why?

7. Make a diagram to show how hypermetropia is corrected. The near point of a hypermetropic eye is 1metre. What is the power of the lens required to correct this defect ? Assume that the near point of the normal eye is 25cm.

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8. Why is normal eye not able to see clearly the

objects placed closer than 25 cm?

**9.** What happens to the image distance in the eye when we increase the distance of an object from the eye ?

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10. Why do stars twinkle?

11. Planets do not twinkle.



**12.** The sun looks reddish at the time of sunrise and sunset.

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13. To an astronaut is a spcaceship, the sky

appears

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#### **Exemplar Short Answer**

- 1. Draw ray diagrams each showing
- (i) myopic eye and
- (ii) hypermetropic eye.



2. A student sitting at the back of the classroom cannot read clearly the letters written on the blackward. What advice will a doctor give to her ? Draw ray diagram for the correction of this defect.

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3. How are we able to see nearby and also the

distant objects clearly?

**4.** Nooper needs a lens of power -4.5D for correction of her vision.

(a) What kind of defect in vision is she suffering from ?

(b) What is the focal length and nature of corrective lens ?

( c) Draw ray diagrams showing the defected

eye and correction for the defect.

(d) What are the causes of this defect ?



**5.** How will you use two indentical 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.

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**6.** Draw a ray diagram showing the dispersion through a prism when a narrow beam of white light is incident on one of its refracting surface. Also indicate the order of the colours of the spectrum obtained.



8. Why do we see a rainbow in the sky only

after rainfall?

**9.** Why does clear sky appear blue ?



**10.** The sun looks reddish at the time of sunrise and sunset.

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**Exemplar Long Answer** 

**1.** Explain the structure and functioning of Human eye. How are we able to see nearby as well as distant objects ?



- 2. Draw ray diagrams each showing
- (i) myopic eye and
- (ii) hypermetropic eye.

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

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4. The sun looks reddish at the time of sunrise

and sunset.

**5.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.



**6.** Assertion : The stars twinkle while the planets do not.

Reason : The stars are much bigger in size

than the planets.



Additional Very Short Answer

### **1.** What is far point of a normal human eye ?

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**2.** What is the least distance of distinct vision for a normal eye ? Is it the same as the distance of near point ?

3. What kind of lens is present in the human

eye?



4. Name the screen on which eye forms the

image.



5. Is cornea transparent to light ?



8. What type of cells are lacking in a person whi is colour blind ?
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**9.** Which type of retinal cells respond to brightness of light ?

10. Which defect of vision can be rectified

using a convex lens ?

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11. Which defect of vision can be rectified using

a concave lens ?

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



13. Which defect of the eye can be corrected

using a cylindrical lens?

**14.** Which colour has largest wavelength ?



**16.** Name the phenomenon which causes the twinkling of stars.



**17.** Which phenomenon is responsiblefor increasing the apparent length of the day by 4 minutes ?

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**18.** Why do stars seem higher than they actually are ? Illustrate your answer with the help of a diagram.




19. What is persistence of vision ? Give one

example of persistence of vision.



**20.** The sun looks reddish at the time of sunrise and sunset.

21. (a) Is eye lens made of glass ?

(b) Is focal lengths of eye lens fixed ?



23. (a) What is meant by far point of human

eye?

(b) What is meant by near point of human eye



(b) What is the maximum power of

accomodation of a normal eye ?

**25.** (a) Which lens is used for correcting a mypoic eye ?

(b) Which lens is used for correcting a

hypermetropic eye ?

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**26.** Why are danger signals red in colour ?

**27.** Why does clear sky appear blue ?



28. Name the part of our eyes which helps us

to focus near and distant objects in quick succession.



#### 29. To an astronaut is a spcaceship, the sky

appears

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**Additional Short Answer** 

1. Why does it take some time to see objects in

a cinema hall, when we just enter the hall?

2. What is the nature of eye lens ? Is its focal

length fixed ?



#### 3. What is meant by accommodation of the eye

?



**4.** Due to gradual weakening of ciliary muscles and diminishing flexibility of the eye lens, a certain defect of vision arises. Write the name of this defect. Name the type of lens required by such persons to improve the vision. Explain the structure and function of such a lens.

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5. What is range of vision ?

6. (a) For a normal eye, what is the least distance of distinct vision ?
(b) What is the maximum power of accomodation of a normal eye ?

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**7.** Why cannot we read a printed page by holding it very close to our eyes ?

8. Draw a simple sketch of human eye and label any five important constituents of the eye.



**9.** Image of an object at infinity is formed in front of retina of an eye, as shown in (Fig.





**10.** Image of an object held at near point N is formed at the back of retina of an eye, as shown in (Fig. 2.25). What is this defect of



**11.** Draw the course of rays for correcting a myopic eye.

12. Draw the course of rays for correcting a

hypermetropic eye.

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**13.** Why has nature given us two eyes instead

of one?



14. We can see a rainbow on a suuny day by looking at the sky through a water fountain. Why ?



15. (a) Name the factors on which deviation of a ray of light through a prism depends.(b) Name the factors on which (angular) dispersion of light through a prism depends.



16. (a) What is the order of longest visible wavelength ? Which colour has it ?(b) What is the order of shortest visible wavelength ? Which colour has it ?

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17. (a) What is the frequency of violet colourof wavelength  $4000A^{\circ}$ ? (b) What is the frequency of red colour of wavelength  $8000A^{\circ}$ ?



passing through two prisms oriented duly?

(b) What is the essential condition for observing a rainbow ?

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**19.** (a) Which phenomenon accounts for advanced sunrise and delayed sunset ?

(b) Which phenomenon accounts for blue

colour of clear sky ?



**20.** (a) What is the essential condition for Rayleigh scattering ?

(b) In Rayleigh scattering, how is intensity of

scattered light related to wavelength of light ?

21. How is the amount of light entering the eye

controlled ?



22. How do we see colours ?

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23. Why do different colours deviate through

different angles on passing through a prism ?



## **25.** What is meant by scattering of light ?



26. What is the condition for Rayleigh scattering ?
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27. What is the order of wavelength of visible

light and audible sound?



28. What is the size of an air molecule ?



# **29.** Can visible light be scattered by

atmos//molecules in earth's atmosphere ?

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**30.** What is the basic cause of atmospheric

refraction ?

**31.** A narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism, it produces a specturm XY on a screen.

(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 ?







**32.** In the following diagram, the correctly marked angles are :



A.  $\angle A$  and  $\angle e$ 

 $\mathsf{B}. \angle i, \angle A \; ext{ and } \angle D$ 

 $\mathsf{C}.\,\angle A,\,\angle r \; \text{ and } \; \angle e$ 

#### $D. \angle A, \angle r \text{ and } \angle D.$

#### Answer: A

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**33.** What is the myopia (near sightedness) ? Draw a ray diagram to show how it can be corrected using a lens.

**34.** A child while playing with his father's spectacles, burnt a hole in a piece of tissue paper by focussing the image of the sun on the paper.

(a) Name the defect of vision his father is suffering from.

(b) List two causes of the defect.

( c) Draw a ray diagram to show this defect

may be corrected using a suiable lens.

35. Draw a block diagram of human eye and

name all its important parts.



36. How does eye view different colours ? What

is colour blindness ?

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**37.** Assertion : The stars twinkle while the planets do not.

Reason : The stars are much bigger in size

than the planets.



**38.** Draw a labelled diagram of human eye.

What is power of accomodation of eye ? Define

colour blindness.



39. (a) Draw a diagram to show the formation of image of a distant object by a myopic eye.How can such an eye defect be remedied ?(b) State two reasons due to which this eye defect may be caused.

(c) A person with myopic eye cannot see objects beyond a distance of 1.5m. What would be the power of the corrective lens used to restore proper vision ?

40. Draw the path of light ray passing through

a prism. Label angle of incidence and angle of

deviation in the ray diagram.

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**41.** The far point of a myopic person is 6*metre*.

Calculate the power of the lens he requires for

distant vision.

**42.** A myopic person is using spectacles of power -1.5D for distant vision. How far can he see distinctly without specs ?



**43.** The near point of a defective eye is 25cm

from the eye. Calculate focal length of the lens

required by her to read a book placed at 20cm.



**44.** The distance of distinct vision of a person is 40cm. Calcuate the power of the lens he should use to read newspaper at a distance of 25cm.



**45.** Study the following ray diagram :

In this diagram, the angle of incidence, the angle of emergence and the angle of deviation







Additional Long Answer

**1.** Write the help of a well labelled diagram, explain the construction and working of the



that occur in the curvature and focal length of

the eye lens while viewing

(a) a distance object,

(b) nearby objects.

Explain, why a normal eye is not able to see

distincly the objects placed closer than 25 cm,

without putting any strain on the eye.



**4.** What happens to the image distance in the eye when we increase the distance of an

object from the eye ?

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5. (a) A student suffering from myopia is not able to see distinctly the objects placed beyond 5m. 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 5m from his eyes. (ii) The type of corrective lens used to restore

proper vision and how this defect is corrected

by the use of this lens.

(b) If in this case, numerical value of focal length of corrective lens is 5m, find the power of the lens as per the new cartesion sign convention.

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6. 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

hypermetric eye.

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**7.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.





**8.** (a) Give reasons for the folowing :

(i) Colour of the clear sky is blue.

(ii) The sun be seen about two minutes before actual sunrise.

(iii) We cannot see an object see an object clearly if it is placed very close to the eyes.(b) What is presbyopia ? Write two causes of this defect.



**9.** (a) A student suffering from myopia is not able to see distinctly the objects placed beyond 5m. 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 5m from his eyes. (ii) The type of corrective lens used to restore proper vision and how this defect is corrected by the use of this lens.

(b) If in this case, numerical value of focal length of corrective lens is 5m, find the power

of the lens as per the new cartesion sign

convention.



**10.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.



**Based Short Answer** 

1. How many surfaces does a glass prism have



2. What is angle of prism ? What is its value in

an equilateral prism?



3. How many refractions does a ray of light

suffer on passing through a glass prism?



**4.** Which phenomena can you study using a glass prisms ?

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5. Draw the course of rays through a glass prism ABC`.
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6. In (Fig. 2.30)., name the incident ray,

refracted ray and emergent ray.



7. In (Fig. 2.30), locate the angle of prism and

angle of deviation.



8. If A is angle of prism, D is angle of deviation, i is angle of incidence and e angle of emergence, then what is the correct relation between them ?



**9.** What is the condition for minimum deviation through then prism ? What is prism formula ?



**10.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.

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11. Which colour deviates (i) most (ii) least on

passing through a prism?



# **Higher Order Thinking**

**1.** Does short sightedness (myopia) or long sightedness (hypermetropia) imply necessarily that the eye has partially lost its ability of accomodation ? If not, what might cause these defects of vision ? 2. A man with normal near point (25 cm) reads a book with small print using a magnifying glass : a thin convex lens of focal length 5cm. (a) What are the closest and the farthest distances at which he can read the book when viewing through the magnifying glass? (b) What is the maximum and the minimum angular magnifications (magnifying powers) possible using the above simple microscope?

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**3.** For a normal eye, the cornea of eye provides a converging power of 40D and the least converging power of the eye lens behind the cornea is 20D. Using this information, the distance between the retina and the cornea eye lens can be estimated to be



**4.** What happens to the image distance in the eye when we increase the distance of an object from the eye ?



5. A person has normal vision, but he cannot

distinguish between red-green colours. Why?



6. What are the important features of visual

system of a person ?

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Value Based Question

**1.** Dolly and Ritu are two friends studying together in V grade. They prefer to sit together. Dolly is uncomfortable in reading the blackboard when they are sitting on the

last bench. Dolly is depressed fearing that they may turn blind one day. Ritu explains to her that the problem may be due to some minor eye defect and there is no cause for worry. Dolly accompanied by Ritu visits the doctor who prescribes specs of suitable power for her. Dolly is now all smiles and thanks Ritu. Read the above passage and answer the following questions : (i) Name the eye defect Dolly is suffering from.

(ii) What could be the cause of this defect ?

(iii) The far point of Dolly is 50*cm*. What is the power of the lens she should use to read from

the blackboard ?

(iv) What values are displayed by Ritu?



2. Saniya and Shikha are friends studying together in grade *IV*. While Saniya can read a book keeping it at normal distance of about 25*cm*, Shikha has to keep the book at about 50*cm* from her eyes. Shikha feels it is a natural defect of her eyes, which cannot be corrected. Saniya is smarter. She tells her that medical science is advanced and there must be treatment for this problem. The doctor, on checking, prescribes spectacles of suitable power to Shikha and her vision with glasses becomes normal. What the above passage and answer the following quentions : (i) What defect was there in the vision of Shikha? (ii) What could be the causes of this defect ? (iii) Calculate nature and power of the lens prescribed by the doctor. Assume that Shikha

can read the book from a distance of 25cm,

which she could do from a distance of 50cm

without glasses.

(iv) What are the values of life displayed by

Saniya ?]



**3.** Physics teacher was explaning to his students in class that our eyes can live even after our death. He told them that by donating our eyes after we die, one pair of our eyes can give vision to two corneal blind people. Eye

donors may being to any sex or any age group. People suffering from diabetes, hypertension, asthma or any other non-communicable disease can donate eyes. Eye Banks have been established for this purpose, where you can pledge to donate your eye after your death. Read the above passage and answer the following questions :

(i) Can people who have been using spectacles or those who have been operated for cataract donate their eyes ?

(ii) Why is the pledge necessary ?

(iii) Do you intend to make such a pledge ?

Why?



**4.** A narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism, it produces a specturm XY on a screen.

(a) State the colour seen at  $X ext{ and } Y$ . (b) Why do different colours of white light

bend through different angles with respect to

## the incident beam of light ?







**1.** The far point of a myopic person is 150cm in front of the eye. Calculate the focal length and

power of a lens required to enable him to see

distant objects clearly.



**2.** A certain person can see clearly objects lying between 20*cm* and 250*cm* from his eye. What spectacles are required to enable him to see distant objects clearly ? When he is wearing these spectacles, what is his least distance of distinct vision ? **3.** A person can see the objects lying between 25cm and 10m from his eye. His vision can be corrected by using lens of power -0.1D. Is the statement true of false ?

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**4.** The distance of distinct vision of a person is 40cm. Calcuate the power of the lens he should use to read newspaper at a distance of 25cm.



**5.** A person wants to read a book placed at 20cm, whereas near point of his eye is 30cm. Calculate the power of the lens required.



**6.** The far point of a myopic person is 6metre.

Calculate the power of the lens he requires for

distant vision.





7. A myopic person is using spectacles of power -1.5D for distant vision. How far can he see distincilly without specs ?

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**8.** The near point of a hypermetropic eye is 50cm. Calculate the power of the lens to enable him to read a book at 40cm?

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Exemplar Multiple Choice

**1.** A person with a myopic eye cannot see objects beyond 1.2m distinctly. What should be the type of corrective lens used to restore proper vision ?

A. +0.5D

B.-0.5D

C. + 0.2D

### $\mathsf{D.}-0.2D$

#### Answer: B

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2. A student sitting on the last bench can read the letters written on the blackboard but is not able to read the letters written in his text book. Which of the following statements is correct ? 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 come closer

to him

D. The far point of his eyes has receded

away.

Answer: A

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**3.** 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 2.21) In which of the following cases, after dispersion, the third colour from the top

corresponds to the colour of the sky?



A. (i)

B. (ii)

# C. (iii)

D. (iv)



scattered away

C. blue colour is scatterd the most

are

D. red colour is scattered the most.

### Answer: A



**5.** Which of the following phenomena of light are involved in the formation of a rainbow ?

A. Reflection, refraction and dispersion

B. Refraction, dispersion and total internal

reflection

C. Refraction, dispersion and internal

reflection

D. Dispersion, scattering and total internal

reflection.

Answer: C

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6. Twinkling of stars is due to atmospheric

A. dispersion of light by water droplets

B. refraction of light by different layers of

varying refraction indices

C. scattering of light by dust particles

D. internal reflection of light by clouds.

Answer: B

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7. Why does clear sky appear blue ?

A. blue light gets absorbed in the atmosphere B. ultraviolet radiations are absorbed in the atmosphere C. violet and blue lights get scattered more than light of all other colours by the atmosphere D. light of all other colours is scattered more than the violet and blue colour lights by the atmosphere.

### Answer: C



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

- A. Red light moves 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 light.

Answer: C



9. Why are danger signals red in colour ?

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.

Answer: B

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**10.** 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

Answer: B



11. Blue colour of water in sea is due to

A. the presence of angae and other plants

found in water

B. reflection of sky in water

C. scattering of light

D. absorption of light by the sea.

Answer: C



12. When light rays enter the eye, most of the

refraction occurs at the

A. crystalline lens

B. outer surface of the cornea

C. iris

D. pupil

Answer: B



13. The focal length of the eye lens increases

when eye muscles

A. are relaxed and lens becomes thinner

B. contract and lens becomes thicker

C. are relaxed and lens becomes thicker

D. contract and lens becomes thinner.

Answer: A

?

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14. Which of the folowing statement is correct

A. A person with myopia can see distant

objects clearly

B. A person with hypermetropia can see

nearby objects clearly

C. A person with myopia can see nearby

objects clearly

D. A person with hypermetropia cannot see

distant objects clearly.

Answer: C

**1.** Human eye has a light sensitive screen on which images are formed. What is this screen called ?

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2. What is range of vision ?

3. (a) For a normal eye, what is the least distance of distinct vision ?
(b) What is the maximum power of accomodation of a normal eye ?
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4. To an astronaut is a spcaceship, the sky

appears

5. Explain briefly what is meant by presistence

of vision.

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**6.** A person with a myopic eye cannot see objects beyond 1.2m distinctly. What should be the type of corrective lens to restore proper vision ?

7. The near point of a hypermetropic person is 50cm from the eye. What is the power of the lens required to enable him to read clearly a book held at 25cm from the eye ?



8. The sun looks reddish at the time of sunrise

and sunset.

9. The near point of a person has shifted from  $25cm \rightarrow 75cm$ . Name the optical defect his eye is suffering from. Draw the course of rays for the normal eye and defective eye.



## 10. What is meant by accommodation of the

eye?

**11.** Explain the phenomenon of dispersion of white light through a glass prism, using suitable ray diagram.



**12.** What is the difference between monochromatic light and polychromatic light

? Give one example of each.

**13.** What is visible spectrum ? How do we classify it as pure specturm and an impure spectrum ?

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**14.** What is cataract ? How is it corrected ?

15. The sun appears oval at sunrise and sunset,

but appears circular at noon. Why?

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16. (a) Why do spectrum colours recombine on passing through two prisms oriented duly ?(b) What is the essential condition for observing a rainbow ?

**17.** A child while playing with his father's spectacles, burnt a hole in a piece of tissue paper by focussing the image of the sun on the paper.

(a) Name the defect of vision his father is suffering from.

(b) List two causes of the defect.

( c) Draw a ray diagram to show this defect

may be corrected using a suiable lens.

18. What is the myopia (near sightedness) ?
Draw a ray diagram to show how it can be corrected using a lens.



## 19. (a) What are bifocal lenses ? When are they

required to be used ?

(b) What is presbiopia ? Discuss briefly.

**20.** Give one example of dispersion of sunlight in nature. Draw course of rays for the formation of primary rainbow. What is the essential condition for observing a rainbow ?



Mock Test Sec B

1. On what factors does of deviation produced

by a prism depend ?

2. A ray of light falls on one face of an equilateral prism at an angle of  $40^{\circ}$  and emerges out at an angole of  $37^{\circ}$  What is the angle of deviation through the prism ?

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**3.** A ray of light is incident on one face of prism making an angle of  $50^{\circ}$  with the face. If emergent ray from the prism is made to

retrace its path, what would be the angle of emergence ?



**4.** In the minimum deviation position of a prism how are angle of incidence and angle of emergence related ?



5. In the minimum deviation position of an equilateral prism, angle of deviation is  $30^{\circ}$ . What are angle of incidence and angle of refraction ?

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**6.** A narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism, it produces a specturm XY on a screen.

(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 ?



