PHYSICS

BOOKS - CHETANA PHYSICS (MARATHI ENGLISH)

LENSES

Exercise

1. For the normal human eye, the distance of distinct vision is____

A. 15 cm

B. 20 cm

C. 25 cm

D. 35 cm

Answer:

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2. The power of convex lens of focal length 50

cm is_____

A. 2 D

B. 0.2 D

C. 50 D

D. 0.5 D

Answer:

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3. The focal length of a concave lens with power -4D is_____

A. -0.5 m

B. 0.5 m

C. -0.25 m

D. 0.25 m

Answer:

4. If the incident ray passes through focus, then the refracted ray is____to the principal axis.

A. parallel

B. opposite

C. perpendicular

D. intersecting

Answer:

5. The image is formed on the___of the human

eye. A. cornea B. Retina C. pupil D. ciliary

muscle

A. A. cornea

B. B. Retina

C. C. pupil

D. D. ciliary muscle

Answer:

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6. If an object is placed between F_1 and $2F_1$ of a convex lens, then nature of the image formed is___.

A. Real and inverted

B. real and diminished

C. virtual, erect

D. virtual, inverted

Answer:

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7. In myopia,____objects can be seen clearly. A. distant B. Nearby C. small D.big

A. A. distant

B. B.nearby

C. C. small

D. D.big

Answer:

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8. Long-sightedness can be corrected by using __lens A. cylindrical B. concave C. diverging D. converging

A. A. cylindrical

B. B. concave

C. C. diverging

D. D. converging

Answer:

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9. Convex lens of power +5 D and concave lens with power -3D are placed together, then the combined power is____.

A. 5 D

B. +3 D

C. 2 D

D. -2 D

Answer:

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10. In simple microscope, _____lens is used

A. concave

B. cylindrical

C. Diverging

D. Convex

Answer:

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11. The perception of dim light is concerned with _____cells. A. rod B. cone C. amoeboid D. squamous

A. A. rod

B. B. cone

C. C. amoeboid

D. D. squamous

Answer:

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12. The second focal point is located at_____

A. A. retina

B. B. optic nerve

C. C. cornea

D. D. Pupil

Answer:

13. If the incident ray passes through focus, then the refracted ray is____to the principal axis.

A. centre

B. pole

C. optical centre

D. principal focus

Answer:

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14. To obtain an image of the same size as the object with the help of a convex lens,the object should be placed___.

A. A. at infinity

B. B. $beyond F_1$

C. C. between F_1 and $2F_2$

D. D. $at 2F1$

Answer:

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15. At what distance should a watchmaker hold his lens from the watch? A. at the focal length

B. at less than focal length C. at more than the focal length D. at zero distance

A. A. at the focal length

B. B. at less than focal length

C. C. at more than the focal length

D. D. at zero distance

Answer:

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16. When we enter a dark room, pupil of our eye _____.

A. A. contracts

B. B. expands

C. C. remains same

D. D. none of these

Answer:

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17. Find the odd word out: Cornea, iris, pupil, cerebrum

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18. Find odd word out: Spectacle, microscope, torch, camera

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19. Find the odd word out: Long-sightedness, myopia, short sightedness, near sightedness.

20. Find the odd word out :Presbyopia, night blindness, myopia, hypermetropia.

21. Find odd word out: Spectacle, microscope, torch, camera

22. Convex lens: converging:: Concave lens:___.

23. Object at $2F_1$: image at $2F_2$:: object at F_1

:_____.

24. Complete the analogy : Myopia: Concave lens:: Farsightedness:_____

25. Concave lens:Negative focal length::

Convex lens:____.

26. Complete the analogy : Rod cells: Sensitive

to dim light:: cone cells:_____.

27. Complete the analogy : Near point : 25 cm:: Far point____.

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28. True/False: A lens is an opaque object.

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29. True/False : Myopia can be corrected by using a spectacle of concave lens.

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30. True/False : Hypermetropia can be corrected by using a spectacle of convex lens.

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31. True/False : Cornea gives colour to the eye.

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32. True/False : The light is first and maximum refracted as it passes through eye lens.

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33. True/False : The perception of colurs is concerned with cone cells.

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34. True/False : Auditory nerve take the impulse from eye to brain

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35. True/ False: Impression of an image lasts on the retina for $\frac{1}{10}th$ the of a second

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36. Concave lens:Negative focal length:: Convex lens:____.

37. True / False: In the compound microscope, two concave lenses are used

38. If the object is at infinity from a convex lens, what would be its size?

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39. Write the lens formula.

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40. Name the types of telescopes.

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41. How is hypermetropia corrected?

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42. How is myopia corrected?

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43. By which lens the matchstick can catch fire in the sunlight?

44. What is persistance of vision?

45. What is principal focus?

46. Concave lens:Negative focal length::

Convex lens:____.

47. For the normal human eye, the distance of

distinct vision is_____

48. What do you mean by power of accommodation?

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49. Why do we have bring a small object near the eyes in order to see it clearly.

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50. An object is placed at a distance of 15 cm from a convex lens.If the focal length of the lens is 60cm,find the image distance.

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51. An object is placed at a distance of 10cm from a convex lens of focal length 12cm.Find the position and nature of the image.

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52. An object is kept 60 cm from a lens gives a virtual image 20 cm in front of the lens. What is the focal length of the lens? Is is a converging lens or diverging lens?

53. An object 6 cm tall is placed in front of a convex lens at a distance of 18 cm. If the image is formed at a distance of 9 cm on the other side of lens, find the height of the image

54. An object is placed vertically at a distance of 20 cm from a convex lens .If the height of the object is 5 cm and the focal length of the lens is 10 cm, what will be the position, size and nature of the image? How much bigger will the image be as compared to the object?

55. 5 cm high object is placed at a distance of 25 cm from a converging lens of focal length 10 cm. Determine the position ,size and type or the image.

56. The focal length of a convex lens is 20 cm.What is the power?

57. Doctor has prescribed a lens having power +1.5D. What will be the focal length of the lens? What is the type of the lens and what must be the defect of vision?

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58. Calculate the focal length of a corrective lens having power`+2.5D.

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59. Three lenses having power 2, 2.5 and 1.7 D are kept touching in a row. What is the total power of the lens combination?

60. Define the following:

Centre of curvature (C)

61. Define the following:

Radii of curvature (R)

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62. Define the following:

Principal axis

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63. Define the following:

Optical centre(O)

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64. Define the following:

Principal Focus(F)

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65. Define the following:

Focal length (f)

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66. Define the following:

Convex lens

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67. Define the following:

Real image

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68. Define the following:

Virtual image

▶ **Watch Video Solution**

69. Define the following:

Convex lens

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70. Define the following:

Diverging lens

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71. Define the following:

Convex lens

72. Define the following:

Ratina

73. Define the following:

Iris

74. Define the following:

Pupil

75. Define the following:

Power of accommodation

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76. Define the following:

Distance of distinct vision

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77. Distinguish between :

Farsightedness and Nearsightedness

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78. Distinguish between :

Concave lens and convex lens.

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79. Distinguish between :

Real image and Virtual image

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80. Give scientific reasons:

Simple microscope is used for watch repair

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81. Give scientific reasons:

We cannot clearly see an object kept at a distance less than 25 cm from the eye.

82. Give scientific reasons:

If we bring an object closer than 25 cm from the eyes, why can we not see it clearly even though it subtends a bigger angle at the eye?

83. Give scientific reasons:

One can sense colours only in bright light.

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84. Define the following:

Convex lens

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85. Define the following:

Diverging lens

86. Give scientific reasons:

You can not enjoy watching a movie or television from a very short distance from the screen.

87. Give scientific reasons:

A concave lens is used to correct myopia

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88. Give scientific reasons:

Old people sometimes use bifocal glasses.

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89. Give scientififc reasons:

Hypermetropia can be corrected by usin

convex lens

> ▶ **Watch Video Solution**

90. Why do we have bring a small object near

the eyes in order to see it clearly.

> ▶ **Watch Video Solution**

91. Which are the different types of lens?

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92. What is the relation between H_1, H_2, u and v.

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93. What is the power of lens?

▶ Watch Video Solution

94. What do you mean by combined focal length?

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95. What is the use of astronomical telescope?

> ▶ **Watch Video Solution**

96. Enlist the functions of Iris.

97. Write the uses of concave lens

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98. Write the uses of convex lens

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99. What is persistance of vision?

100. What is colour blindness?

101. What is the function of iris and the muscles connected to the lens in human eye?

102. How do we percieve different colours?

103. Draw well labelled diagram for the following:

A ray diagram for object position at infinity for a convex lens or convergence of rays by convex lens.

104. Draw well labelled diagram for the following:

A ray diagram for object position beyond $2F_1$ for a convex lens.

105. Draw well labelled diagram for the following:

At which position will you keep an object in front of a convex lens so as to get a real image

of the same size that of the object? Draw a figure .

106. Draw well labelled diagram for the following:

A ray diagram for object position at 2F1 for a convex lens

107. Draw well labelled diagram for the following:

A ray diagram for object position between $2F_1$ and F_1 for a convex lens

108. Draw well labelled diagram for the following:

A ray diagram for object positioned at $F1$ for a convex lens

109. Draw well labelled diagram for the following:

A ray diagram for object position between F1 and O for a convex lens

110. Draw well labelled diagram for the following:

Divergence of rays by concave lens.

111. Draw well labelled diagram for the following:

Ray diagrams showing images obtained by concave lens

112. Draw well labelled diagram for the following:

The structure of human eye.

113. Draw well labelled diagram for the following:

The change in the shape of the lens while seeing distant and nearby objects

114. Draw a figure explaining various terms related to a lens

115. Enlist the rules for drawing ray diagrams of convex lens

116. Explain the following with the help of a diagram:

Myopia or Nearsightedness

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117. Explain the following with the help of a diagram:

Hypermetropia or Farsightedness

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118. Explain the following :

Presbyopia (Old age hypermetropia)

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119. Explain the following with the help of a diagram:

Compound microscope

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120. Explain the following with the help of a diagram:

Explain the working of an astronomical telescope using refraction of light.

121. Answer the question based on the following diagrams:
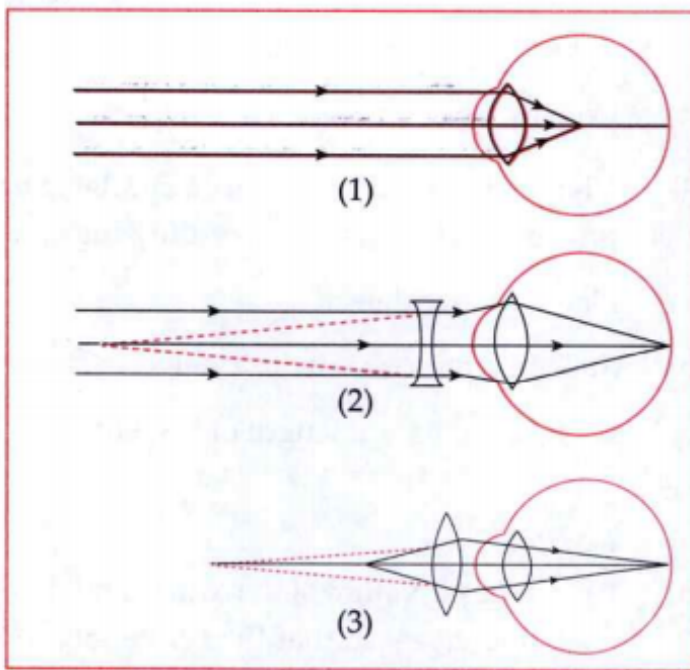
Fig 7.23

Name the defect shown in figure(1)

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122. Answer the question based on the following diagrams:
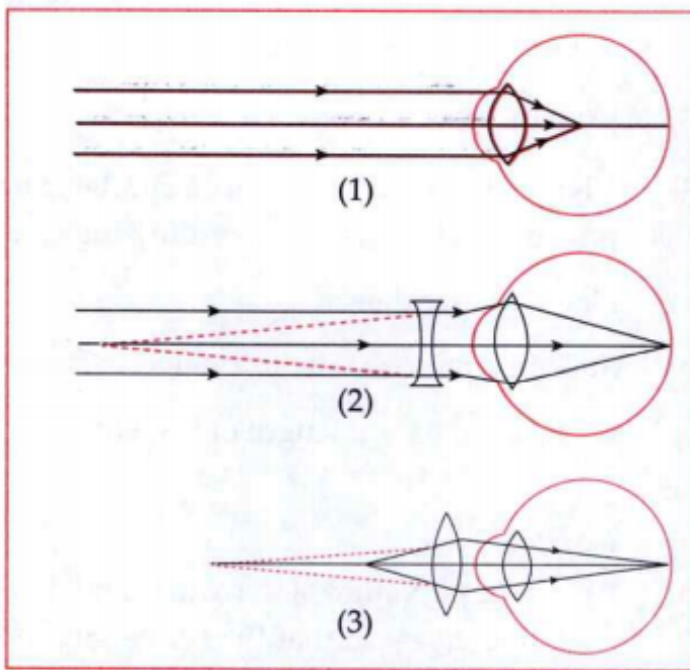
Fig 7.23

Give two reason for this defect

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123. Answer the question based on the following diagrams:
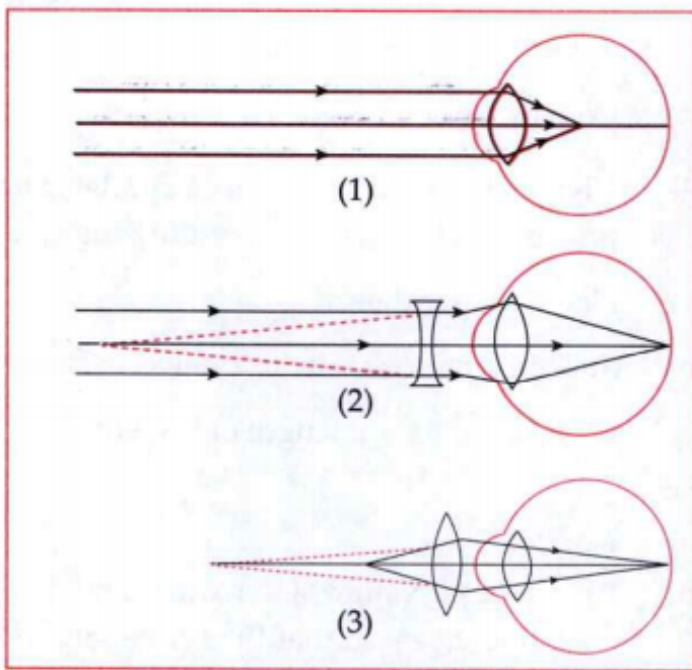
Fig 7.23

In which figure is the defect corrected,in figure (2)or(3)?

124. Selwyn is 16 yr old and wears a spectacle having a power of $+2$ D .Answer the following question? What Will Be the Focal Length of the Lens? What is the Type of the Lens and What Must Be the Defect of Vision?

125. Vijay is 16 yr old and wears a spectacle having a power of -2 D .Answer the following question: What Will Be the Focal Length of the

Lens? What is the Type of the Lens and What Must Be the Defect of Vision?

126. Ankit developed an eye defect at the age of 65 yrs and had to wear a lens of power+3D.Answer the following questions:

(a) Name the eye defect.

(b) State two reasons why this defect is caused?

(c) Compute the focal length of his lens

127.

Fig 7.24

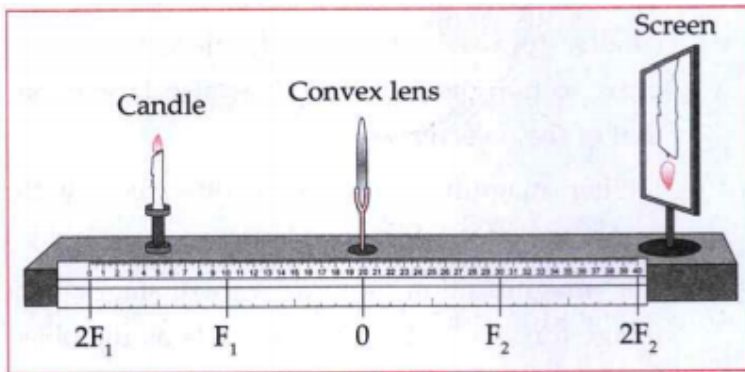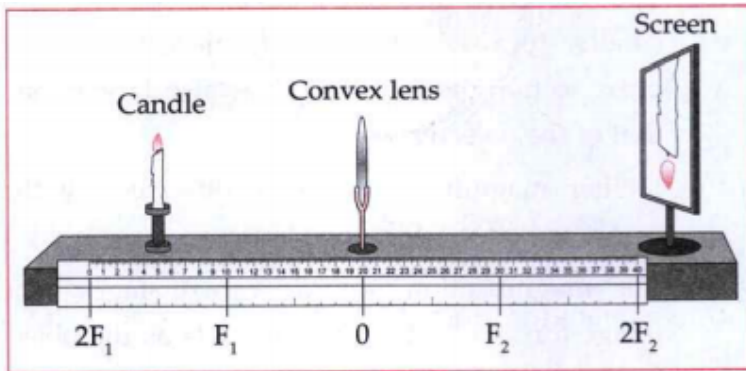What changes in the position of the candle should be made to obtain a virtual and enlarged image?

128.

Fig 7.24

What is nature of image formed if a concave lens is used instead of a convex lens?

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129.

State any one point of difference between a

real and virtual image.

130.

Fig 7.25

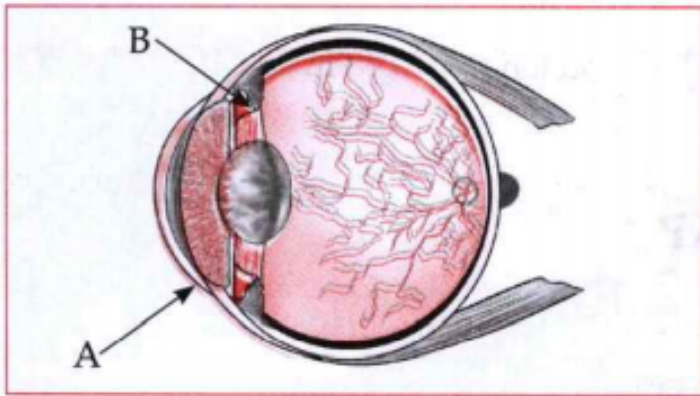Label A and B in the diagram.

131.
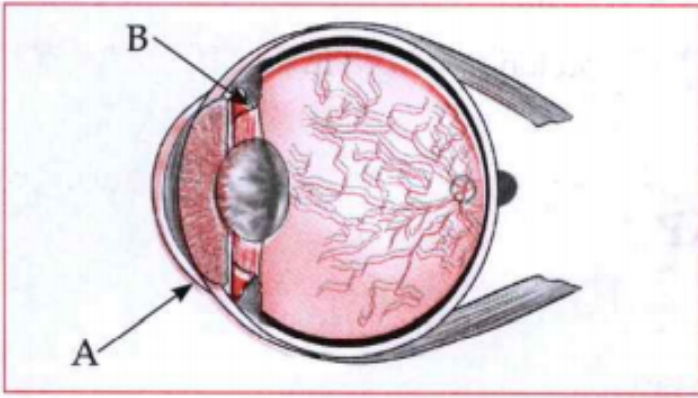
Fig 7.25
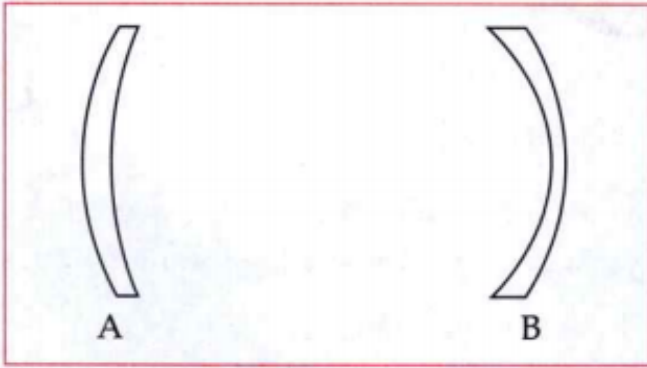
Explain the functions of A.

132. Name the two lenses A and B

Fig 7.26

133. Farsightedness can be corrected by using ____lens. A. Convex B. concave C. diverging D. converging

A. A. Convex

B. B. concave

C. C. diverging

D. D. converging

Answer:

134. The perception of dim light is concerned with _____cells. A. rod B. cone C. amoeboid D. squamous

A. Rod

B. Cone

C. Amoeboid

D. Squamous

Answer:

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135. Find the odd word out: Long-sightedness, myopia, short sightedness, near sightedness.

136. Object at $2F_1$: image at $2F_2$:: object at F_1

:_____.

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137. State whether the following statement are 'True' of False". If false write the correct statement Myopia can be corrected by using a spectacle of concave lens

$\blacktriangleright$ **Watch Video Solution**

138. An object is placed at a distance of 15 cm from a convex lens.If the focal length of the lens is 60cm,find the image distance.

139. Give scientific reasons:

We cannot clearly see an object kept at a distance less than 25 cm from the eye.

140. Distinguish between :

Farsightedness and Nearsightedness

141. Draw a neat and labelled diagram of human eye.

142. 5 cm high object is placed at a distance of 25 cm from a converging lens of focal length 10 cm. Determine the position ,size and type or the image.

143. Draw a neat and labelled diagram of Following:

When object is beyond $2F_1$ in convex lens.

144. Draw a neat and labelled diagram of of Following:

When object is at infinity in convex lens.

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145. Explain the following with the help of a diagram:

Explain the working of an astronomical telescope using refraction of light.

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146. Explain the following with the help of a diagram:

Hypermetropia or Farsightedness

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147. Explain the following with the help of a diagram:

Myopia or Nearsightedness

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