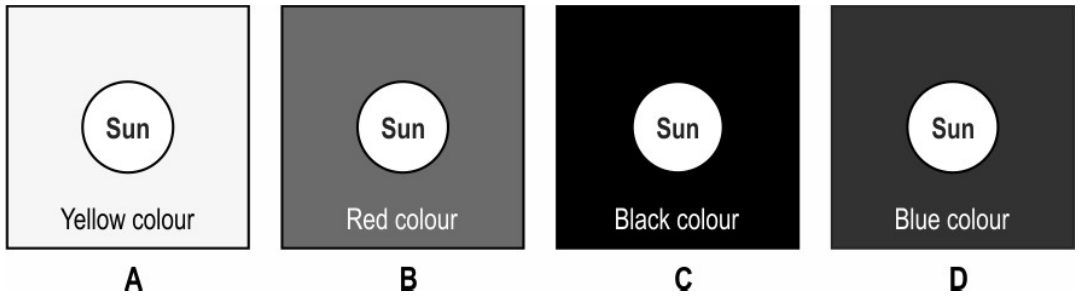
Chapter - 11
The Human Eye and The Colourful World

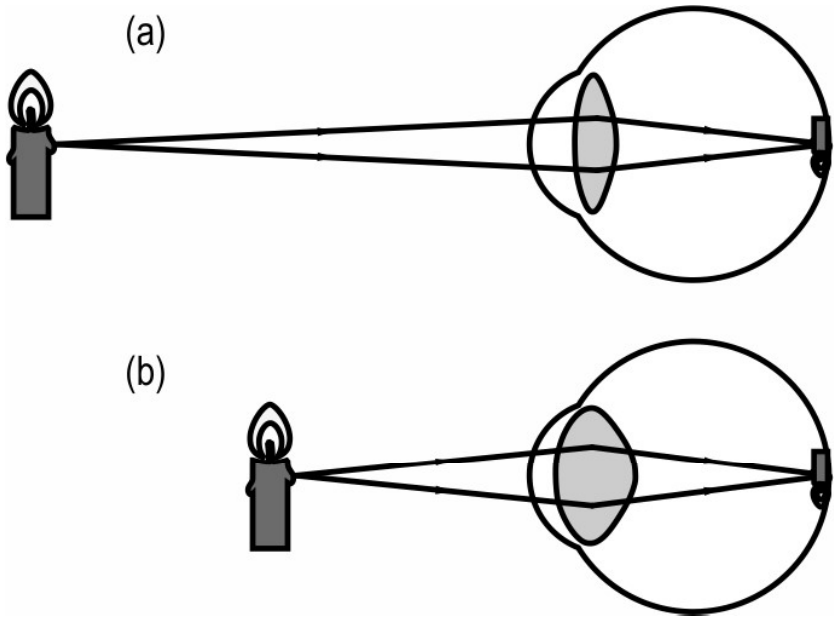
Q: 1 **If the Earth did not have an atmosphere, which of the following shows what you would see if you looked at the Sun?**



(Note: You should never look at the Sun directly.)

Answer the following questions based on the information given below:

The far point and the near point refer to the visibility of objects close by and far away from the human eye respectively. These are the maximum and minimum distances at which an object is clearly visible to a person.



Q: 2 **The near point and the far point are determined with regards to the function of which part of the eye?**

1 pupil **2** retina **3** eye-ball **4** ciliary muscles

Q: 3 **Which of these is a reason why a far-sighted person needs a convex lens to correct his vision?**

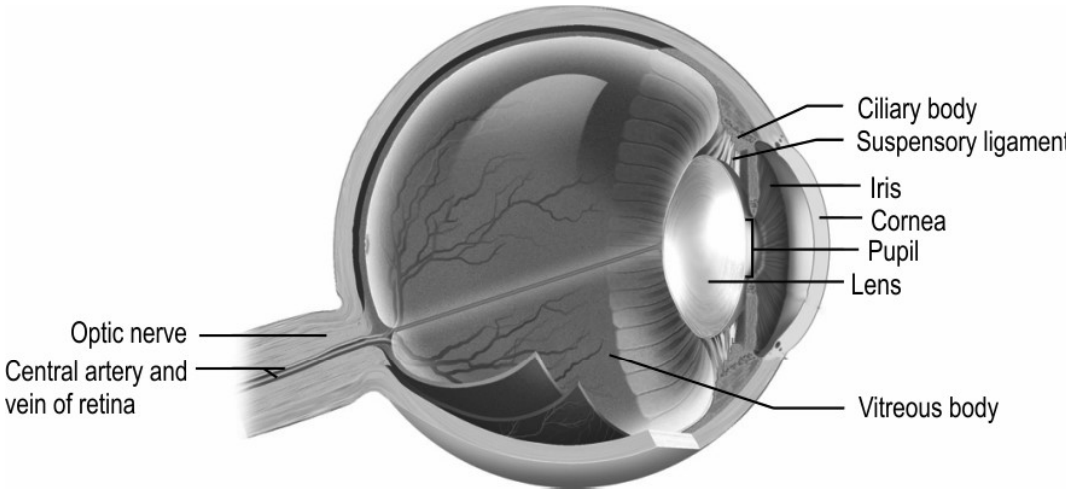
1. The image forms in front of his retina.
2. The image forms behind the retina.
3. The image forms below the retina.
4. The image forms on the retina.

Q: 4 **Under which of these can myopia and hypermetropia be classified?**

1. breakdown of tissues
2. incorrect bending of light in the eye
3. incorrect reflection of light by surfaces around us
4. incorrect coordination with brain for colour

Answer the following questions based on the given information.

The iris is a muscular diaphragm that controls the size of the pupil.
It consists of two layers: the front pigmented fibrovascular layer known as a stroma and, beneath the stroma, pigmented epithelial cells. The colour of the eye is defined by the pigmentation of the iris.



Q: 5 **Which of the following can be directly affected if the iris does not function properly?**

1. identification of colours
2. the amount of light entering the eye
3. transmission of visual information to the brain
4. finer adjustments for focussing the objects

Q: 6 **Rohan lit an incense stick in his room and after an hour observed that when a beam of sunlight entered his room through a small gap in the window, he was able to see the path of the beam.**

Which of the following is most likely TRUE about the air present in the room?

1 It is a pure substance.
2 It is a compound.
3 It is a solution.
4 It is a colloid.

Q: 7 **In a medium like glass, the velocity of light increases as the wavelength increases.**

Which of the following light would be the fastest in glass?

1 blue **2** violet **3** green **4** red

Q: 8 **Which of the following correctly gives the sequence of events that take place when human eye changes its focus from a distant object to an object closer to the eye?**

1 ciliary muscles relax - -> curvature of eye lens increases --> focal length of eye lens increases
2 ciliary muscles contract - -> curvature of eye lens decreases --> focal length of eye lens increases
3 ciliary muscles relax - -> curvature of eye lens decreases --> focal length of eye lens decreases
4 ciliary muscles contract - -> curvature of eye lens increases --> focal length of eye lens decreases

Q: 9 **A person's near point is at 45 cm and far point is at 2 m.**

What kind of corrective lens is BEST suited for his vision defect?

1 convex **2** concave **3** bifocal **4** plano-convex

Q: 10 **Nanda saw rays of sunlight entering into a dark room as shown below.** **[2]**

He then did something to the air in the room after which he was NOT able to see the rays of sunlight in the room.

What is it that Nanda could have done to make the rays of sunlight invisible? Justify your answer.

Q: 11 **Mars's atmosphere is composed mainly of carbon dioxide, nitrogen and argon and negligible amounts of oxygen, water vapour and methane.** **[1]**

Using the information given in the sentence above and knowledge about how rainbows are formed on Earth, explain why rainbow formation is impossible on Mars.

Q: 12 **Space is mostly vacuum, devoid of any medium.** **[2]**

(a) What colour does the Sun appear to the astronauts on International Space Station?
(b) Give reason for your answer to (a).

The table below gives the correct answer for each multiple-choice question in this test.

Q.No	Correct Answers
1	3
2	4
3	2
4	2
5	2
6	4
7	4
8	4
9	3

Q.No	Teacher should award marks if students have done the following:	Marks
10	Removing all the dust particles from the air in the room by passing the air through a very efficient filter.	1
	Filtering the air removes the suspended dust particles thus preventing the scattering of light which make the rays visible.	1
11	There is not enough water vapour in the atmosphere to cause scattering of light.	1
12	(a) white	1
	(b) Since there is no medium to disperse or scatter the light coming from the Sun, it appears white.	1