



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words**[4]**

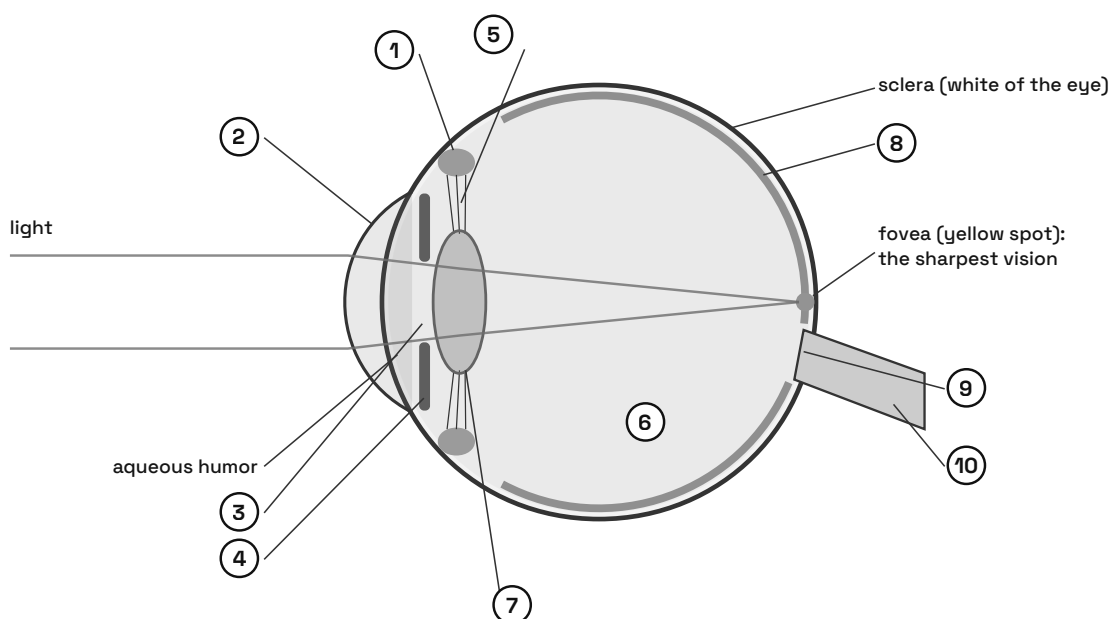
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

accommodation cataract ciliary muscles concave lens cone cells convex lens
near point rod cells short-sightedness vitamin A

Changing the focal length of the eye lens to see both near and distant objects clearly is called _____. It is done by the _____. The nearest point at which a normal eye can see clearly, about 25 cm away, is its _____. A person who sees near objects clearly but distant objects blurred has _____, which is corrected by a _____. When the eye lens becomes cloudy, usually in old age, the problem is called a _____. The _____ of the retina let us see colors, and a lack of _____ is one of the main causes of night blindness.

2 Label the diagram**[5]**

The diagram shows the human eye, cut through from front to back. Name the parts numbered 1 to 10. Each carries 0.5 mark.



- | | | |
|-----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
| 4. _____ | 5. _____ | 6. _____ |
| 7. _____ | 8. _____ | 9. _____ |
| 10. _____ | | |



[5]

Choose the correct option for each of the following questions.

- i. What is the near point of a normal adult eye? [1]
 - a. about 25 cm
 - b. at infinity
 - c. about 2 cm
 - d. about 1 m
- ii. Which part of the eye does most of the bending of light? [1]
 - a. the eye lens
 - b. the cornea
 - c. the pupil
 - d. the retina
- iii. Which is a correct understanding of eye problems and their causes? [1]
 - a. When the lens of the eye becomes cloudy, color blindness occurs.
 - b. When the focal length of the eye lens increases, short-sightedness occurs.
 - c. When the shape of the surface of the cornea changes, a defect of vision is seen.
 - d. Night blindness occurs due to weakness of the cone cells of the retina.
- iv. Sanjay looks up from his phone to the mountains on the horizon. What happens in his eyes? [1]
 - a. the ciliary muscles contract and the lens gets thicker
 - b. the ciliary muscles relax and the lens gets thinner, with a longer focal length
 - c. the retina moves closer to the lens
 - d. the pupil gets bigger to let the far light in
- v. A student sees the whiteboard clearly from the first bench but not from the last bench. Which lens does she need? [1]
 - a. a concave lens, as she is short-sighted
 - b. a convex lens, as she is long-sighted
 - c. a convex lens, as she is short-sighted
 - d. no lens: she should always sit in front

[3]

Write very short answers to the following questions.

- a. Where is the far point of a normal eye? [1]
-
-
- b. Name the light-sensitive pigment in the rod cells that is made from vitamin A. [1]
-
-
- c. Why can't we see anything whose image falls on the blind spot? [1]

[6]

Write short answers to the following questions.

- a. Give a reason: a lack of vitamin A in the body is one of the main causes of night blindness. [2]
-
-
-



- b. Write any two differences between the near point and the far point of the eye. [2]

- c. A student sitting in a classroom shifts his eyes from the letters on the whiteboard to a distant object seen out of the window. Explain the role of the ciliary muscles in the change of thickness of the eye lens. [2]

6 Long answer

Write a long answer to the following question.

A student can't read the letters on the whiteboard from the last bench, but reads them clearly from the first bench.

- What defect of vision does he have?
- Where is the image of the whiteboard formed in his eye?
- Write two reasons for this defect.
- Which lens corrects it, and how?

7 Numerical problems

Solve the following problems. Show your working.

- a. Pemba can see clearly only up to 2 m. Calculate the power of the lens he needs, and name the kind of lens. [2]

[illegible]

Answer:

- b. The lenses of Asha's spectacles have a power of -2.5 D . [4]
- Calculate their focal length.
 - What kind of lens are they?
 - What defect of vision does she have?
 - Up to what distance can she see clearly without her spectacles?



