

HUMAN EYE AND THE COLOURFUL WORLD

CHAPTER NO.11

SUB: PHYSICS

HUMAN EYE AND THE COLOURFUL WORLD

CHANGING YOUR TOMORROW

Accommodation:

- It is the ability of the eye lens to focus both near and distant objects by adjusting its focal length
- **Near point:** The minimum distance at which an object can be seen most distinctly without any strain is called the least distance of distinct vision.
- It is 25 cm for normal eye of an adult.
- It is also called near point of the eye.

Far point:

- it is the farthest point upto which the eye can see clearly. It is infinity for normal eye
- **Persistence of vision:** The time for which sensation of an object continues in the eye is called persistence of vision.
- It is about $1/16^{\text{th}}$ of a second.

Define power of accommodation:

- It is the maximum variation in power of eye lens for focusing nearby or far objects.
- For young adults, with normal vision, the power of accommodation is about 4D.

Defects of vision

- The defects due to which a person cannot see the objects distinctly and comfortably are called defects of vision.
- The three main defects are:
 - 1) Myopia or short sightedness
 - 2) Hypermetropia or long sightedness
 - 3) Presbyopia

Myopia:

- 1. The defect in which a person can see nearby objects distinctly but cannot see distant objects clearly is called myopia.
- 2. In this case, the image is formed before retina.
- 3. **causes:** i. Excessive curvature of eye lens.
- ii. Elongation of eye ball.
- **Remedy:** This defect can be corrected by using concave lens of appropriate power.
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Myopic Eye

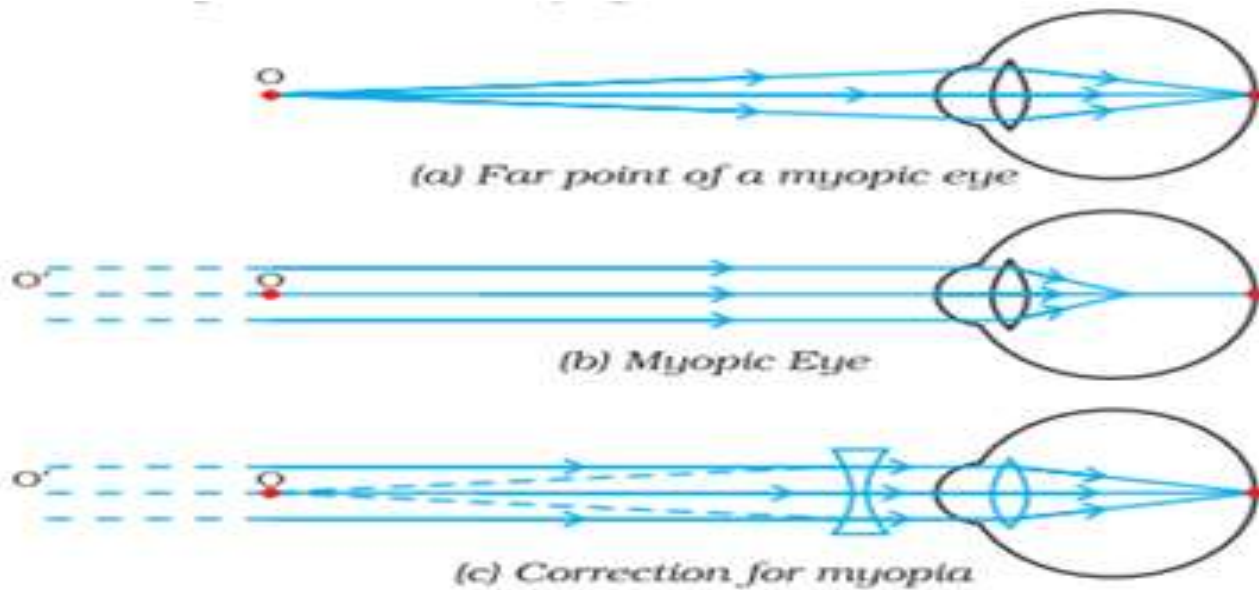


Figure 11.2

(a), (b) The myopic eye, and (c) correction for myopia with a concave lens

Hypermetropia: :

- 1. The defect in which a person can see distant objects distinctly but cannot see nearby objects clearly is called hypermetropia.
- 2. In this case, the image is formed after retina.
- 3. **causes:** i. Focal length of eye lens become large.
- ii. Eye ball becomes too short.
- **Remedy:** This defect can be corrected by using convex lens of appropriate power.

Presbyopia:

- It is found in old people.
- For most people the near point recedes away with age.
- Sometimes people may suffer from both myopia and hypermetropia.
- **Causes:** Weakness of ciliary muscles.
- Hardening or loss of elasticity of eye lens.
- **Remedy:** The defect can be corrected by using bifocal lenses which contains both concave lens and convex lens.

THANKING YOU
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