

CLASS - 10

DATE

12.08.2024

SUBJECT - BIOLOGY

TEACHER Nidhi Rang

CHAPTER II 'Sense Organs'

Good morning students,

Students this Lesson is of Class 10 for the subject of Biology; Topic 'Structure of Eye' which is covered in Chapter II 'Sense organs' starting on Page 138 of your text book titled 'Concise Biology - Selina Publications' and is being submitted to you on 12.08.2024

All students now please open Page No 138 of your text book in front of them.

If you all are ready then let us start with - 'Sense organs'. All of you please listen carefully as I will be asking you a few questions in between the chapter.

Students - as you very well know that 'sense organs help us to be aware of our outside world as well as our internal environment.'

Various sense organs give us different sensation.

For example - Eyes give the sensation of light.

Ears give us the sensation of sound.

Tongue gives us the sensation of taste.

Nose gives us the sensation of smell and

Skin gives us the sensation of touch.

All these sense organs possess some

sensory cells, called receptors - which

help us to perceive the sensation.

Receptors can be classified according to the type of stimulus they respond to.

For Example

1. Photoreceptors - respond to light. For example Rod and Cone cells of retina of eye, about which we will learn further in the chapter
2. Chemoreceptors - that respond to chemicals. Such receptors are present in the tongue that give us the sensation of taste due to chemical influence. For example salt - as you know is a chemical compound - Sodium chloride. You get the taste of salt due to chemoreceptors present in the tongue
3. Thermoreceptors that respond to heat and cold i.e. any change in temperature. These receptors are present in the skin.
4. Mechanoreceptors that respond to touch, pressure of skin due to mechanical change. For example during a prick or a pinch. These receptors are also present in the skin
5. Phonoreceptors that respond to the sound and that help us in hearing. These are present in the ears.

Students before going further in the chapter, let me ask you a few questions. You may listen to the questions carefully and then pause the audio for 3 minutes to write down the answers in the notebook.

The questions are

- Q.No. 1) Where are the chemoreceptors present?
- Q.No. 2) What do the phonoreceptors respond to?
- Q.No. 3) Name the sensory receptors that respond to the change in temperature?

Students you may now pause the audio for 3 min break

3 minutes break is over children.

Children Let us now discuss the sense organs their parts and functioning in detail.

The syllabus includes the structure and functions of only two sense organs -

Eye and the Ear. - and their various parts

Today we will study the structure of Human

Eye. Eyes are situated in deep bony cavities called orbits on the front side of the head.

Each eye consists of an eyeball and accessory structures comprising the - eyelids, eyelashes, eyebrows, lacrimal gland and the conjunctiva. Let us learn about these structures one by one.

- 1) Firstly the Eyelids - Eyelids are protective in nature as they shade the eye during sleep and also protect eyes from excessive light and foreign particles.
- 2) Eyelashes Each eyelid bears outwardly curved row of thick hair. They prevent falling of larger particles in eye.
- 3) Eyebrows - Eyebrows are strip of coarse hair growing on the ridge above a person's eye socket preventing sweat, water and other debris from falling down into the eyes. They are also important during human communication for facial expression.
- 4) Tear gland [are also called the Lacrimal gland] These lacrimal glands are located at the upper outer end of the eyeball beneath the eyelid. Children you may please see the exact location of Lacrimal gland as shown in Fig 11.1 on Page No 138 of

your text book. The secretion from Lacrimal gland is called the 'tears' that spread evenly by blinking of eyelids thus serving as lubricant and also washes away dust particles.

Tears also have antiseptic property as they contain an enzyme called Lysozyme that helps to kill germs. 6-12 ducts of the lacrimal gland pour the secretion over the front surface. Tear ducts further drain off the liquid into a Lacrimal sac lying at the inner angle of the eye.

Students may please see the exact location of lacrimal sac as depicted in Fig 11.1 on Page 138 of your text book.

Now children let us again take another short break of 3 minutes. During the break you may please spell the terms -

(i) Lacrimal gland. and (ii) Lysozyme and also write their functions in your notebook.

Now you may pause the audio for 3 minutes break.

3 minutes break is over children. Now let us continue further in the chapter with -

Nasolacrimal duct. All the students may please spell the nasolacrimal duct after me - N-A-S-O-L-A-C-R-I-M-A-L D-U-C-T
Nasolacrimal duct.

Further a nasolacrimal duct connects the lacrimal sac with the nasal cavity and thus conducts the secretion of the lacrimal sac into the nasal cavity.

As an example - all of us have, sometimes experienced medicines dropped in the eye coming into nose and even into the throat. The reasoning behind is - that the naso-lacrimal duct that connects the eyes to the nose and throat has conducted the medicines dropped in eyes to the nose. Now, let us quickly summarise the functions of tears again -

- (i) Tears lubricate the eyes, helping in continuous easy movement of the eyelids.
- (ii) Tears wash away any foreign substance or dust particles falling in the eye.
- (iii) Tears act as an antiseptic, killing the germs.
- (iv) Tears help us to communicate emotions. One may shed tears both in grief and in extreme joy.

Now children let us talk about a protective covering of the eye - the Conjunctiva. Conjunctiva is a thin membrane covering the entire front part of the eye, thus giving protection to the eye. Conjunctiva is continuous with the inner lining of the eyelids. Conjunctivitis is a very common eye disease in which this outermost layer conjunctiva turns red due to viral infection.

To conclude children - the bony orbit, eyelids, eyebrows, lacrimal gland and the conjunctiva serve for eye protection in their own way.

Students I am ending the topic here. Now I will give you some home assignment questions. All students are required to answer these home assignment questions in their notebooks.

Home Assignment questions are as follows -

- Q-1 State the location and function of Lacrimal gland.
- Q-2 Medicines dropped into eye sometimes come into nose or even throat. Give reason for the above statement.
- Q-3 State functions of tears.

— THANK YOU —