

Q-1 Draw the structure of human ear and briefly explain its functions.

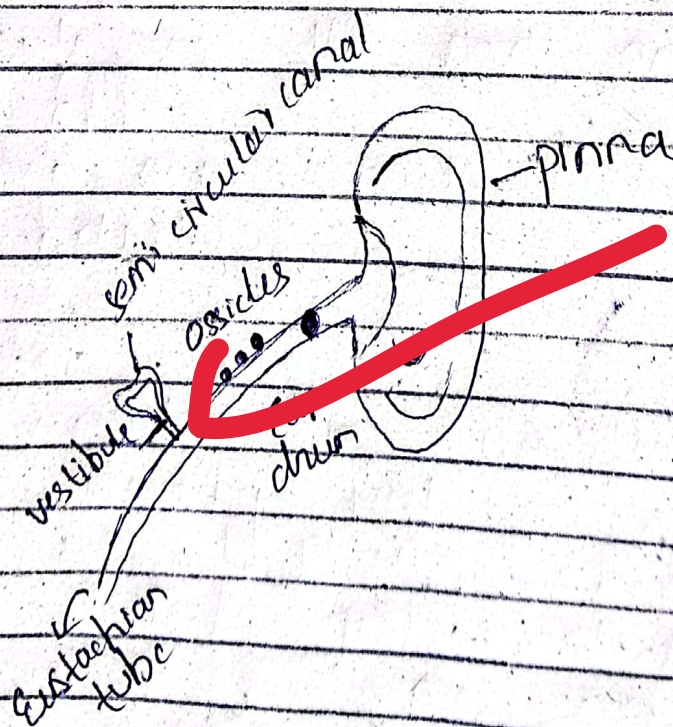
## HUMAN EAR

Use blue and black colors only

### INTRODUCTION

Human ear is sensory organ present which transmits sound waves to brain for interpretation and translation. Humans have one pair of ear. Apart from hearing, ear also plays important role in maintaining the balance as per the position of the body.

### DIAGRAM





There are three main parts of ear: outer ear, inner ear, and middle ear.

## TO OUTER EAR

outer ear consists of three parts which are given below.

### a) Pinna

The outer visible cartilaginous part of the ear is pinna with which the sound waves interact first. The sound waves enter through pinna into auditory canal.

### b) Auditory canal

Auditory canal is the second part of outer ear. It is tube like structure which act as a passage for transmitter of sound waves. Auditory canal also known as auricle. It transmit sound waves to ear - drum.

### c) Eardrum

Eardrum also known as tympanic membrane and is third part of outer ear which separates outer ear from middle ear. When sound waves interact with tympanic membrane it vibrates and transmit sound waves to middle ear.



## 2. MIDDLE EAR

Middle ear consists of two components: ossicles and Eustachian tube. Middle ear is also known as tympanic cavity. The sound waves strike with three ossicles which consist of three small bones, Malleus, incus, and stapes. These small bones vibrate and transmit sound waves to inner ear. Another component of middle ear is Eustachian tube which connects middle ear to the back of nose. The Eustachian tube also helps in maintaining pressure in the tube which is crucial for sound wave transmission. The Eustachian tube consists of mucosa, just like the inside of the nose and throat.

## 3. INNER EAR

The inner ear consists of three components given below.

### a) cochlea

Cochlea consists of semi-fluid and acts as the hearing part of the ear. It is a place where sound waves convert into electrical signals. It consists of hair cell receptors and auditory nerve which transmits electrical signals.



sentient to thalamus for analysis.

b) vestibule

vestibule is the second part of the inner ear which consists of receptors.

c) semi-circular canals

These canals are present for maintaining body balance as per its position.

It also consists of fluid with receptors like vestibule.

Putting it briefly, the sound waves interact with pinna which transmit it to auditory canal. This canal serves as passage for sound waves, and carries it towards eardrum. The eardrum vibrates and transfer sound waves to ossicles. These ossicles are connected to inner ear thus transmits sound waves towards cochlea. The cochlea is the hearing part and convert sound waves to electrical signals and send these signals to thalamus through auditory nerve.