Q.1. *Explain briefly how the Vestibular System works?*

The vestibular system is a sensory organ located inside the inner ear that helps balance and allows constant vision when the head moves. It is composed of two main parts: the semicircular canals, which detect the head's rotation, and the otoliths organs, which detect forward and backward movements in addition to gravity. Both of these parts are filled with fluid.

The brain receives information from the vestibular system to be processed and sent on to the other organs such as the eyes, to provide a clear vision, or to the muscles to maintain the body balanced.

Q.2. *Why are there three different channels in the Vestibular System?*

A vestibular system needs to record Rotation and Translation in order to understand the movement of the body. Different body parts are used to record these properties, like semicircular canal and otoliths.

The semicircular canal system is used to capture the rotation of the body. As we live in a three-dimensional space we need a three-dimensional canal structure to perceive the surroundings and that is the reason, the Vestibular system consists of three semicircular channels.

They are arranged in an almost orthogonal way to maximize the reception of movement relative to the surroundings. They are named as per below.

1. Horizontal or lateral.
2. Anterior semicircular canal or Superior.
3. Posterior semicircular canal or Inferior.

- Horizontal semicircular canal captures the head movement around the vertical axis, and keep the body balanced while performing whirls or related activities.
- Anterior and Posterior movements are combinedly known as Vertical Semicircular canal and help capture the rotation of the head in Sagittal Plane (Dividing the body into right and left) and Frontal plane (Dividing the body into front and back).