

General Science:

The Muscular System:

Q1. Muscles:

The muscles are the fleshy parts of the body. They are capable of contracting and relaxing and thus cause the various movements in the body.

Q2. Types of muscles:-

Muscles are of two types.

i) **Voluntary muscles:** The muscles which are under the control of the will are called voluntary muscles. They are attached to the bony skeleton and hence are sometimes called skeletal muscles. The muscles of the arms, legs, neck, face etc. are some of the examples. Each voluntary muscle has the following parts:

The thick, fleshy, middle part of muscle is called its body or belly.

A muscle is connected with bones by means of tendons at one or both ends. One end is fastened to a fixed bone and is called the origin of the muscles. The other end is connected with the bone to be moved and is called the insertion of the muscles.

ii) **Involuntary muscles:** Those muscles which are not under the control of the will are called involuntary muscles. The muscles of the stomach, the intestines, the kidneys, the lungs, the heart etc. are some of the examples. They have no tendons and they act even when we are asleep.

The Ear

Q1. External Ear:

The external ear consists of two parts:

a) **Pinna:** The pinna is an irregular funnel-shaped flap of cartilage covered with skin, with an opening leading into the auditory canal. It receives and collects sound waves and reflects them into the auditory canal.

b) **Auditory Canal:** It is about 3-4 inches long and is lined with skin which has some fine hair and glands secreting the ear wax. Both the hair and ear wax arrest dust particles and hold back invisible

germs and insects from getting in. It leads to the drum of the ear or the tympanic membrane and conveys the sound waves to this drum.

Q2. The Middle Ear:

The middle ear is a small cavity in the temporal bone. It is separated from the auditory canal by the ear drum. It is connected with the pharynx by means of the Eustachian tube. This arrangement equalizes the pressure of the air on the two sides of the drum. It contains a chain of three bones:-

- i) The malleus or hammer, ii) The incus or anvil, iii) The stapes or stirrup.

The malleus is attached to the drum and stapes fit into an opening in the internal ear. By this chain of bones the sound waves are transmitted from the drum to the internal ear.

Q3. The Internal Ear:

It consists of a bony labyrinth which contains a similar membranous labyrinth. The space between them is filled with a fluid called the perilymph and the membranous labyrinth is filled with a fluid called the endo-lymph. The internal ear consists of the following parts:

- i) The Vestibule is the central chamber. It has an opening into which the foot of the stapes fits.
- ii) The Semi-circular Canals are three tubes, connecting with the vestibule by five openings. They keep the equilibrium of the body and make us aware of our position and movements in different directions.
- iii) The Cochlea is a spiral tube consisting of two and a half turns. There are terminations of the auditory nerve in it.

Joints And Its Types:

Q1. Joint:

A joint is a place of meeting or union between two or more bones.

Types of Joints:

Joints are of two types. They are as:

a) Immovable or fixed joints:

Immovable joints are in the skull. Here the bones forming a joint are joined by means of sutures and no movement is possible.

b) Movable joint:

Here the bones forming a joint are capable of movement. They may be perfect or imperfect.

i) Perfect joints:

Perfect joints are those joints which allow more or less free movement like Ball and Socket joints, Hinge joints and Pivotal joints.

ii) Imperfect joints:

They are those joints which allow very little movement like gliding joints.

Q2. Kinds of movable joints:

There are four kinds of movable joints. They are as:

i) Ball and Socket joints:-

In this joint, the ball like head of one bone fits into the hollow socket of the other, thus allowing a perfectly free movement in every direction. e.g., The hip joint and Shoulder joint.

ii) Hinge joints:-

In this joint, movement is possible only backwards and forwards. e.g., The elbow joint, The knee joint, The ankle joint and the joints between the phalanges of the fingers and toes.

iii) Pivotal joints:-

Pivotal joints, as the joint formed by the atlas and the axis. The Odontoid process of the axis fits into the hole of the atlas, thus enabling the head to move from side to side. Another example of this is the joint between the upper ends of the radius and ulna.

iv) Gliding joints:-

Gliding joints, as those of the wrist and the various vertebrae. Here the bones forming a joint glide over one another.