

# LARYNX

Q. No. 2 (i)

- Air goes from pharynx into larynx
- Larynx is a **box** made of **cartilage** (hyaline cartilage).

**Location:** Larynx is located between the pharynx and trachea.

**Voice box:** Larynx is also called the 'voice box'. Two pairs of **fibrous bands** called 'vocal chords' stretch across the larynx.

**Function:** The vocal chords vibrate when air passes through them. The vibration of vocal chords produces sound. Thus, larynx helps in production of speech/sound.

Q. No. 2 (ii)

(a) A → Hyaline cartilage

(b) **Structure:** Hyaline cartilage is **strong** yet **flexible**.

**Location:** It is found covering the ends of long bones like

- Nose
- trachea
- larynx
- Bronchial tubes.

A - Hyaline cartilage



Q. No. 2 (iii) **Selective Reabsorption**: It takes place in the renal tubule. It is done through the phenomena of diffusion, active transport and osmosis.

**Proximal convoluted tubule** allows reabsorption of water and glucose. Here, water flows by osmosis and salts by active transport.

**Loop of Henle**: Descending limb allows reabsorption of water while ascending limb allows re-absorption of salts.

**Distal convoluted tubule**: It allows reabsorption of water.

⇒ In selective re-absorption 99% of the glomerular filtrate is reabsorbed in the blood vessels surrounding renal tubule. It's the 2<sup>nd</sup> step of urine formation.

Q. No. 2 (iv)

	Hormone	Name of gland
A	Parathormone	Parathyroid glands
B	Corticosteroids	Adrenal glands (Adrenal cortex)
C	Glucagon	Pancreas (islets of Langerhans)

Q. No. 2 (v)

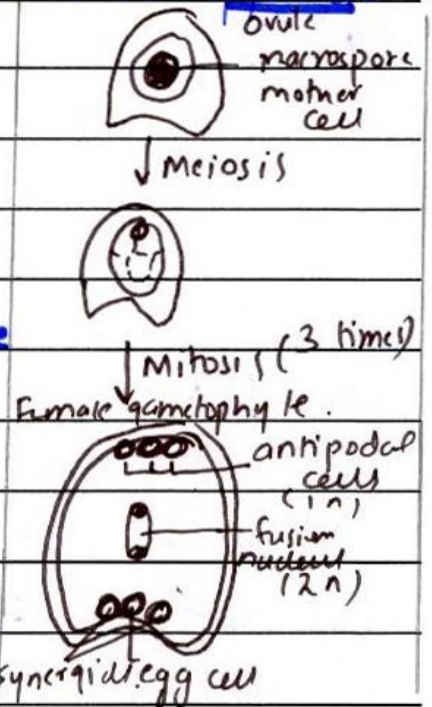
Q. No. 2 (vi) Fourth whorl of the flower is gynoecium.

Its units are called carpels or pistils which consists of upper stigma, middle style and ovary. Inside ovary one to many ovules are present.

Inside an ovule, a haploid megaspore is produced through meiosis. It germinates into the female gametophyte.

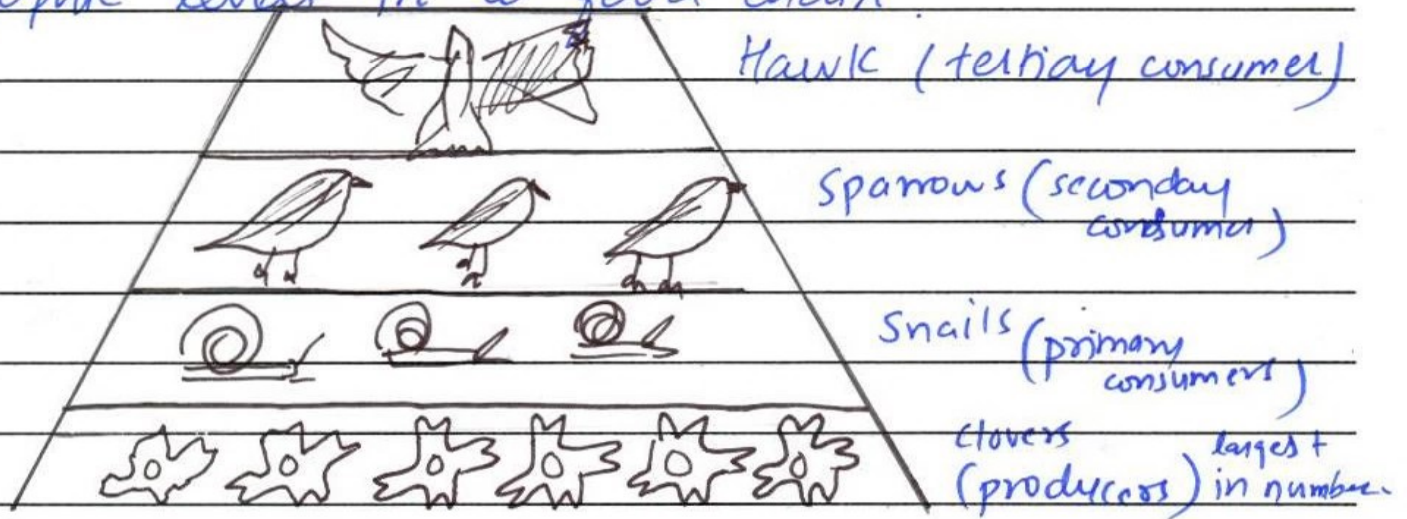
During this process, the nucleus of megaspore undergoes mitosis to form eight cells out of which one

is egg cell, three are antipodal cell, two synergids and some associated structures i.e. fusion



Q. No. 2 (vii) **Ecological pyramid:** "A graphic representation of a number of individuals or amount of biomass or energy present at various trophic levels in an ecosystem is called ecological pyramid."

**Pyramid number:** It is a graphic representation of a number of individuals present at different trophic levels in a food chain.



Q. No. 2 (viii)

(a) The process is called **Binary fission**. It is the simplest type of asexual reproduction in which an organism divides into two by simple cell division. The given diagram shows binary fission in a bacterium.

(b) B: -DNA replication. The DNA replicates so two copies of DNA are formed which migrate to opposite poles of the cell.

(c) C- A cell wall is deposited between the two cross membranes. After that two daughter cells of almost equal size are formed which grow in size

Q. No. 2 (ix)

(a) **Heterozygous**: The genotype consisting of two different alleles is called heterozygous genotype. It is a subtype of genotype. In heterozygous genotype one allele is dominant while the other one is recessive (suppressed) e.g.  $Aa$ ,  $Bb$ ,  $Cc$ . Thus, in heterozygous genotype, the gene pair consists of two different alleles e.g.  $Tt$  ( $T$ =tall height,  $t$ =short height)

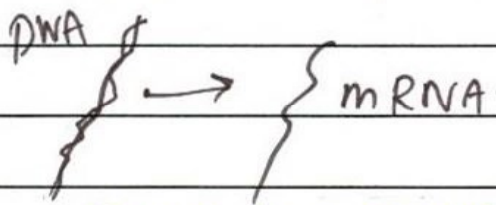
(b) **Genotype**: "The specific combination of genes in an individual is known as genotype." It may be homozygous or heterozygous. It can be determined by observing DNA by genotyping methods e.g.  $AA$ ,  $TT$  (height),  $Tt$  (height),  $aa$  (albinism)

Q. No. 2 (x)

	Drugs	Effects
A	Sedatives	<b>Short term</b> : lethargy, dizziness, slow brain function, depression. <b>Long term</b> : Suicidal thoughts
B	Hallucinogens	• affect <b>sympathetic nervous system</b> causes <b>dilation of pupil</b> , <b>constriction of blood vessels</b> , <b>increased heart rate</b>
C	Heroin	• It acts on central nervous system and causes <b>drowsiness</b>

## Q. No. 2 (xi) Transcription

▶ In transcription, the specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA).



**DNA → mRNA**

★ ~~DNA~~ Occurs in nucleus

★ Template strand is DNA

★ First step of protein synthesis

## Translation

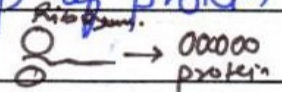
The mRNA carries the specific sequence of DNA nucleotides to the ribosome. Ribosomes read the sequence and join specific amino acid according to it, ~~it's call~~ synthesize protein. It is called translation.

**mRNA → protein.**

★ Occurs in cytoplasm

★ Template strand is mRNA

★ Second step of protein synthesis



Q. No. 2 (xii)

Q. No. 2 (xiii)

(Extra Q)

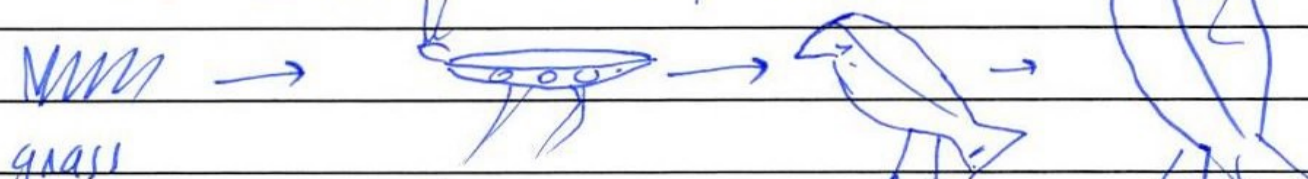
**Genetic engineering:** Genetic engineering is defined as the addition, synthesis, modification, removal or repair of the genetic material i.e. DNA. It is done to alter the characteristics of living organism. It is also called modern biotechnology.

**Use of microorganism:** Micro-organisms are used to produce a variety of products which are beneficial for humans. One such technique applied is fermentation in which a product is obtained by the mass culture of organisms. i.e. yeast is used in production of alcohol, bread etc.

Q. No. 2 (xiv) **Food chain:** "A chain in which one organism is eaten by the organism after it and feeds on the one before it"

**Relationship:** feeding relations. A primary consumer feeds on the producer which is eaten by a secondary consumer and then a tertiary consumer. A food chain consists of 4-5 trophic levels. Smaller food chains provide greater available energy and vice versa.

**Example:** Producer → Primary consumer → Secondary consumer → Tertiary consumer



Q. No. 2 (xv) Moveable joints: They allow movement in all directions. Moveable joints: They allow a variety of movement. Examples include knee joint, hip joint, shoulder joint, elbow joint. They have many types. Two main types are:-

① Hinge joints

\* They move like a hinge on the door and allow movement in one plane only. (Back and forth).

\* Allow  $180^\circ$  movement  
e.g. Elbow joint, knee joint etc.

② Ball-and-socket joints

\* They allow movement in all directions.

Allow  $360^\circ$  movement  
e.g. hip joint, shoulder joint etc.

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## (a) BONE

### Definition:

The hardest connective tissue present in human body is called the bone.

### Function:

- provides **support** (i.e. vertebral column provides main support to body mass)
- **movement** (works with skeletal system to help us move)
- provides **protection** (skull protects brain, rib-cage protects different organs)
- **Mineral storage**:- It stores minerals like calcium and phosphorus which make bone hard.
- produces **Red blood cells, White blood cells and platelets** in bone marrow.

### Regions:

A bone has two main regions

- **Spongy bone**
- **Compact bone**

#### 1. Spongy bone:

The interior of the bone is soft and spongy. It's called the spongy bone. It contains

- **Bone marrow**
- **Blood vessels**

The hard outer layer of the bone is called the compact bone.

**Composition:**

• Like cartilage, bone consists of collagen fibres.

• But, it also contains the following minerals: • calcium • phosphorus

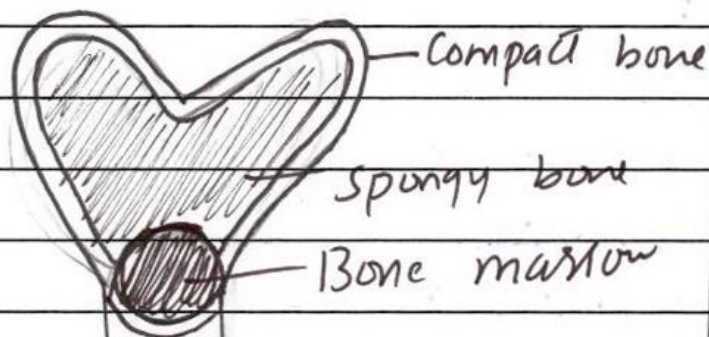
**Cells:**

Cartilage consists of a single type of cells but bone consists of many types of cells i.e

**Osteocytes:** The mature bone cells are called osteocytes.

**Osteoblasts:** The bone forming cells are called osteoblasts.

**Osteoclasts:** The bone destroying cells are called osteoclasts.



## (b) FERMENTATION

### Definition:

Fermentation, also called as Anaerobic respiration, is the incomplete oxidation-reduction of glucose to release less energy in form of ATP.

### Fermentation in terms of biotechnology:

In terms of biotechnology, the term fermentation means "The production of a product from the mass culture of micro-organisms".

### Applications of fermentation (fermented food)

Fermentation makes food more nutritious, more digestible and more tastier. It also tends to preserve the food lowering the need for refrigeration.

#### 1- Cereal products:

Bread is the commonest type of fermented cereal product. Wheat dough is fermented by *S. cerevisiae* along with some lactic acid bacteria.

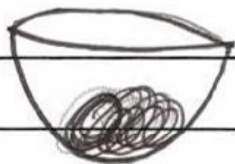
2- Dairy products: Cheese and yogurt are the popular dairy products. Cheese is formed when milk protein is coagulated. The acid produced from lactic acid bacteria reacts with milk protein, coagulating it, resulting in production of cheese.

Lactic acid bacteria.

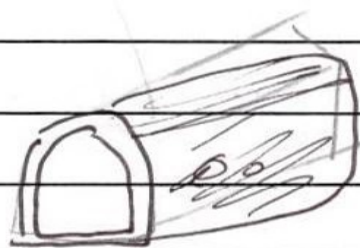
3- **Fruits and vegetables:** Fermentation, along with salt and acid, is used to preserve fruits and vegetables.

4- **Beverage products:** Beer is produced from cereal grains which have been malted, dried and ground into fine powder. Fermentation of the powder is done by yeast and converts it into pyruvic acid and then into alcohol. Grapes can be fermented directly by yeast to wine.

5- **Production of Chocolate:** Cocoa beans are fermented to produce chocolate.



Yogurt



Bread



(a)

Explanation:-

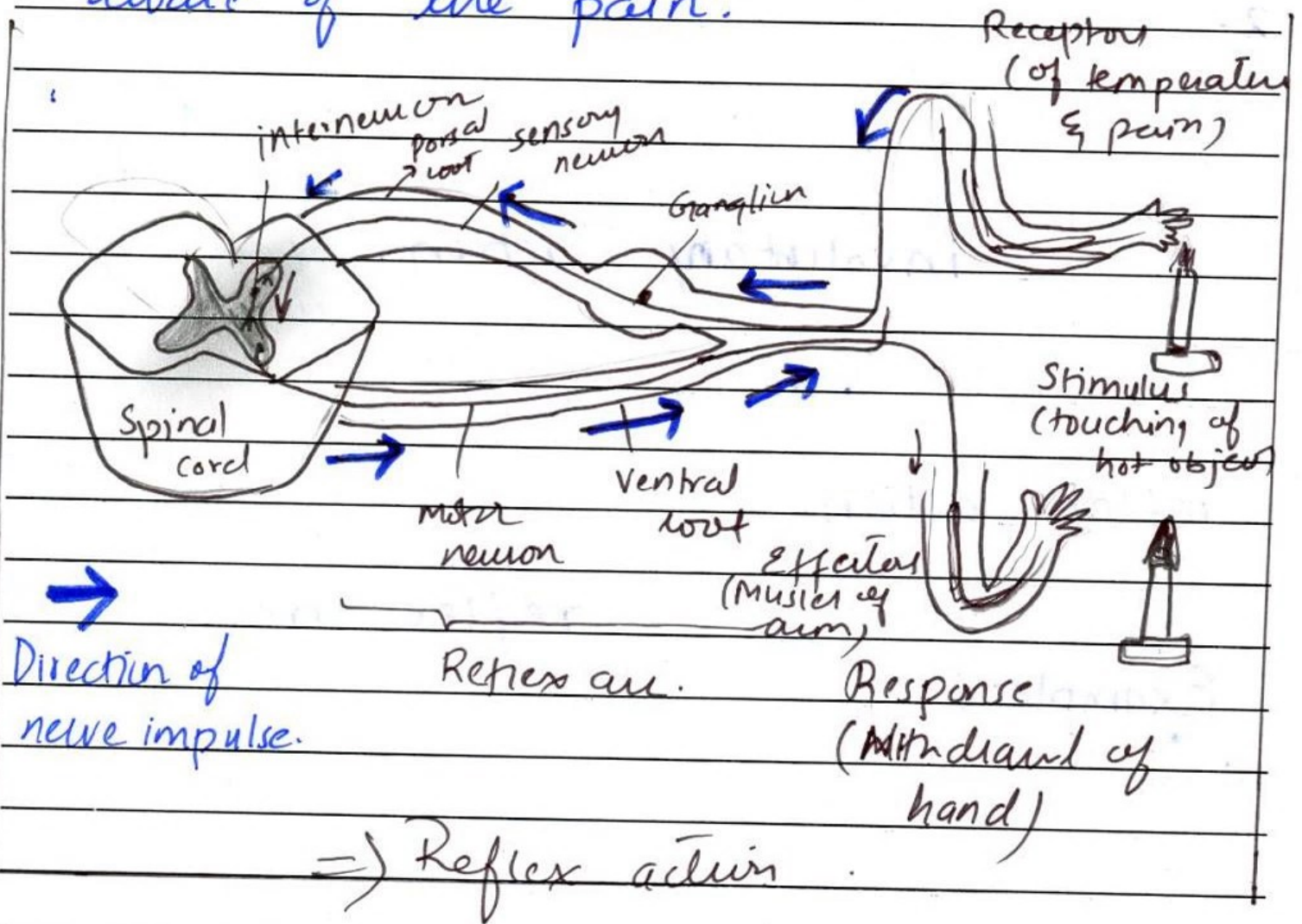
The brain consists of two parts in terms of function.

- 1- The higher centres of the brain control conscious and voluntary actions.
- 2- Sometimes the information is not passed onto the higher centres of the brain. Such actions which are not under conscious control are called **involuntary actions**. Sometimes the involuntary action produced by the CNS is **very** quick. Such an action/ quick response is called **reflex action**. The pathway followed by a nerve impulse for producing a reflex action is called **reflex arc**.

Example:-

- Following is an example of simple reflex action in which spinal cord acts as coordinator.
- When we touch a hot object, heat stimulates the temperature and pain receptors in skin. As a result, a nerve impulse is generated which is carried by the sensory neurons to the interneurons of spinal cord.

Q. No. 5 (Page 2/4) in form of nerve impulses to withdraw hand. Information is carried by the motor neurons to effectors (Muscles or glands). The muscles of arm contract to withdraw hand. During this, information is passed onto the higher centres of the brain so that the person becomes aware of the pain.



(b) Artificial Vegetative propagation: If the artificial vegetative propagation is not carried out naturally but by human intervention, then it is called the artificial vegetative

(b) The two methods of artificial vegetative propagation :-

### 1- Cutting :-

#### Definition:

In this method, cuttings are mainly taken from the roots or stem of the plant.

- The cuttings must have a meristematic region from which growth can occur.
- When the cuttings are placed in suitable soil and under right conditions (water, sunlight and sufficient nutrients), they form roots and shoots. These can then be planted in a field.

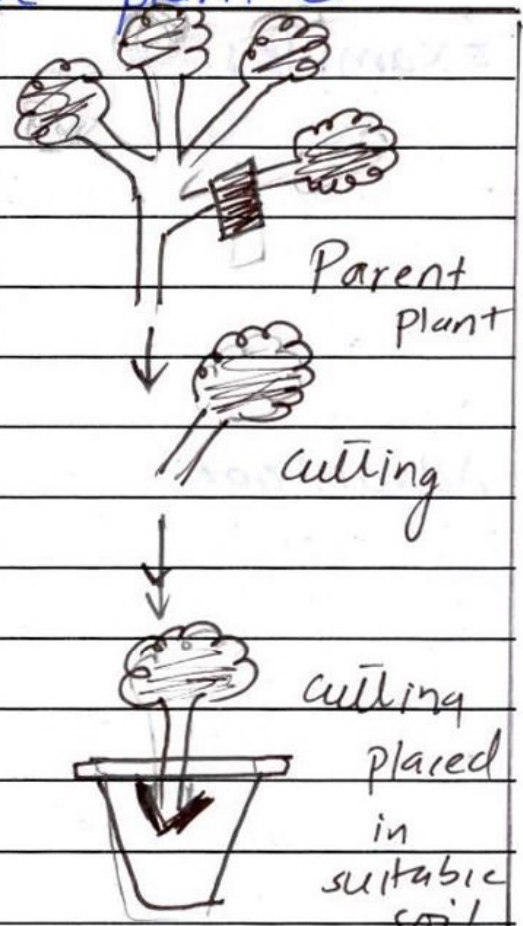
#### Stem cutting:

Roses, ivy and gourd vine are mostly propagated by stem cuttings.

#### Root cutting:

Sweet potato is an enlarged root. Farmers place it in moist sand or soil until it produces several plantlets which are then planted in fields.

Uses: - It is used to produce



single plant. The ~~gen~~ beneficial characteristics are preserved.

• It has been beneficial for sugar cane production

## 2. Grafting:

### Definition:

- In grafting, a part of plant is taken and attached with another plant with established root system.
- After some time, the vascular bundles of attached stem piece and host plants are connected together.
- The attached part and host plant begin to grow together.

### Examples:

The following have been produced by grafting :-

- Roses,
- Peach trees
- Plum trees

### Advantage:

- The graft is exactly identical to the parent plant.
- It helps to increase the number of plants at a rapid rate.

