



## CLASS NOTES

### Animal nutrition

- Animal nutrition includes nutrient requirement, mode of intake of food and its utilisation in the body.
- The components of food are,
  - carbohydrates
  - proteins
  - fat
  - minerals
  - vitamins
  - dietary fibres
  - water
- The intake of food is **ingestion**.
- The breakdown of complex components of food into simpler substances is called **digestion**.

### Different ways of taking food

- Scraping
- Siphoning
- Sponging



ANIMAL	FOOD	MODE OF FEEDING
Snail	Leaves and insects	Scraping
Ant	Food particles	Chewing
Eagle	Small animals/ flesh	Capturing and swallowing
Lice	Blood	Sucking
Mosquito	Blood	Sucking
Butterfly	Nectar of flower	Siphoning
Housefly	Decaying matters	Sponging

### Digestion:

The process by which the body converts nutrients into simple usable substances is known as digestion.

#### Human digestive system

- The digestive tract and the associated glands together constitute the digestive system.
- Alimentary canal (digestive tract):
  - The food passes through a continuous canal which begins at the buccal cavity and ends at the anus.
  - The canal can be divided into various compartments.
    1. buccal cavity or oral cavity or mouth



2. food pipe or oesophagus
3. stomach
4. small intestine
5. large intestine ending in the rectum
6. anus

- These parts together form the alimentary canal (digestive tract).

- The inner walls of the stomach and small intestine and the various glands associated with the canal such as salivary glands, the liver and the pancreas secrete digestive juices.

### Mouth

- The digestion of carbohydrates present in the food begins in the mouth.
- **Role of salivary glands:**
  - The salivary glands present in the mouth secrete saliva. Saliva is the digestive juice which contain salivary amylase. Salivary amylase breaks down starch into sugar.

### Oesophagus

- Food is pushed down by the wave-like muscular movements of the foodpipe.

### Stomach

- The walls of the stomach are lined with a membrane called mucosa. The mucosa secretes mucous, which protects the inner lining of the stomach.



- The glands present in the inner walls of the stomach secrete hydrochloric acid and digestive juices. The acid kills many bacteria that enter along with the food and acidifies food. It helps the digestive juices to act. The digestive juices break down the proteins into simple substances.

### Small intestine

- It receives secretions from the liver and the pancreas. Besides its wall also secretes juices.
- **The role of liver:**
  - It secretes bile juice that is stored in a sac called gall bladder.
  - The bile helps in the digestion of fats.
- **The role of pancreas**
  - The pancreas secretes pancreatic juice.
  - The pancreatic juice acts on carbohydrates, fats and proteins and changes them into simpler forms.
- The carbohydrates get broken into simple sugars such as glucose, fat into fatty acids and glycerol, and proteins into amino acids.
- All the useful substances from the digested food are absorbed into the villi of the small intestine. This process is known as **absorption**.
- All the substances that have been absorbed into the villi of the small intestine ultimately enter the blood vessels. The circulating blood then carries the useful substances to every living cell in the human body. The absorption of digested food and its utilisation by the body is known as **assimilation**.



### The large intestine

- Absorption of water and some salts from the undigested food material.
- The remaining waste passes into the rectum and remains there as semi-solid faeces.
- The faecal matter is removed through the anus from time-to-time. And it is called **egestion**.

### Digestion in grass-eating organisms

- The herbivores eat grass and the grass is rich in cellulose, a type of carbohydrates.
- Herbivores such as cows, buffaloes, deer, goats, yaks and camels have a specialized digestive system that can digest cellulose. They have a four-chambered stomach.
- The grass eating animals quickly swallow the grass and store it in a part of the stomach called rumen, the first chamber. The rumen has a large number of microorganisms which begin the digestion of the cellulose in the grass.
- The animal then regurgitates or brings the partially digested food from the rumen back into the mouth several times to chew on it. The food that is repeatedly chewed is called cud.
- The repeated regurgitation and chewing of food is called rumination and these animals are called ruminants.
- **All the ruminants are herbivores but all herbivores are not at all ruminants.**
- Animals like horses and rabbits have a single chambered stomach and



they have an enlarged sac-like structure called Caecum between the oesophagus and the small intestine.

- The cellulose of the food is digested in caecum by the action of certain bacteria- that produce cellulase, an enzyme that breaks down cellulose into sugars.

### Digestion in unicellular organisms – amoeba

- Amoeba has a cell membrane, a rounded, dense nucleus, and many bubble-like vacuoles in its cytoplasm.
- Amoeba constantly changes its shape and position.
- Amoeba pushes out one or more finger-like projections called pseudopodia or false feet for movement and capture of food.
- The process includes-

#### **Ingestion:**

The amoeba senses a food particle, pushes out pseudopodia around the food particle and engulfs it.

#### **Digestion:**

The food is trapped in a food vacuole and digestive juices are secreted into the food vacuole. They act on the food and break it down into simpler substances.

#### **Assimilation:**

The amoeba uses these substances for growth, maintenance, and multiplication.

#### **Egestion:**

The undigested residue of the food is expelled outside by the vacuole.