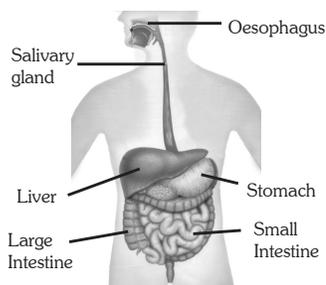


SCIENCE-7 (ANSWERS)

CHAPTER-1 : FOOD AND NUTRITION

A. Answer the following questions :

1. In autotrophic mode of nutrition, living things make their own food. The green plants show this mode of nutrition. The green plants prepare their own food with the help of carbon dioxide and water from the environment. They also use chlorophyll, a green pigment (found in green leaves) and sunlight for the manufacture of food. This process is known as *photosynthesis*.
2. On the basis of eating habits, the heterotrophs can be classified as
 - (a) **Herbivorous** : The animals that depend upon plants for their food are called *herbivorous animals*, e.g., cow, sheep, goat.
 - (b) **Carnivorous** : The animals that depend upon other animals for their food are called *carnivorous animals*, e.g., tiger, lion.
 - (c) **Omnivorous** : The animals that consume plants as well as other animals as their food are called *omnivorous animals*, e.g., bear, dog, human beings.
 - (d) **Parasites** : The organisms that obtain their food from other animals either by living inside their body or outside their body are called *parasites*, e.g., tapeworm and roundworm.
 - (e) **Scavengers** : The animals who feed on the remains of dead animals preyed by predators are called *scavengers* e.g., vulture, crow.
- 3.



Human digestive system

4. The digestive system of human has these parts-mouth, oesophagus, stomach, small intestine, pancreas, liver, large intestine, rectum and anus. The digestive system starting from mouth to the anus form a long, hollow canal and is called the *alimentary canal*.

Now, let's look at what happens in each part of the alimentary canal.

Mouth : The process of digestion starts in the mouth itself. Food is bitten off and chewed by the teeth. The chewed food gets mixed with saliva secreted by the salivary glands. The tongue helps in mixing the food with saliva and its swallowing down the digestive system.

Oesophagus : The mouth cavity opens into a tube called *oesophagus*. No digestion takes place in the oesophagus. Through this oesophagus,

the swallowed food passes into large sac like structure called *stomach*.

Stomach : The inner lining of the stomach secretes mucous, hydrochloric acid and digestive juices. The mucous protects the lining of the stomach. The acid kills many bacteria that enter along with the food and makes the medium in the stomach acidic. The digestive juice break down the proteins into simpler substances. Stomach opens into the small intestine.

Small intestine : As the food enters the small intestine, it comes into contact with a liquid called *bile* *Bile* is green, watery fluid, produced in the liver and stored in the gall bladder. Bile helps to break down fats into tiny droplets that can be digested by enzymes. Bile being alkaline also neutralizes the acidic food from the stomach.

The digestion of food is completed in the small intestine. The pancreas produced several enzymes including amylase, protease and lipase, to completely digest the food. The end products of digestion are sugars, amino acids, fatty acids and glycerol.

Digested food, together with some vitamins and mineral salts, is absorbed by diffusion into the walls of the small intestine and then into the blood stream.

The inner surface of small intestine contains a large number of finger like projections called *villi*. These tiny projections on in inner walls further increase its surface area. Food takes a long time to pass through it.

Large Intestine : The body does not digest all the food that we eat. The undigested food enters the *large intestine* as a liquid paste. Water and minerals are absorbed and the waste turn into solid waste. This solid waste then collects in the *rectum* which is at the end of the large intestine. This undigested waste forms the faeces which leave the body at regular intervals through an opening called *anus*.

5. The *main function* of teeth is to chew the food. There are four main kinds of teeth in humans-*incisors*, *canines*, *premolar*, and *molars*.
 - (a) **Incisors** : The front four teeth in each jaw are the *incisors*. They are flat and help in biting the food.
 - (b) **Canines** : On either side of the incisors are the *canines*. These are sharp and two in number in each jaw. They are meant for tearing the food.
 - (c) **Premolars** : Premolars are behind the canines, two in number on either side in each jaw.
 - (d) **Molars** : Molars are behind the premolars. In an adult, they are six in number in each jaw, three each on either side of the premolars. The premolars and molars are meant for grinding and crushing the food.
6. **Structure of teeth** : Teeth are living structures. Teeth can be divided into two sections. The part above the gum called the *crown* and part embedded in the gum called the *root*. The crown is the outside of the part

of the tooth. It is the part that does all the hard work. It is capped with an extra hard substance called *enamel*. Beneath the enamel, making up the bulk of the tooth is the *Dentine* and within the centre is the *pulp cavity*.

7. **Toothache** : *Plaque* is a yellow sticky substance deposited on the teeth if you don't brush teeth regularly. Plaque is rich in sugar, hence it contains bacteria. The bacteria produce acids, which dissolve the calcium salts in the tooth enamel. The enamel and dentine are dissolved away in patches, forming cavities. The cavities reduce the distance between the outside of the tooth and the nerve ending. The acids produced by the bacteria irritate the nerve ending and cause tooth ache.



Structure of a tooth

8. Salient features of digestion in human are :
- (i) Digestion is *extra cellular*.
 - (ii) It involves many organs-mouth, oesophagus, stomach, intestine and anus.
 - (iii) The process of digestion involves ingestion, digestion, absorption, assimilation and egestion.
 - (iv) The number of organic compound called digestive juices or enzymes are involved in the process of digestion.
9. **Ruminants** : A ruminant is an even toed animal that is able to regurgitate i.e. it can bring the swallowed food up again to the mouth from the stomach. Example : Cow, goat, deer.

Digestion in ruminants : Ruminants eat mainly small plants and grass which is rich in cellulose. The food, therefore, first passes into the *rumen*, where there are bacteria and protozoa (symbiotic micro-organisms) that break down the cellulose. After this, a soft, fermented food returns to the animal's mouth which is chewed continuously and then it enters the second compartment of the stomach- *the reticulum*.

Here, further digestion is carried out by more bacteria and the food passes on to the third compartment of the stomach-*the omasum*.

The main function of omasum is to absorb water from the food. In the fourth compartment of the stomach-*the abomasum* the food is mixed with a variety of digestive juices. It then passes into small intestine and digestion is completed in the normal way.

B. Define the following terms :

1. **Nutrition** : The mode of taking food by an organism and its utilisation by the body is called nutrition.
2. **Insectivorous Nutrition** : Feeding on small insects is known as *insectivorous nutrition*.
3. **Saprophytic nutrition** : Feeding on dead and decaying organic matter is known as *saprophytic nutrition*.
4. **Digestion** : The process of breaking down complex food molecules like

starch, proteins, fats into simplex molecules like glucose, amino acids, fatty acid is known as digestion.

C. Identify the plant and explain how it catch its prey.

1. This plant is *bladderwort* plant (*Utricularia*). It catches its prey with insectivorous sacs that are controlled by the valves.
2. This plant is a *Sundew* plant. This employs a sticky mucus to trap its prey.
3. This plant is a *pitcher plant*. The leaf lamina of pitcher plant is modified to form a pitcher-like structure, and the leaf tip is modified into a lid. When an insect happens to enter a pitcher, the lid is enclosed. The insect, thus, gets trapped in the pitcher.

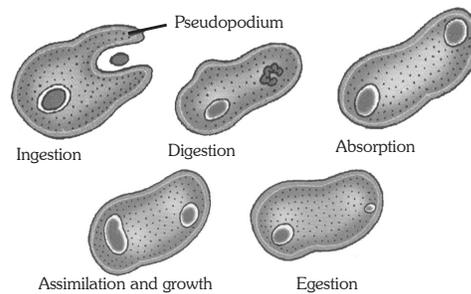
D. With the help of diagrams explain the mode of nutrition in :

1. **Amoeba** : Amoeba is a single-celled organism, hence, all the steps of nutrition are performed by the single cell.

Amoeba constantly changes its shape and position. It pushes out one, or more finger-like projections, called *pseudopodia* or false feet for movement and capture of food.

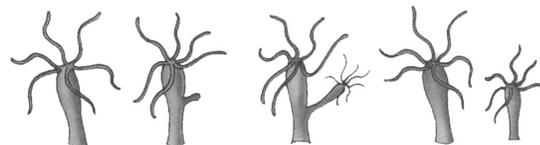
Amoeba feeds on some microscopic plants and animals that float in a water body. When it senses food, it pushes out pseudopodia around the food particle and engulfs it.

Thus, ingestion in amoeba is with the help of pseudopodia. The food becomes trapped in a food vacuole. Inside the *food vacuole*, food gets digested by digestive enzymes which are secreted into the food vacuole. These enzymes act on the food and break it into simpler substances. Gradually the digested food is absorbed and utilised by the cell. This is termed as *assimilation*. These absorbed substances are used for growth, maintenance and multiplication. The undigested food remains in the food vacuole and is thrown out of the body. This is called *egestion*.



Nutrition in amoeba

2. **Hydra** : Hydra is a simple, multicellular animal. It has a number of *tentacles* around its mouth which are used for ingestion of food.



Hydra

The tentacles entangle small aquatic animals and kill them with their *stinging cells*.

They then push them into the mouth. Inside the body cavity the digestive juices secreted by the surrounding cells help to digest the food. It is absorbed through the cavity walls and assimilated in the cells.

E. Differentiate between

1.	Parasitic Nutrition	Symbiotic Nutrition
	In <i>parasitic nutrition</i> organisms obtain their food from other animal either by living inside their body. Examples of organism : tapeworm roundworm.	In <i>symbiotic nutrition</i> , the two different organisms live together and both are mutually beneficial. Example of organism : Lichen.
2.	Absorption	Assimilation
	<i>Absorption</i> is a process by which the digested food molecules are absorbed by body cells and transported to different parts of the body.	<i>Assimilation</i> is a process in which the absorbed food is incorporated into living cells and used by the body for its growth.
3.	Endoparasites	Ectoparasites
	The organisms that obtain their food from other animals by living inside their body are called endoparasites. Example : Malarial parasite.	The organisms that obtain their food from other animals by living outside their body are called ectoparasites. Example : Leech.
4.	Carnivores teeth	Herbivores teeth
	1. The incisors are used for biting and holding the prey. 2. The molars are jagged and used for cutting up food.	1. They have no incisors in the under jaw. Upper jaw incisors are long, chisel like for growing grass and twigs. 2. The molars are broad and flat with ridges for grinding.

F. Name the following :

- Ingestion, digestion, absorption, assimilation and egestion.
- Mouth, Oesophagus, stomach, small intestine, pancreas liver, large intestine, rectum and anus.
- Amylase, protease, Lipase.

G. Fill in the blanks :

- Autotrophs 2. Haustoria 3. Starch
- Utricularia 6. Tongue

H. Write 'T' for true and 'F' for false

- T 2. F 3. T 4. F 5. T

CHAPTER- 2 : MATERIALS OF DAILY USE

A. Answer the following questions :

1. Silk is the strongest of all natural fibers and is unique also as it is produced in as filament. Some characteristics of silk that make it unique are as follows :
 - (i) Silk is the strongest of all natural fibres.
 - (ii) It is highly elastic.
 - (iii) It can be stretched and will still return to its original shape.
 - (iv) Silk garments are extremely light in weight and are warmer than cotton, linen or rayon clothing.
 - (v) Dyed silk cloth has a deeper, richer appearance than most other dyed fabrics.
 - (vi) Silk can be ironed easily and it resists wrinkling.
2. Silk was first discovered and then developed in early China. Chinese legend gives the title Goddess of silk to Lady Hsi-Ling-Shih, wife of the mythical yellow Emperor. Hsi-Ling-Shih is credited with the introduction of silkworm rearing and the invention of the loom. According to an old Chinese legend, she was asked by the emperor to find the cause of the damaged leaves of mulberry trees growing in their garden. The emperor found white worms eating up mulberry leaves. She also noticed that they were spinning their cocoons around them. Accidentally, a cocoon dropped into her cup of tea and a tangle of delicate threads separated from the cocoon. Silk industry began in China and was kept a closely guarded secret for hundreds of years. Later on traders and travellers introduced silk to other countries.
3. The processing of silk is the twisting of one or more threads of raw silk into a strand sufficiently strong for weaving or knitting. This procedure is called throwing. In the process of throwing four different types of silk thread can be produced. These are :
 - (i) **Organzine** : Organzine thread is made by giving raw silk thread a preliminary twist in one direction and then twisting two or more of these threads in the opposite direction at rate of about 4 turns /cm.
 - (ii) **Crepe** : Crepe is similar to organzine, but is twisted to much greater extent, usually, 16 to 32 turns/cm.
 - (iii) **Tram** : Tram is made by twisting two or more raw silk threads in only one direction with 8 to 12 turns/cm.
 - (iv) **Thrown Singles** : Thrown Singles are individual raw silk threads, that are twisted only in one direction, the number of turns depending on the quality of thread required.
4. Wool, is the common name applied to soft curly fibres obtained chiefly from the fleece of domesticated sheep.

The fleece of sheep is not the only source of wool, however, wool can be obtained from other wool bearing animals. These animals include camel, alpaca, angora goat, cashmere goats, yak and llama. Besides these angora rabbits are also a source of wool.

5. Warm sweaters, jackets, scarves, etc. are the great charm of winter months. So we prefer to wear woolen clothes during winter. However, during summer, we prefer to wear loose clothing made up of cotton.
6. In the clinical thermometer, there is a bent at its lower end which is called constriction. This constriction prevents the flow of mercury back into the bulb of the thermometer.
7. Condition for conduction of heat from one body to another body are :
 - (i) The two bodies should be contact with each other.
 - (ii) The two bodies should have different temperature.
8. Convection occurs readily in gases because convection depends on motion of mass from one region of space to another.
9. In coastal areas, the breeze generally flows from the sea to the land during the day, and from the land to the sea during the night. They are generally known as sea breeze and land breeze respectively. Let us see how they are produced.
 - (i) **Sea breeze** : During the day, land heats up more than water. The air over the land becomes hotter and rises up. The air from the sea, which is cooler, rushes to take its place. Therefore, a sea breeze blows during the day.
 - (ii) **Land breeze** : During the night, land loses heat faster than water and becomes cooler. The air over the sea is now warmer. It rises up and the cooler air over land rushes to take its place. Thus, we get a land breeze at night.
10. Thermos flask keeps hot liquid hot and cold liquid cold for a long time. It does this by stopping or reducing conduction, convection and radiation.

B. Define the following :

1. **Fibre** : Fibres are thin threads and are either natural or synthetic.
2. **Reeling** : The process of obtaining the thread from the cocoon is called reeling.
3. **Shearing** : Shearing is the process of removing wool from sheep. Wool is like hair as it grows back after shearing.
4. **Radiant Heat** : The heat energy which is transferred from a hot body to a cold body, without being absorbed by the space between the hot and cold bodies is called radiant heat.

C. Difference between the following :

1. Differences between clinical thermometer and laboratory thermometer :

Clinical Thermometer	Laboratory Thermometer
1. Clinical thermometer is used by a doctor or nurse.	1. Laboratory thermometer is used in the laboratory.
2. It is called clinical thermometer.	2. It is called celsius thermometer.
3. It measures temperature up to 42°C only.	3. It measures temperature up to 100°C.

2. Difference between heat and temperature :
Heat is an invisible energy which causes the sensation of hot and cold. On the other hand, temperature is the degree of hotness or coldness of a body.
3. Difference between conduction and convection :
The process of transmission of heat energy in solid without the actual

movement of particles from their position is called conduction. On the other hand, convection is the usual method by which heat travels through fluids, i. e., liquid and gases.

D. Give some of the practical application of :

1. Some practical applications of good conductor of heat :
 - (i) Mercury is used as a thermometric liquid as it is a good conductor of heat.
 - (ii) Cooking utensils are made of good conductors. In these vessels, heat from the flame is conducted to the food inside quickly and efficiently. It help in the faster cooking of food items.
 - (iii) Cooling coils of air conditioners and refrigerators are made of copper as they readily conduct away heat.
 - (iv) Copper tubing is used in automobile radiators as it readily takes heat from the hot water coming from the engine.
2. Some of the practical applications of bad conductors of heat :
 - (i) The handles of cooking utensils are made of wood or plastic. It is because the wood or plastic is a poor conductor of heat.
 - (ii) We wear woolen clothes in winter because woolen yarn contains a large amount of trapped air. Since air is a bad conductor of heat, it does not allow the body heat to flow outward. As our body stops losing heat, we feel warm.
 - (iii) Birds puff up their feathers in winter, because in doing so they trap large amount of air, which in turn acts as an insulator and does not allow their body heat to flow out.
 - (iv) Steam pipes are covered with asbestos or glass wool to prevent heat losses due to conduction.
3. Some of the practical applications of convection :
 - (i) Central heating in building is based on convection currents. Normally water or oil is heated in a boiler. This gives rise to convection currents in the water or oil, because of which it circulates through pipes that go through the rooms.
 - (ii) Ventilators are provided high up on the walls in houses. It is because the air we breathe out is warmer and rises up. It escapes from the ventilators. It is replaced by fresh air coming in from doors and windows. Thus, stale air goes out and fresh air comes in due to the convection currents set up in the air in the room.
4. Some of the practical applications of radiation :
 - (i) The base of a cooking utensil is painted black so that it absorbs more heat and hence cooking is faster.
 - (ii) Tea or coffee stays, hot for a longer time in a shiny pot than in a blackened pot. This is because the shiny pot is a poor radiator of radiant heat energy.
 - (iii) We wear white or light-coloured clothes in summer as they absorb less radiant heat and keep our body cooler than dark clothes.

E. Fill in the blanks :

- | | | | |
|------------------|----------|-------------|---------------|
| 1. cocoon | 2. cold | 3. kelvin | 4. bimetallic |
| 5. badconductors | 6. black | 7. silvered | |

F. Write 'T' for true and 'F' for false :

- | | | | | | |
|------|------|------|------|------|------|
| 1. T | 2. F | 3. F | 4. T | 5. T | 6. F |
|------|------|------|------|------|------|