

## LIFE PROCESSES

### Gist of the Lesson:

**Life Processes:** The processes that are necessary for an organism to stay alive.  
Eg. Nutrition, respiration, etc.

**Criteria of Life:** (i) Growth (ii) Movement

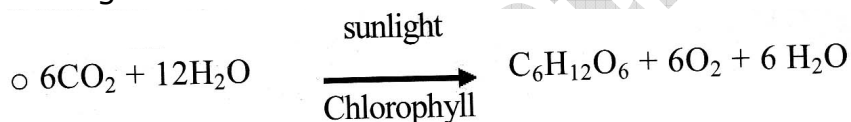
**Nutrition:** The process in which an organism takes in food utilizes it to get energy, for growth, repair and maintenance, etc. and excretes the waste materials from the body.

### Types of Nutrition:

#### 1. Autotrophic Nutrition (Auto =self: trophos = nourishment)

E.g. Plants, Algae, blue green algae.

- **Process** - Photosynthesis(Photo=light; Synthesis= to combine)
- **Raw Materials**- (i) Carbon dioxide (ii)Water
- **Equation**- sunlight



Energy conversion- Light/Solar energy to Chemical energy

Role of Chlorophyll- To trap the sun's energy for photosynthesis

#### • Factors:

- Carbon dioxide
- Water
- Light
- Temperature

#### • Events/ Steps of Photosynthesis-

- Absorption of light energy by chlorophyll
- Conversion of light energy to chemical energy & Splitting of water molecule into Hydrogen & oxygen
- Reduction of Carbon dioxide to Carbohydrate

#### • Gaseous Exchange-

- Gas used- Carbon dioxide
- By product - Oxygen

#### • Source of Raw Materials-

- Carbon dioxide -Land plants- Air, Aquatic plants- Water
- Water & Minerals - Soil

#### 2. Heterotrophic Nutrition (Hetero =others: trophos = nourishment) Eg. Animals, plants lacking chlorophyll like fungi.

- (a) **Saprophytic Nutrition:** Organisms feeds on dead decaying plants or animals material.  
E.g. Fungi, Bacteria
- (b) **Parasitic Nutrition:** Organisms obtain food from the body of another living (host)

**Endoparasite :** Parasite lives inside the body of the host e.g. tapeworm, roundworm.

**Exoparasite :** Parasite lives on the body of the host. E.g. lice, leech.

**Note-** The parasite benefits while the host is usually harmed E.g. Cuscuta-plant parasite (amar bel), plasmodium (malaria parasite).

- (c) **Holozoic Nutrition:** Organism (mostly animals) takes in whole food and then digests it into smaller particles with enzyme.  
Eg. Amoeba, Paramoecium. Animals, human beings.

**Steps in Holozoic Nutrition**

- (i) Ingestion: taking in of food.
- (ii) Digestion: breaking down of complex food into simpler, absorbable form.
- (iii) Assimilation: Utilization of digested food from the body.
- (iv) Egestion: Removing undigested food from the body

**Nutrition in Human Beings**

Mouth → Oesophagus → Stomach → Small intestine → Large intestine  
(book)

Organ	Gland.	Enzyme/Juice	Function
Mouth	Salivary glands	Salivary Amylase	Converts starch into sugar
Stomach	Gastric glands	Gastric juice- (i) Hydrochloric acid →  (ii) Pepsin → (iii) Mucus →	a) Kills harmful bacteria that enter with the food.  (b) Makes the medium acidic for the action of Pepsin  Digests Proteins.  Protects the inner lining of the stomach from the corrosive action of Hydrochloric acid.

Small intestine	1) Liver	(i) Bile juice →	(a) Makes the medium alkaline for the action of Pancreatic enzymes.  (b) Breaks down large fat molecules into smaller globules so that enzymes can act upon them  (Emulsification)
	2) Pancreas	(ii) Pancreatic juice  →  →  →	Converts Carbohydrates to glucose  Converts proteins to Amino acids  Converts Fats into Fatty acids & Glycerol

**Peristaltic Movements-** Rhythmic contraction of muscles of the lining of Alimentary canal to push the food forward.

**Sphincter Muscle-** Helps in the exit of food from the stomach.

**Villi-** Small finger like projections on the walls of

- (v) Small intestine- To increase the surface area for the absorption of food.
- (vi) Large intestine- For absorption of water.

**Respiration-**

The process by which digested food is broken down with the help of Oxygen to release energy.

**Types of Respiration-** (i) Aerobic respiration (ii) Anaerobic respiration

Aerobic Respiration	Anaerobic Respiration
<ol style="list-style-type: none"> <li>1. O<sub>2</sub> is required for oxidation</li> <li>2. End products- Carbon dioxide &amp; Water</li> <li>3. More energy is released.</li> <li>4. Takes place in Cytoplasm &amp; Mitochondria</li> <li>5. Complete oxidation of glucose takes place.</li> <li>6. It occurs in most organisms.</li> <li>7. Equation Glucose → Pyruvate → CO<sub>2</sub> + H<sub>2</sub>O + Energy</li> </ol>	<ol style="list-style-type: none"> <li>1. O<sub>2</sub> is not required.</li> <li>2. End products- Ethanol, Carbon dioxide &amp; Lactic acid in animals.</li> <li>3. Less energy is released.</li> <li>4. Takes place in only in Cytoplasm.</li> <li>5. Incomplete oxidation of glucose takes place.</li> <li>6. It occurs in certain bacteria, yeast &amp; certain tissues of higher organisms. E.g. In humans during vigorous exercise, when the demand for Oxygen is more than the supply, muscle cells respire anaerobically for some time</li> <li>7. Equation- <b><u>In Yeast -</u></b> Glucose → Pyruvate → Ethanol + H<sub>2</sub>O + Energy <b><u>In muscle cells -</u></b> Glucose → Pyruvate → Lactic acid + Energy</li> </ol>

**Some common features of Respiratory organs-**

- (i) Large surface area- for greater rate of diffusion of respiratory gases.
- (ii) Thin permeable walls - to ensure easy diffusion & exchange of gases.
- (iii) Extensive blood supply- Respiratory organs are richly supplied with blood vessels for quick transport of gases.

**Gaseous exchange in plants-**

- Process-Diffusion
- Direction of diffusion depends on-
  - (i) Environmental conditions
  - (ii) Requirement of the plant.

**Day Time-** Carbon dioxide given out during respiration is used for photosynthesis. Therefore only Oxygen is released, which is a major activity during the day.

- **Night Time-** Only respiration takes place. Therefore only Carbon dioxide is released, which is a major activity during the night.

## Gaseous exchange in Animals-

- Terrestrial animals- take Oxygen from the atmosphere.
- Aquatic animals- take Oxygen dissolved in water. (Oxygen content is low in water, therefore they breathe faster).

## Human Respiratory System

External nostrils → Nasal cavity → Trachea → Bronchi → Bronchioles → Alveoli

- Rings of cartilage present in the throat ensure that the trachea (air passage) does not collapse when there is less air in it.
- Lungs-
  - (i) Present in the thoracic cavity.
  - (ii) They are spongy, elastic bags consisting of Bronchi, Bronchioles and Alveoli.

## Respiration occurs in two Phases-

- (i) External-Breathing, which is a mechanical process.
- (ii) Internal - Cellular respiration

## Mechanism of breathing - It includes:

- (i) Inhalation
- (ii) Exhalation

## Exchange of Gases

**Unicellular organisms-** By Diffusion

**Animals-**

- (i) As the body size is large, diffusion alone is not enough.
- (ii) Respiratory pigments also required.
- (iii) Respiratory pigment in human beings is Hemoglobin, which is present in red blood corpuscles.
- (iv) It has very high affinity for Oxygen.
- (iv) Carbon dioxide is more soluble in water than Oxygen, so it gets dissolved in blood and is thus transported.

## • Transportation in Human Beings-

**Blood-**

- (i) It is a fluid connective tissue.
- (ii) Components-
  - (1) Fluid medium- Plasma
  - (2) Red blood corpuscles
  - (3) White blood corpuscles
  - (4) Platelets suspended in plasma
- (iii) Plasma transports food, Oxygen, Carbon dioxide, Nitrogenous wastes, etc.

**Functions of Blood-**

- (i) Transport of respiratory gases.
- (ii) Transport of nutrients.

- (iii) Transport of waste products.
- (iv) Defense against infection.

**Blood Vessels-**

- (i) Arteries
- (ii) Veins
- (iii) Capillaries

Arteries	Veins
<ul style="list-style-type: none"><li>1. Thick walled.</li><li>2. Deep seated.</li><li>3. Carry blood away from the heart.</li><li>4. Carry Oxygenated blood.</li><li>5. Valves absent.</li></ul>	<ul style="list-style-type: none"><li>1. Thin walled.</li><li>2. Superficial.</li><li>3. Carry blood to the heart.</li><li>4. Carry Deoxygenated blood.</li><li>5. Valves present</li></ul>

**Heart-**

- (i) It is a muscular organ, which works as a pump in the circulatory system.
- (ii) It is the size of our fist.
- (iii) It has two sides, which are separated by a partition so that the oxygenated and deoxygenated blood do not get mixed up.
- (iv) It has four chambers-
  - Two upper chambers called Atria.
  - Two lower chambers called Ventricles.

**Working of Heart-**

**Left Side:**

- (i) Left atrium relaxes & the Oxygenated blood enters it from the lungs through the pulmonary vein.
- (ii) Left atrium contracts & the blood enter the left ventricle through the valve.
- (iii) Left Ventricle contracts and the blood is pumped into the largest artery Aorta and is carried to all parts of the body.

**Right Side:**

- (i) Right atrium relaxes & the deoxygenated blood from the body enters it through superior and inferior Vena cava.
- (ii) Right atrium contracts & the blood enters the right Ventricle through the valve.
- (iii) Right Ventricle contracts and the blood is pumped into the Pulmonar artery and is carried to lungs.
  - Valves- Unidirectional to prevent the backward flow of blood.

- Pulmonary vein is the only vein that carries Oxygenated blood.
- Aorta is the only artery that carries Deoxygenated blood.
- Double circulation in main- because the blood passes through the heart circulates twice in one complete cycle of the circulation.

#### • Capillaries:

- (i) Form the connection between arteries & veins.
- (ii) Walls are one cell thick only for easy exchange of blood.

**Platelets-** Plug the leaks of arteries and veins by clotting the blood.

**Lymph-** Extracellular fluid similar to plasma but colorless with lesser protein.

#### **Functions of lymph-**

- (i) Transportation of digested & absorbed fats from the small intestine.
- (ii) Drains excess fluid from the intercellular spaces back in the blood.

**Higher animals-** E.g., birds, mammals.

- (i) Oxygenated blood & Deoxygenated blood are completely separate for efficient Oxygen supply.
- (ii) This is to fulfill higher energy needs and to maintain body temperature (warm blooded animals).

**Amphibians-** have 3 chambered heart where little mixing of Oxygenated blood & Deoxygenated blood takes place. Therefore their body temperature varies with the temperature of the environment. (cold blooded animals)

#### • Transportation in Plants-

Plant need less energy needs- because they do not show locomotion and therefore have a slow transport system.

#### **Transport of Water:**

- (i) Takes place by xylem tissue present in roots, stem, leaves and is therefore interconnected.
- (ii) Root cells take up ions from the soil, which creates a concentration difference between root and soil. Column of water therefore rises upwards.

In very tall plants- transpiration creates a suction pressure, which pulls the water upwards.

Importance of transpiration-

- (i) Helps in upward movement of water in plants.
- (ii) It regulates the temperature in plants.

#### • Transport of Food-

- (i) Takes place by phloem tissue.
- (ii) Movement of prepared food in plants is called translocation.

Excretion- The biological process of removal of harmful metabolic wastes in living organisms.

Excretion in human beings.

- **Organs of Excretory System-**

(i) Kidneys (iii) Urinary bladder (ii) Ureters (iv) Urethra

- **Kidneys-**

(i) Two in number

(ii) Bean shaped

(iii) Present in abdomen on either side of the backbone

(iv) Basic unit is nephron.

a. Glomerulus- Group of capillaries (cluster) presents in Bowman's capsule to receive blood from renal artery and filters it.

b. Bowman's capsule- Cup shaped structure, which contains glomerulus.

c. Convolute tubule- is long and reabsorbs vital nutrients like glucose, amino acids, salts, urea and water.

- **Note-Vital functions of kidneys-**

(a) Filtration & removal of Nitrogenous wastes

(b) Reabsorption of vital nutrients

Ureters-Transport the urine formed in the kidneys to the urinary bladder.

Urinary bladder-Muscular bag like structure to store urine.

Urethra- Helps in removal of urine when the Urinary bladder is full.

Artificial kidney-Principle: Dialysis

- **Excretion in Plants-**

Gaseous wastes-  $\text{CO}_2$  in respiration &  $\text{O}_2$  in photosynthesis are removed by the process of diffusion.

Excess water- is removed by transpiration.

Other wastes-

(i) Stored in cellular vacuoles or in leaves, which fall off or as gums, resins, etc. in old xylem.

(ii) Excreted in soil.

- **Important Diagrams-**

1. Open & close stomata
2. Steps of nutrition in Amoeba
3. Alimentary canal of human beings/ Digestive system of human beings
4. Respiratory system of human beings
5. Structure of heart.
6. Excretory system of human beings
7. Structure of nephron.



• **Important Activities-**

1. To prove that chlorophyll is necessary for photosynthesis.
2. To prove that Carbon dioxide is necessary for photosynthesis.
3. To prove that light is necessary for photosynthesis.
4. To prove that product of fermentation is Carbon dioxide.
5. To prove that leaves lose water by transpiration.
6. To study the action of salivary amylase on starch.
7. To demonstrate that Carbon dioxide is present in exhaled air.
8. To demonstrate the process of transpiration in plants.

**One Mark Questions (One word or one sentence)**

**1. Why are life processes needed?**

- A. Life processes are needed to maintain functions of living organisms.

**2. Which processes are called life processes?**

- A. The processes which together perform the maintenance job in living organisms are called life processes.

**3. Why does a single-celled organism not need specific organs for taking in food, exchange of gases or removal of wastes?**

- A. A single-celled organisms does not need specific organs for taking in food, exchange of gases or removal of wastes because the entire surface of the organism is in contact with the environment.

The need for specific organs to carry out life processes arise in complex multicellular organisms. In them all the body cells are not in direct contact with the environment.

**4. Write the two forms of metabolism?**

- A. a) Catabolism (b) Anabolism.

**5. Give two examples of plant parasite?**

- A. Cuscuta and Loranthus.

**6. Give two examples of saprophytes?**

- A. Rhizopus and Mushroom.

**7. Name the element that is essential in synthesis of proteins other than carbon, hydrogen and oxygen. How do plants obtain this element?**

- A. (i) Nitrogen.

- (ii) Nitrogen is obtained by plants to take up it in the form of inorganic nitrates or nitrites. It may be taken up by plants as organic compounds which have been prepared by bacteria from atmosphere.

### Two Marks Questions (30 words)

#### 1. Differentiate between autotroph and heterotrophy?

A.

Autotroph	Heterotroph
1. They can make their own food from raw materials in presence of sunlight. 2. They take in simple inorganic substances and change it into complex organic food. E.g., All green plants.	1. They cannot make their own food. 2. They take in complex food and break it into simple food. E.g., All animals and fungi and non-green plants.

#### 2. List the events that occur during photosynthesis?

A. During photosynthesis the following events occur:

- (i) Absorption of light energy by the chlorophyll pigment.
- (ii) Conversion of light energy into chemical energy.
- (iii) Splitting of water molecules into hydrogen and oxygen.
- (iv) Reduction of carbon dioxide into carbohydrates.

#### 3. Define ingestion, digestion, absorption and egestion?

A. **Ingestion:** The process of taking in of food is called ingestion.

**Digestion:** The process of breaking down of food mechanically and chemically into simpler and absorbable form is called digestion.

**Absorption:** The process of absorption of useful part of the digested food is called absorption.

**Egestion:** Removal of throwing out of the undigested food from the body is called egestion.

#### 4. Where are salivary glands located in human being? At are the function of saliva?

A. Salivary glands secrete their secretion called saliva in the mouth cavity. There are three pairs of salivary glands located in the mouth.

**Functions of Saliva:**

- (i) Saliva moisten the food thus help in chewing of food by the teeth.
- (ii) Human saliva contains an enzyme called salivary amylase that converts starch into maltose a (sugar)



**5. How is respiration different from breathing?**

A.

<b>Breathing</b>	<b>Respiration</b>
<ol style="list-style-type: none"> <li>1. It is a mechanical process.</li> <li>2. It occurs only in some animals which possess breathing organs like tracheae gills and lungs.</li> <li>3. During breathing atmospheric air is taken into the body to obtain O<sub>2</sub> and the CO<sub>2</sub> is given out of the body.</li> <li>4. it is known as external respiration.</li> </ol>	<ol style="list-style-type: none"> <li>1. It is a bio-chemical process.</li> <li>2. It occurs in all animals and plants cells in the mitochondria.</li> <li>3. In the process of respiration the food (mainly glucose) is oxidised in the cells producing CO<sub>2</sub>, water and energy.</li> <li>4. It is referred to, as tissue or cellular or internal respiration.</li> </ol>

**6. Differentiate between Inhalation and Exhalation?**

A.

<b>Inhalation</b>	<b>Exhalation</b>
<ol style="list-style-type: none"> <li>1. It is the process of taking air into the lungs.</li> <li>2. The external intercostal muscles contract, raising the ribs forward and upwards.</li> <li>3. The muscles of the diaphragm contract and make it straight.</li> <li>4. The abdominal muscle relax and allow compression of the abdominal organs.</li> </ol>	<ol style="list-style-type: none"> <li>1. It is the process of giving out the air from the lungs.</li> <li>2. The internal intercostal muscles contract and the ribs take their normal position.</li> <li>3. The muscles of the diaphragm relax and it comes to its original position.</li> <li>4. The abdominal muscles contract and the diaphragm pushes upward.</li> </ol>

**7. What are the functions of nostrils?**

**A. Functions of Nostrils:**

- (i) The air passing through nostrils is filtered by the fine hairs that line the passage. So that the air going into the lungs is free from dust and other impurities.
- (ii) (a) The nostrils passage is lined with mucus glands. The mucus glands secrete mucus which helps in removing dust and impurities present in the air.  
(b) Mucus also moisten the air to reduce friction.
- (iii) The nostrils also help in regulating the temperature of the air entering from the environment into the body.

**8. Mention the differences between Blood and Lymph?**

**A.**

<b>Blood</b>	<b>Lymph</b>
1. Blood is purple red due to presence of red blood cells.	1. The lymph is light yellow because it does not have hemoglobin.
2. Blood flows in blood vessels.	2. The lymph bathes the body tissues.
3. Blood flows from heart to body organs and returns to heart.	3. The lymph flows from the tissues to the heart.
4. Blood contains RBC, WBC, platelets and plasma.	4. Lymph does not contain RBC.

**9. Write the differences between veins and artery?**

**A.**

<b>Artery</b>	<b>Vein.</b>
1. Arteries carry blood from the heart to the body organs.	1. Veins carry blood from body organs to the heart.
2. Arteries have thick walls.	2. Veins have comparatively thin walls.
3. Blood flows with a force in the arteries.	3. Blood flow is very slow and without any force.
4. There are no valves in the arteries.	4. Veins have valves which allow the flow of blood in one direction only and check and back flow.

**10. Name the two kinds of cells of xylem?**

**A.** The two kinds of cells of xylem are:

- (i) Tracheids      (ii) Vessels.

**11. What is diffusion? Name the animals in which excretion takes place by diffusion?**

A. Diffusion is the movement of molecules from a region of high concentration to lower concentration leading finally to the uniform concentration everywhere. In some unicellular organisms like Chlamydomonas-(algae), Amoeba and Paramecium excretion takes place by diffusion. In these unicellular organisms, elimination of metabolic wastes takes place by diffusion from the body surface into the surrounding water.

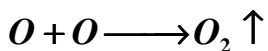
**Three Marks Questions (50 words)**

**1. State the part played by each of the following in photosynthesis:**

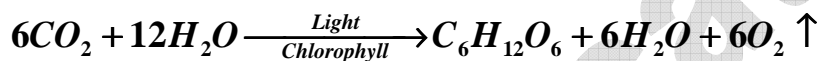
**(a) Water (b) Chlorophyll (c) Stomata**

A. Part played in photosynthesis by

**(a) Water:** Water ( $H_2O$ ) undergo photosynthesis in light reaction.



As a result ATP and NADPH are formed which are used in formation of carbohydrates from  $CO_2$ .



Water also releases  $O_2$  which is given out during photosynthesis.

**(b) Chlorophyll:** It traps solar (light) energy and utilises it in fixing oxides of carbon ( $CO_2$ ) and hydrogen ( $H_2O$ ) as carbohydrates.

**(c) Stomata:** They help in exchange of gases. Carbon dioxide needed in photosynthesis is taken in through stomata. Oxygen produced in photosynthesis is given out through stomata.

**2. Write major functions of stomata present in the epidermis?**

A. Major functions of stomata

(i) Stomata are essential for exchange of gases between the plant and the atmosphere oxygen and carbon dioxide.

(ii) Normally, plants eliminate excessive water in the form of vapour through stomatal openings. The process is called transpiration.

(ii) When there is shortage of water, stomatal openings get closed. Thus, reduce water lose. Stomatal openings also close down during night. Thus, stomata regulate water lose from plants i.e., they regulate transpiration.

**3. Liver does not secrete any digestive enzyme yet it is known as largest digestive gland. Comment?**

A. Liver is the largest gland present in our body. It does not secrete any digestive enzyme. It secretes bile juice which is very important for the digestion of food. Bile juice does two functions.

- (i) Bile juice emulsifies fats and facilitates digestion of fats.
- (ii) It also helps to make the enzyme (semi-solid food coming from stomach into intestine) alkaline. In alkaline medium pancreatic and intestinal enzymes digest the food.

If liver does not secrete the bile juice, the digestion of food will not take place. That is why liver is called as largest digestive gland.

**4. What are the functions of stomach?**

A. Functions of stomach

- (i) The muscular walls of the stomach help in mixing the food thoroughly with more digestive juices.
- (ii) The contraction muscular walls also cause to break down comparative large food pieces into pulp to expose larger surface of food for the action of gastric enzymes.
- (iii) The exit of food from the stomach is regulated by a sphincter muscle which releases it in a small amounts into the small intestine.
- (iv) Gastric glands present in the wall of the stomach release hydrochloric acid, pepsin enzyme and mucus.
  - (a) Hydrochloric acid kills bacteria and also makes the medium acidic for the action of pepsin enzyme.
  - (b) Pepsin enzyme help in digesting proteins.
  - (c) Mucous protects the inner lining of the stomach from the action of the HCl acid under normal conditions.

**5. Point out the differences between diffusion and osmosis?**

A.

<b>Diffusion</b>	<b>Osmosis</b>
1. It is the movement of particles from the region of higher concentration to low concentration through the pores of medium.	1. It is a special form of diffusion where water molecules move from a weaker solution to a stronger solution through semi-permeable membrane.

<ol style="list-style-type: none"><li>2. It is rapid in gases, less in liquid and minimum in solids.</li><li>3. The rate of diffusion depends upon the intensity of gradient.</li></ol> <p><b>Examples:</b></p> <ol style="list-style-type: none"><li>1. Exchange of <math>O_2</math> and <math>CO_2</math> in plants.</li><li>2. Dispersion of <math>CuSO_4</math> and <math>KMnO_4</math> crystal in water.</li></ol>	<ol style="list-style-type: none"><li>2. It is only concerned to liquids.</li><li>3. Its rate does not depend upon the gradient.</li></ol> <p><b>Examples:</b></p> <ol style="list-style-type: none"><li>1. Absorption of water and mineral solution from the soil by the root hairs.</li></ol>
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## Five Marks Questions (70 words)

### 1. How will you prove that chlorophyll is essential for photosynthesis?

A. The following activity can prove that chlorophyll is essential for photosynthesis.

Activity:

1. Take a potted plant with variegated leaves (leaves partly green and partly non-green), for example colens, croton, money plant.
2. Keep the plant in a dark place for 3 days. So that all the starch of leaves gets used up.
3. Place the plant for 6 hours in sunlight.
4. Pluck a leaf from the plant. Mark the green areas of the leaf and trace them on a sheet of paper.
5. Boil the leaf first in water for a few minutes and then replace the leaf in a beaker containing alcohol. Place this beaker in a bigger beaker containing enough water. Heat till the alcohol begins to boil on a burner.  
(Note: If you use a hot plate to heat the leaf in alcohol, there is no need to use water bath. Boil the leaf directly in alcohol on a hot plate. In case, you use burner, vapour of alcohol can catch fire from flame)
6. Boiling of the leaf in alcohol decolourizes the leaf.
7. Place decolourized leaf in a petridish and pour iodine solution on it.

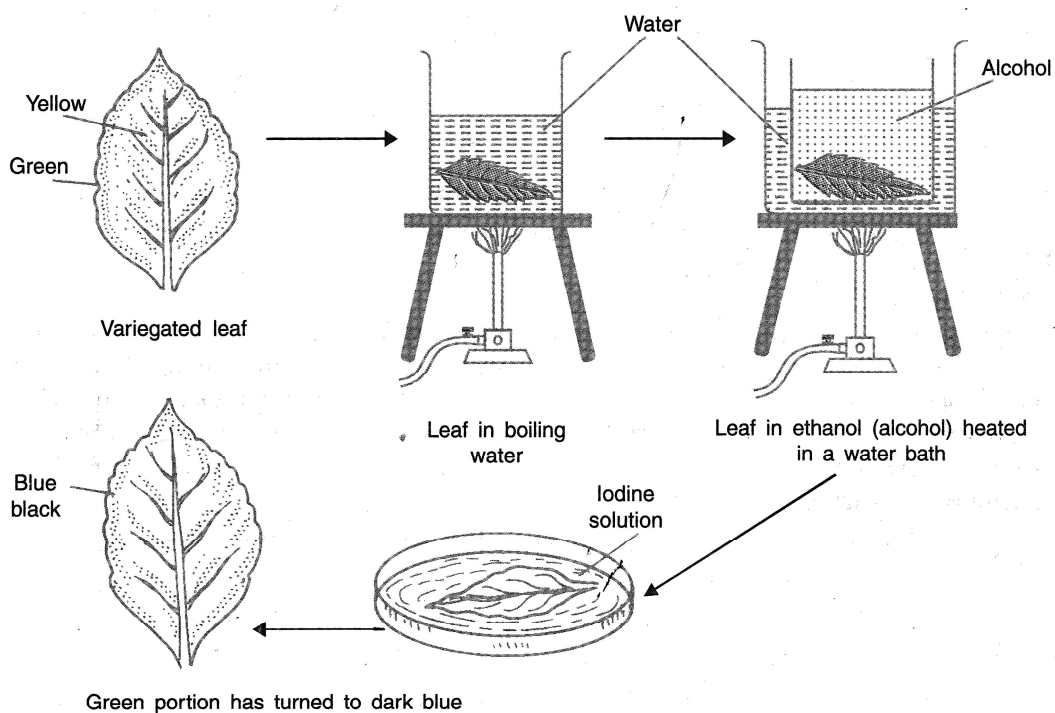


Fig. 6.3. To show that chlorophyll is necessary for photosynthesis



- Take out the leaf and rinse off the iodine solution. Observe the colour of the leaf and compare this with the tracing of the leaf done in the beginning iodine solution on it. The portion of the leaf which was previously green has turned into dark blue colour while the non-green portion turns yellow (colour of iodine solution). The dark blue colour indicates the presence of starch (starch with iodine turns blue black) while the yellow portion does not show any starch.

This proves that only chlorophyll containing cells synthesize starch. Hence chlorophyll is necessary for photosynthesis.

## 2. Draw labelled diagram of digestive system of human alimentary canal?

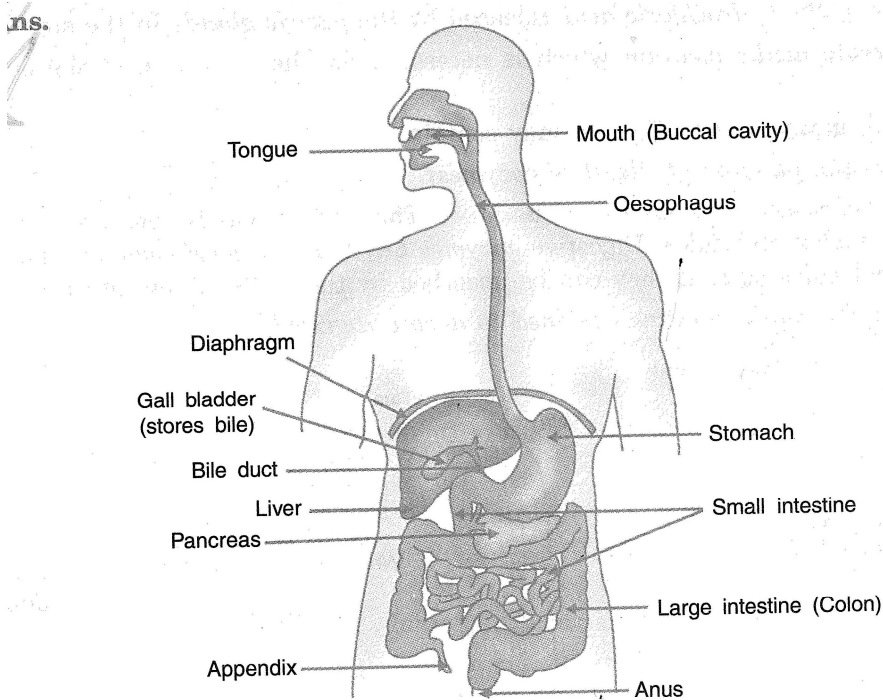


Fig. 6.12. Alimentary canal of a human body

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