Chapter 1. Nutrition in Plants

Very Short Q&A:

Q1: Name some components of food.

Ans: Carbohydrates, proteins, fats, vitamins and minerals.

Q2: Define nutrients.

Ans: Carbohydrates, proteins, fats, vitamins and minerals are essential components of food, these components are called nutrients.

Q3: Give an example of autotrophs.

Ans: All green plants.

Q4: Give an example of heterotrophs.

Ans: Animals and human beings.

Q5: Plants prepare their food by using raw materials present in _____.

Ans: Surrounding

Q6: What do you mean by nutrition?

Ans: Nutrition is the mode of taking food by an organism and its utilisation by body.

Q7: Name the food factories of plants.

Ans: Leaves

Q8: Name the tiny pores present on the surface of leaves.

Ans: Stomata

Q9: Name the green pigment present in leaves.

Ans: Chlorophyll

Q10: _____ helps leaves to capture the energy of sunlight

Ans: Chlorophyll

Q11: Why photosynthesis is named so?

Ans: Because the synthesis of food occurs in presence of sunlight.

Q12: Sun is the ultimate source of energy for all living organisms. True / False

Ans: True

Q13: Where does the nucleus of cell lies?

Ans: In the centre of cell.

Q14: State the equation for the process of photosynthesis.

Ans: Carbon dioxide + water ——————> carbohydrate + Oxygen

Q15: The nucleus in a cell is surrounded by a jelly like substance called _____.

Ans: cytoplasm

Q16: Why algae present in stagnant water bodies are green in colour?

Ans: because they contain green colour pigment chlorophyll

Q17: Name a component of food other than carbohydrate synthesise by plants.

Ans: proteins and fats

Q18: Name some insectivorous plants.

Ans: Pitcher plants and Venus flytraps are insectivorous plants

Q19: In saprotrophic mode of nutrition organisms take in nutrients from

a. Oxygen mask
b. Water mask
c. Pollution mask
d. None of these

Ans: C. Both a and b

Q20: During photosynthesis plants take in _____ and releases _____.

Ans: Carbon dioxide and oxygen

Q21: Some organisms live together and share shelter and nutrients, this type of relationship is called

Ans: Symbiotic relationship.

Q22: Lichen is a symbiotic association between _____ and fungi.

Ans: algae and fungi.

Q23: Name the edible fungi.

Ans: Mushroom

Q24: Name the organism responsible for converting atmospheric nitrogen into soluble forms.

Ans: Rhizobium bacteria

Q25: Where we can see Rhizobium bacteria?

a. Dead matter
b. Decaying matter
c. Both a and b
d. None of these

Ans: In root nodules of gram, peas, moong, beans and other leguminous plants.

Q26: Give an example of parasites.

Ans: Cuscuta plants

Q27: Give an example of saprotrophs.

Ans: Fungi

Q28: Amarbel is an example of

a. Parasite

b. Host
c. Autotrophs
d. Saprotrophs

Ans: Parasite

Q29: Carbon dioxide is released during photosynthesis. True/ False.

Ans: False

Q30: During photosynthesis solar energy is converted into chemical energy. True/ False.

Ans: True

Q31: The product of photosynthesis is

a. Carbohydrate
b. Protein
c. Fats
d. All of these

Ans: All of these

Q32: Name a plant that has both autotrophic and heterotrophic mode of nutrition.

Ans: Insectivorous plants

Q33: Name a parasitic plant with yellow, slender and tubular type of stem.

Ans: Amarbel

Q34: Name the pores present in leaves through which exchange of gas takes place.

Ans: Stomata

Q35: Animals are autotrophs. True/ False.

Ans: False

Short Q&A:

Q1: Differentiate between nutrients and nutrition.

Ans: Carbohydrates, proteins, fats, vitamins and minerals are essential components of food, these components are called nutrients, but Nutrition is the mode of taking food by an organism and its utilisation by the body.

Q2: Differentiate between autotrophs and heterotrophs.

Ans: Green plants are called autotrophs as they prepare their own food from simple substances, but animals and most other organisms are called heterotrophs as they take in ready-made food prepared by the plants.

Q3: Explain the food factory of plants.

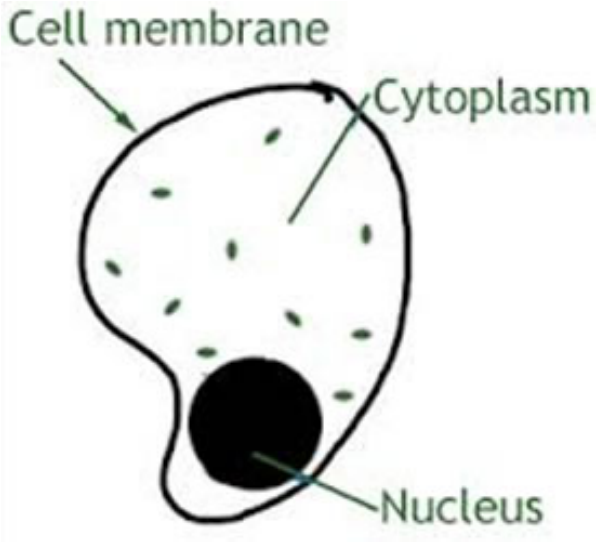
Ans: Leaves are called food factory of plants, as the synthesis of food takes place in leaves of plants. Water and minerals present in soil are absorbed by roots and transported to leaves via stem. Carbon dioxide from air is taken in through tiny pores on surface of leaves called stomata.

Q4: How do plants obtain raw materials from the surrounding?

Ans: Refer section B answer no 3.

Q5: Draw a labelled diagram of cell showing nucleus and cytoplasm.

Ans:



Q6: How water and minerals are transported to leaves from roots?

Ans: There are vessels inside a plant which run like pipes throughout the root, stem branches and leaves, by going through these vessels water and minerals are transported to leaves from roots.

Q7: Define chlorophyll.

Ans: Chlorophyll is the green colour pigment which helps leaves to capture energy from sunlight to carry out the food making process of plants by the leaves.

Q8: Explain the role of chlorophyll in the process of photosynthesis.

Ans: Chlorophyll is the green colour pigment which helps leaves to capture energy from sunlight to carry out the food making process of plants by the leaves. It is the green photosynthesis pigment which provides energy necessary for photosynthesis.

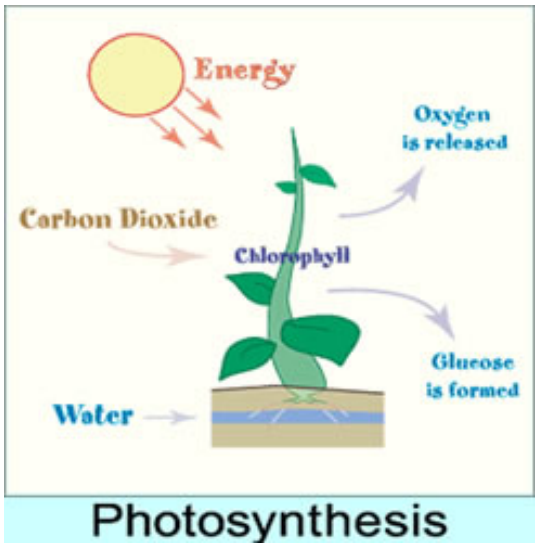
Q9: Define photosynthesis along with the equation for the same.

Ans: Photosynthesis is the food manufacturing process of green plants containing chlorophyll, in presence of sunlight, with the help of carbon dioxide and water to synthesise carbohydrates. The equation for the process is as follow:

Carbon dioxide + water ——————> carbohydrate + Oxygen

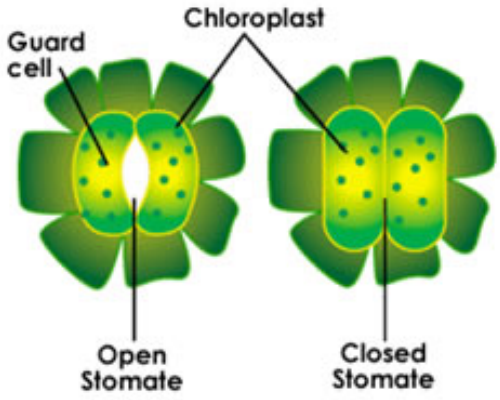
Q10: Draw a labelled diagram showing the process of photosynthesis.

Ans:



Q11: Draw diagram of a leaf showing chlorophyll, and stomata in it.

Ans:

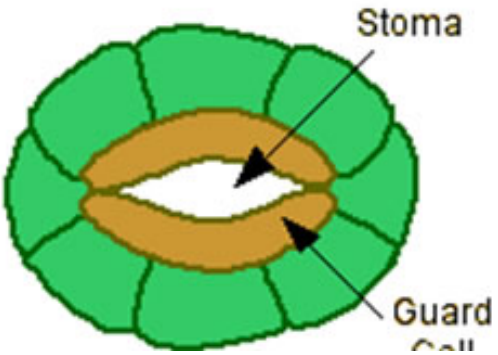


Q12: What is the function of stomata in leaf of a plant?

Ans: Stomata are the tiny pores present on the surface of leaves which helps in exchange of gases, the pores in stomata are surrounded by guard cells.

Q13: Draw a diagram of stomata showing guard cells in it.

Ans:



Q14: How would you test the presence of starch in leaves?

Ans: Take a potted plant which has been exposed to sunlight and pluck a leave from the plant. Then boil it in water for 5 min to soften it and then place the leave in a test tube containing alcohol ,place the test tube in a beaker containing water gently heat the beaker till the alcohol dissolves in the chlorophyll and the leaves loses its green colour. Now wash the leaf with water and then place it on a plate and add a few drops of iodine solution the parts that turn blue black show.

Q15: How humans and animals are directly or indirectly dependent on plants?

Ans: All living organisms require food. Plants can make their food themselves by organic substances but animals including humans cannot make their food themselves. They get it from plants or animals that eat plants. Thus, humans and animals are directly or indirectly dependent on plants.

Q16: Why do we need food?

Ans: Living organisms need food to build their bodies, to grow, to repair damaged parts of their bodies and provide with energy to carry out life processes.

Q17: Whether food is made in all parts of a plant or only in certain parts? Explain.

Ans: Only certain parts of plant like leaves have green pigment called chlorophyll. So Leaves are called the food factories of plants. Besides leaves, photosynthesis also takes place in other green parts of the plant like in green stems and green branches. The desert plants have scale or spine like leaves to reduce loss of water by transpiration. These plants have green stems which carry out the process of photosynthesis.

Q18: What is cell?

Ans: The body of living organisms are made of tiny units called cells, therefore Cell are called the building blocks of living organism. Cells can be seen only under the microscope. Some organisms are made of single cell they are called Unicellular. Ex. Amoeba, Paramecium etc. While others are made of multicells and are called multicellular. Ex. man, tree etc.

Q19: What is the cell membrane?

Ans: The cell is enclosed by a thin outer boundary, called the cell membrane Many cells have a distinct, centrally located spherical structure called the nucleus. The nucleus is surrounded by a jelly-like substance called cytoplasm.

Q20: What are the main requirements of photosynthesis?

Ans: Chlorophyll, sunlight, carbon dioxide and water are necessary to carry out the process of Photosynthesis.

Q21: Why colours of algae are green?

Ans: Algae contain chlorophyll which gives them green colour and because of chlorophyll it can also prepare their own food by photosynthesis.

Q22: What are the main components presents in carbohydrates?

Ans: The main components presents in carbohydrates are carbon, hydrogen and oxygen.

Q23: From where do the plants obtain nitrogen?

Ans: Soil has certain bacteria that convert gaseous nitrogen into a usable form and release it into the soil. These soluble forms are absorbed by the plants along with water. By adding fertilizers rich in nitrogen to the soil farmers also made nitrogen available for plants.

Q24: What do you mean by parasitic nutrition?

Ans: The mode of by which parasitic organism get and synthesize their food is called parasitic nutrition. Example Cucuta. It does not have chlorophyll; it takes readymade food from the plant on which it is climbing. The plant on which it climbs is called a host. In a parasitic nutrition only one of the partners is benefited and other is not.

Q25: Define insectivorous plants along with examples.

Ans: There are few plants which can trap insects and digest them. Such plants may be green or of some other colour. Such insect-eating plants are called insectivorous plants. Example: Venus Flytrap and Pitcher plant.

Q26: What is saprotrophic mode of nutrition?

Ans: This mode of nutrition in which organisms take in nutrients in solution form from dead and decaying matter is called saprotrophic nutrition. Plants which use saprotrophic mode of nutrition are called saprotrophs. Example Fungi that secrete digestive juices on the dead and decaying matter and convert it into a solution. Then they absorb the nutrients from it.

Q27: Explain the mode of nutrition in fungi?

Ans: Refer section B answer no 26.

Q28: What do you understand by symbiotic relationship present in some organism?

Ans: Some organisms live together and share shelter and nutrients. This is called symbiotic relationship. E.g. an alga, and a fungus live together fungus provides shelter, water and minerals to the alga and, in return, the alga provides food which it prepares by photosynthesis. In this kind of association both partners are benefited.

Q29: How nutrients are replenished in soil?

Ans: Nutrients are replenished in soil by following ways:

- By spreading manure or fertilizers that contain nutrients such as nitrogen in the fields
- By the bacterium Rhizobium that is commonly present in rot nodules of leguminous plant that can take atmospheric nitrogen and convert it into a soluble form like nitrates.

Q30: What do you mean by Symbiosis?

Ans: Symbiosis is the type of nutrition in which two different kinds of organisms depend on each other for their nutrition. In this both the organisms are benefitted by each other e.g., lichen is a symbiotic association between algae and fungi. In this one alga and one fungus live together and remain in symbiotic relationship.

Q31: What is the role of leguminous plants in replenishing soil fertility?

Ans: Rhizobium is a type of bacteria that cannot make its own food and lives in the roots of gram, peas, moong beans and other legumes, it converts atmospheric nitrogen into useable form which increases the fertility of soil, and legumes provide food and shelter to the bacteria.

Q32: Distinguish between a parasite and a saprotrophs.

Ans:

Parasites	Saprotrophs
1. A parasite takes readymade food from the organism on which it feeds. 2. They feed on a living organism. 3. The organism on which it feeds is called host. 4. It deprives the host of valuable nutrients	a. They secrete the digestive juices on the matter they live and convert it into a solution and then absorb it. b. They feed on dead and decaying organism . c. They do not feed on a living organism. d. There is no host at all.

Q33: Explain how Pitcher plants get their nutrition?

Ans: When an insect lands in the pitcher, the lid closes and the trapped insect gets entangled into the hair. The insect is digested by the digestive juices secreted in the pitcher.

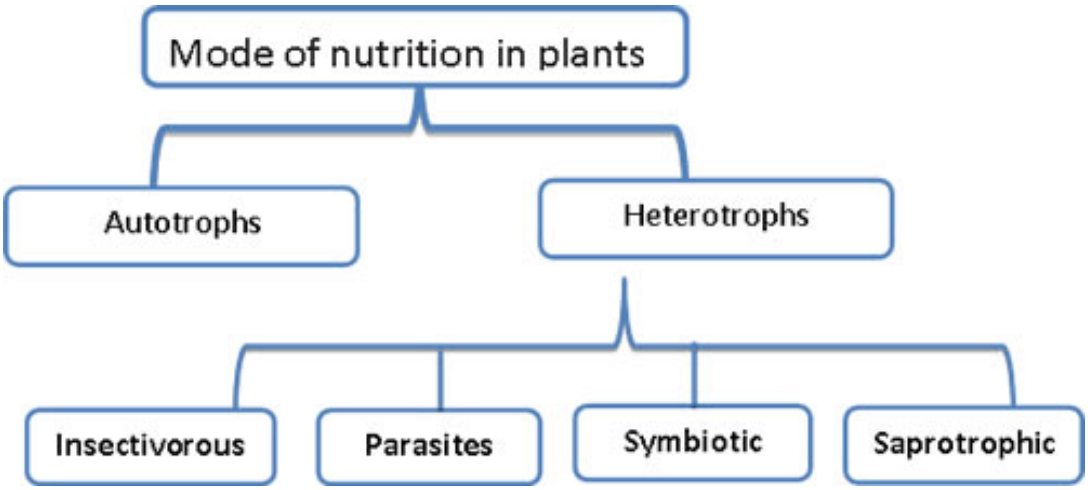
Long Q&A:

Q1: Sun is called the ultimate source of energy for all living organisms. Comments.

Ans: The solar energy is very important to carry out the process of photosynthesis, it is captured by the leaves and stored in the plant in the form of food. And this in turn use by other organism to get food to obtain energy Thus, we say that sun is the ultimate source of energy for all living organisms.

Q2: Explain the two mode of nutrition in plants.

Ans:



For details refer Section B answer no 2, 3, 9,24, 26 and 28.