D. Long- Answer Questions:

1. Differentiate between autotrophs and heterotrophs, giving two examples of each.

Ans:

Autotrophs	Heterotrophs
The green plants which produce food on their own are called autotrophs	Animals and non-green plants such as fungi which cannot produce their own food and depend directly or indirectly on green plants for their nutrition are called heterotrophs.
They contain chloroplasts in their cells Examples: Grass, Maize	They do not contain chloroplasts in their cells. Examples: Humans, Dodder

2. How will you test a leaf for starch? Mention any precautions you will take.

Ans:

1. Take a leaf from a plant which has been well exposed to sunlight.
2. Boil the leaf for five minutes till it gets softened.
3. Place the leaf in a test tube with alcohol. Place the test tube in a beaker of water.
4. Now warm the water gently until the alcohol begins to boil.
5. The leaf will lose its colour as alcohol is dissolving the chlorophyll.
6. Drop iodine solution on the leaf.
7. If leaf shows blue-black colour after removing iodine using water, shows the presence of starch in leaf.

Precaution:

1. The water in the beaker should not boil.
2. Wash the leaf in warm water to remove the alcohol.

3. How do plants get nitrogen to synthesize proteins?

Ans: Though air contains large amounts of nitrogen, plants cannot absorb this nitrogen directly. They get nitrogen in two ways.

1. Soil contains certain bacteria called Rhizobium that can convert atmospheric nitrogen into water- soluble compounds. Plants absorb these compounds along with water to get nitrogen.
2. Farmers add fertilizers rich in nitrogen to the soil. These are absorbed by plants.

4. All animals – whether herbivores, carnivores or omnivores – depend on plants for their food. Discuss.

Ans:

Herbivorous animals depend directly on plants for their nutrition.

Carnivores depend on herbivores which in turn depend on plants for their food.

Omnivores depend on plants for their food either directly or indirectly.

Plants can prepare their own food through the process of photosynthesis, but these animals depend on plants for their food because they can't produce their own food.

5. Explain the following with the help of an example for each:

a. **Parasitic Nutrition**: It is a heterotrophic nutrition in which organism called as parasite live on the host body or inside the body and derive its nutrition from the host.

EX: Some non-green plants like Dodder sucks food from another plant using root-like structure.

Some green plants like mistletoe grow on trees such as mango and take in water and minerals from the host plants and synthesize their food.

b. **Symbiosis:** It is the mode of nutrition where two different organisms work together for their mutual benefit.

Ex: Alga is an autotroph and fungus, which is a saprophyte, live together in lichen. The fungus supplies water and minerals to the cells of the alga, while the alga supplies food to the fungus.

c. **Saprotrophic nutrition**: A type of nutrition where non-green plants living on dead and decaying plants and animals for obtaining food from them is called saprotrophic nutrition.

Ex: Mushrooms and other fungi secrete digestive juices on the dead and decaying matter which converts solid matter into a liquid. They then absorb the nutrients from this liquid.

6. why are manures and fertilizers added to the soil in a farm?

Ans:

Plants absorb nutrients from the soil. Therefore, the amount of nutrients in the soil goes on decreasing. To replenish the nutrients lost, farmers add fertilizers and manures as they contain plant nutrients such as potassium, nitrogen and phosphorous.

7. Distinguish between parasites and partial parasites in plants, giving one example of each.

Ans:

Parasites	Partial parasites
Parasites are the organisms that live in or on other living organisms and derive their food from them.	Partial parasites are organisms that only take in water and minerals from the host plant.
Parasites fully depend on host for their food, water and minerals.	Partial parasites do photosynthesis with the help of host plant on which they grow
Example: Dodder	Example: Mistletoe