1. Why do organisms need to take food?

**Solution:**

All living organisms require food to survive as they help us in following ways:

i) Food gives us energy to perform different activities. Any activities such as playing, walking, running, studying require energy. Our body gets energy and nutrients for growth and development from various components such as proteins, carbohydrates, fats, vitamins and minerals present in the food.

2. Distinguish between a parasite and a saprotroph.

**Solution:**

<table>
<thead>
<tr>
<th><strong>Saprotroph</strong></th>
<th><strong>Parasite</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saprotroph are the organisms that obtain nutrients from the dead or the decaying organic matter.</td>
<td>Parasite are the organisms which grow on the body of other organisms and extract nutrients from them.</td>
</tr>
<tr>
<td>Saprotrophs digest the decaying matter and absorb nutrients from it.</td>
<td>Parasite absorbs prepared food from the host.</td>
</tr>
<tr>
<td>Example: Fungi and few bacteria</td>
<td>Example: Cuscuta and Orchids.</td>
</tr>
</tbody>
</table>

3. How would you test the presence of starch in leaves?

**Solution:**

The presence of starch in leaves can be detected through experiment:

i) Lets take two healthy green potted plants of same type.

ii) Place one potted plant in a dark room for a day or two so as to remove all the starch from its leaves.

iii) Place other plant in sunlight.

iv) Lets take one leaf from each of the potted plants, and put a few drops of iodine solution it them.

v) Now lets note down the change in the color of each of the two leaves.
Observation: We observed that there was blue-black color in the leaf of the plant kept in sunlight which indicated the presence of starch. There was no black-blue color in the leaf of the plant kept in dark room which indicated the absence of starch.

4. Give a brief description of the process of synthesis of food in green plants.

Solution:

The process of synthesis of food in green plants is through the process of photosynthesis. Photosynthesis is defined as a process by which the plant cells containing chlorophyll produce food in form of carbohydrates in the presence of sunlight by using water and carbon dioxide from air.
The sources of raw materials required for photosynthesis are:

a) Water is absorbed from the roots and transported to the leaves.

b) The carbon dioxide in the air enters the plants through tiny pores called stomata which are present on the leaves and is distributed to the cells containing chlorophyll.

c) Solar energy is required to split the water molecules into hydrogen and oxygen. This hydrogen now combines with carbon dioxide to produce food in plant in the form of carbohydrates.

Thus, photosynthesis can be represented by the following equation.

\[
\text{Photosynthesis Equation} \\
\begin{array}{|c|c|c|c|}
\hline
\text{Carbon dioxide} + \text{Water} & \text{SUNLIGHT} & \text{Sugar} + \text{Oxygen} \\
\hline
6\text{CO}_2 & 6\text{H}_2\text{O} & \text{C}_6\text{H}_{12}\text{O}_6 & 6\text{O}_2 \\
\hline
\end{array}
\]

5. Show with the help of a sketch that plants are the ultimate source of food.

Solution:

![Diagram showing photosynthesis process]
The leaves produce carbohydrates in the form of glucose represented by C₆H₁₂O₆.

6. Fill in the blanks:
   (a) Green plants are called ________________ since they synthesise their own food.
   (b) The food synthesised by the plants is stored as ________________.
   (c) In photosynthesis solar energy is captured by the pigment called ____________.
   (d) During photosynthesis plants take in ________________ and release ________________.

Solution:
   a) autotrophs.
   b) starch.
   c) chlorophyll
   d) carbon dioxide, oxygen

7. Name the following:
   (i) A parasitic plant with yellow, slender and tubular stem.
   (ii) A plant that has both autotrophic and heterotrophic mode of nutrition.
   (iii) The pores through which leaves exchange gases.

Solution:
   i) Cuscuta
   ii) Pitcher plant.
   iii) Stomata

8. Tick the correct answer:
   (a) Amarbel is an example of
      (i) autotroph
      (ii) parasite
      (iii) saprotroph
      (iv) host

       (b) The plant which traps and feeds on insects is
          (i) Cuscuta
(ii) China rose  
(iii) Pitcher plant  
(iv) Rose  

**Solution:**  
(a) Amarbel is an example of (ii) parasite.  
(b) The plant which traps and feeds on insects is (iii) pitcher plant  

9. Match the items given in column I with those in column II

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorophyll</td>
<td>Rhizobium</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Heterotrophs</td>
</tr>
<tr>
<td>Cuscuta</td>
<td>Pitcher plant</td>
</tr>
<tr>
<td>Animals</td>
<td>Leaf</td>
</tr>
<tr>
<td>Insects</td>
<td>Parasite</td>
</tr>
</tbody>
</table>

**Solution:**

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorophyll</td>
<td>Leaf</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Rhizobium</td>
</tr>
<tr>
<td>Cuscuta</td>
<td>Parasite</td>
</tr>
<tr>
<td>Animals</td>
<td>Heterotrophs</td>
</tr>
<tr>
<td>Insects</td>
<td>Pitcher plant</td>
</tr>
</tbody>
</table>

10. Mark 'T' if the statement is true and 'F' if it is false:  
(i) Carbon dioxide is released during photosynthesis. (T/F)  
(ii) Plants which synthesize their food themselves are called saprotrophs. (T/F)  
(iii) The product of photosynthesis is not a protein. (T/F)  
(iv) Solar energy is converted into chemical energy during photosynthesis. (T/F)  

**Solution:**  
(i) False  
(ii) False  
(iii) True  
(iv) True
11. Choose the correct option from the following:
   Which part of the plant takes in carbon dioxide from the air for photosynthesis?
   (i) Root hair
   (ii) Stomata
   (iii) Leaf veins
   (iv) Sepals
   **Solution:**
   ii) Stomata

12. Choose the correct option from the following:
   Plants take carbon dioxide from the atmosphere mainly through their:
   (i) roots
   (ii) stem
   (iii) flowers
   (iv) leaves
   **Solution:**
   iv) leaves

13. Why do farmers grow many fruits and vegetable crops inside large greenhouses? What are the advantages to the farmers?
   **Solutions:**
   Greenhouses help farmers grow many fruits and vegetable crops inside a large area. The conditions such as water, temperature, humidity, and moisture can be controlled. It helps farmers to grow healthy, good quality and better-producing plants.