NCERT QUESTIONS WITH SOLUTIONS

1. What are the differences between autotrophic nutrition and heterotrophic nutrition?

Ans.

	Autotrophic Nutrition	Heterotrophic Nutrition
(1)	The process through which organisms are able to manufacture their own organic food from inorganic substances.	The process in which the organisms derive their nutrition by taking readymade food from other dead or living plants and animals.
(2)	The raw materials are obtained from outside, in the form of carbon dioxide and water.	The survival of heterotrophs depends directly or indirectly on autotrophs.
(3)	Chlorophyll and sunlight are essential for photosynthesis.	Chlorophyll and sunlight are not required.
(4)	E.g., Green plants and some bacteria.	E.g., Animals, fungi and most of bacteria.

2. Where do plants get each of the raw materials required for photosynthesis?

Ans. (i) CO_2 - from air through stomata.

(ii) Water - from soil through roots.

3. What is the role of acid in our stomach?

Ans. Hydrochloric acid (HCl) is component of gastric juice. It has five functions –

(i) Softening of food.

(ii) Conversion of pepsinogen and prorennin into active forms of pepsin and rennin.

(iii) Acidify the food for proper action of pepsin.

(iv) Killing of microorganisms present in food.

(v) Stoppage of action of salivary amylase.

4. What is the function of digestive enzymes?

Ans. Digestive enzymes are hydrolytic enzymes which bring about hydrolytic splitting of complex organic substances into simple, soluble and absorbable substances, e.g.,

$$\text{Protein} \xrightarrow{\text{Enzyme}} \text{Peptides} \xrightarrow{\text{Enzyme}} \text{Amino acids}$$

5. How is small intestine designed to absorb digested food?

Ans. The inner lining of small intestine has millions of tiny fingers like projections called villi. Villi are transverse folds of intestine wall that not only increase surface area but also reach deep into the lumen of intestine for absorption of digested food. Villi possess blood capillaries and lacteals (lymph vessels) for quick transport of absorbed food.

6. The autotrophic mode of nutrition requires.

(a) Carbon dioxide and water

(b) Chlorophyll

(c) Sunlight

(d) All of the above

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7. How are fats digested in our bodies ? Where does this process take place?

Ans. Bile juice (from the liver) provides alkaline medium and emulsifies fats (conversion of larger fat globules into smaller fat droplets) but it is a non-enzymatic digestive juice so has no chemical action on food. Pancreatic juice (from the pancreas) contains pancreatic lipase enzyme which digests the emulsified fats into fatty acids and glycerol respectively.

$$\text{Fats} \xrightarrow{\text{Pancreatic lipase}} \text{Glycerol} + \text{Fatty acid}$$

This process takes place in small intestine.

8. What is the role of saliva in the digestion of food?

Ans. Salivary glands secrete saliva which contains a digestive enzyme called ptyalin or salivary amylase that breaks down starch.

$$\text{Starch} \xrightarrow[\text{Amylase}]{\text{Salivary}} \text{Maltose} + \text{Dextrin}$$

9. What are the necessary conditions for autotrophic nutrition and what are its by products?

Ans. Necessary conditions for autotrophic nutrition -

(1) Sunlight

(2) Photosynthetic pigment

(3) Carbon dioxide

(4) water

Its by products -

(1) Glucose

(2) Water

(3) Oxygen