**Digestion**

1. Define the following terms, giving an example of each.

|  |  |
| --- | --- |
| **Macromolecule** | “*large molecules made up of smaller organic molecules. There are four classes of macromolecules: carbohydrates, lipids, proteins and nucleic acids*” (1) |
| **Ingestion** |  |
| **Digestion** |  |
| **Absorption** |  |
| **Assimilation** |  |
| **Excretion** |  |
| **Egestion** |  |
| **Enzyme** |  |
| **Substrate** |  |
| **Optimum pH** |  |
| **Lipase** |  |
| **Protease** |  |
| **Amylase** |  |

1. Explain the need for digestion of large food molecules. (3 marks)
2. State the name of the type of reaction which *uses water* to break down a macromolecule.
3. Explain the need for enzymes in digestion of large food molecules. (5marks)
4. Review: Explain three factors that affect the rate of enzyme activity. (8 marks)
5. State the source, substrate, products, and optimum pH for the following types of enzymes:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Carbohydrase (amylase)** | **Lipase** | **Protease** |
| **Substrate** | Carbohydrates  | Lipids/ fats | Proteins |
| **Example of enzyme** |  |  | trypsin |
| **Product(s)** |  |  |  |
| **Source of enzyme** |  | pancreas |  |
| **Optimum pH** |  |  |  |

1. Label and state the function of the structures of the digestive system below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name** | **Function** |  |
| a. |  |  |
|  | Salivary glands | Secrete saliva, includes amylase to being digestion of starch.  |
| b.  |  |  |
| c.  |  |  |
| d.  |  |  |
| e.  |  |  |
| f.  |  |  |
| g.  | Small intestine (duodenum) |  |
| h.  |  |  |
| i. |  |  |
| j.  |  |  |
| k.  |  |  |

1. Outline the functions of the stomach and small intestine.

|  |  |
| --- | --- |
| **Stomach** |  |
| Acid  |  |
| Mechanical Digestion |  |
| Enzyme |  |

|  |  |
| --- | --- |
| **Small intestine** |  |
| Neutralisation of chyme |  |
| Enzymes |  |
| Duodenum |  |
| Ileum |  |
| Peristalsis |  |

1. The small intestine is made up of many finger-like projections called villi.
2. Distinguish between *absorption* and *assimilation*.
3. Label the structures of the villus below.
4. Explain how the structure of the villus is related to its role in absorption and transport of the products of digestion.



|  |  |
| --- | --- |
| **Visible structures** | **Function/ effect** |
|  | Villi | Increase surface area for absorption |
| a. |  |  |
| b. |  |  |
| **Not visible** (epithelial cells) | **Function/ effect** |
|  | Epithelium is one cell thick | Short diffusion path of molecules from lumen into blood |
| c. |  |  |
| d. |  |  |
|  | Protein channels in microvilli | Channels for:Pumps for: |

1. Undigested food molecules are passed to the large intestine.
2. Outline the functions of the large intestine.

|  |  |
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| **Large intestine** |  |
| Folds and Villi |  |
| Egestion |  |

1. Distinguish between egestion and excretion.
2. List four materials that are egested in feces.
3. Discuss the benefits of a high-fibre diet.