

Biology Solutions: sample page

Introduction

"The past is the key to the future".

The biology syllabus has remained basically unchanged since 1969. The last, and very minor revision of the syllabus was in 1976. The biology examination paper has not changed since its beginning in 1971. This year, 2000, will be the 30 th. Biology examination. After 30 years there is very little new to ask.

The biology 2000 exam **will** not present any problems if you understand and know the answers to the 'old exam papers'.

Initially you are offered 10 years of solutions. This **will** be built on gradually to extend your range of expertise increasing your competence in biology.

The solutions are only part of the service. Also provided are insights to reading, interpreting questions and answering technique. Poor answering skill is a major problem.

Frequently, answers contain a lot of impressive and detailed Information but score badly as it is not directly connected with the question. You must develop good answering technique so the time you have spent studying is fully rewarded.

A good way to acquire answering skill is by example. Follow the advice that accompanies each solution and apply the techniques to your written homework and class tests. (See advice on 'Success in Exams in the Study Skills Package).

Question + Solution

Outline how the structure of the alimentary canal of a mammal is adapted for carrying out its functions. 1987 35 marks Time: 15 minutes

K words: outline structure adapted functions

Outline: give a concise summary, give the principle points - minor details are not required.

Structure: the physical interconnecting parts or framework of the alimentary canal - not processes, not juices.

Adapted: is suited to, fitting it well - state how the named part is carries out its role successfully and or efficiently

Functions: its role or purpose or task or job or business.

Manor Answer Problems:

1. Students did not pay attention to the word 'structure'. Named digestive juices but not the glands or organs which secreted these juices. Named peristalsis but not the muscles in the wall of the alimentary canal.
2. Missed one major function - control the movement of food along the alimentary canal.
3. Answers were too long - went well beyond the 'budget time's their last question in the exam was left short of time.
4. The liver and pancreas are not part of the alimentary canal - they are accessory organs, outside the canal. They could be included if the question had stated the 'digestive system'.

Answer

The major functions of the alimentary canal are digestion, absorption and the control of movement of food along it. Digestion is the break-up of the complex food chemicals into simple soluble absorbable subunits. Chemical digestion is speeded up the physical digestion of the food into smaller pieces. The teeth in the mouth and the churning action of the muscles in the wall of the stomach are responsible for this breakup.

Chemical digestion is by enzymes. Salivary glands in the mouth secrete amylase, which digests starch to maltose. Gastric glands in the wall of the stomach secrete pepsin, which converts starch to peptones, peptides and amino acids. Cells in the lining of the small intestine secrete a full array of digestive enzymes e.g. amylase to digest starch to maltose, lipase to digest lipid to glycerol and fatty acids, erepsin to digest proteins to amino acids. Absorption is mostly carried out by the small intestine. The villi the microvilli and the long length greatly increase its surface area so absorption is very efficient. Absorption is fast because the only obstacle to the entry of nutrients is the thin outer membrane of lining cells. The dense network of blood capillaries and lymphatic capillaries in the villi efficiently transport away the absorbed nutrients.

Food is moved along the alimentary canal from oesophagus by peristalsis, the action of the circular and longitudinal muscle in the wall of the alimentary. Specialised sphincter muscles at opposite ends of the stomach control the movement of food in and out of the stomach.