

# **My Question Paper**

1. Digestion involves the breaking down of food by a combination of mechanical and chemical processes.

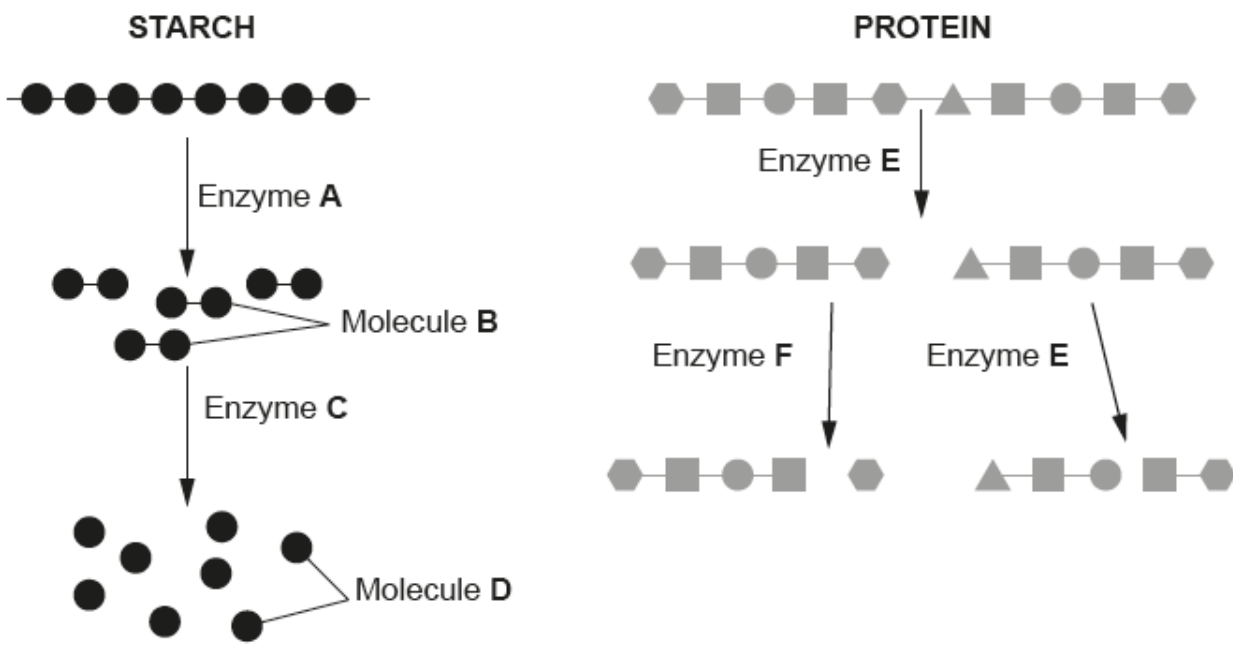
(a) Describe **two** ways in which food is broken down **mechanically** in the human alimentary canal.

[2]

I. ....  
 .....

II. ....  
 .....

(b) The diagrams show the digestion of a molecule of starch and a molecule of protein.



(i) In the digestion of starch name:

Enzymes **A** and **C**:

[1]

**A** ..... **C** .....

Molecules **B** and **D**:

[1]

**B** ..... **D** .....

(ii) Name **two** places in the alimentary canal where digestion caused by enzyme A takes place.

[1]

.....

(c) (i) In the digestion of protein name the **types** of enzyme shown at **E** and **F**.

[2]

E .....

F .....

(ii) Pepsin and trypsin are enzymes involved in the digestion of proteins. Both are secreted as inactive precursors. Complete the table to give the names of the substances responsible for their activation.

[2]

Enzyme	Name of precursor	Activated by
pepsin	pepsinogen	
trypsin	trypsinogen	

(iii) *Helicobacter pylori* is a species of bacterium that lives in the stomach and digests urea into alkaline ammonia. Ammonia is toxic to epithelial cells lining the gastric pits (glands).

Suggest how infection with *H.pylori* can lead to the development of a peptic ulcer.

[3]

.....

.....

.....

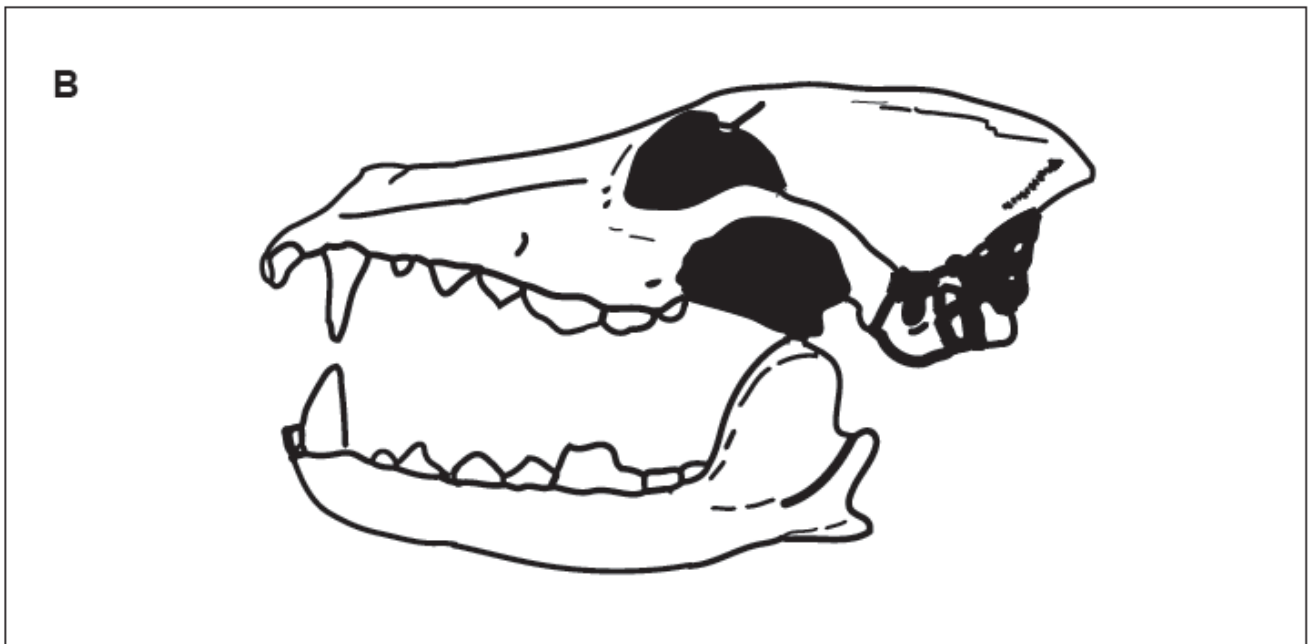
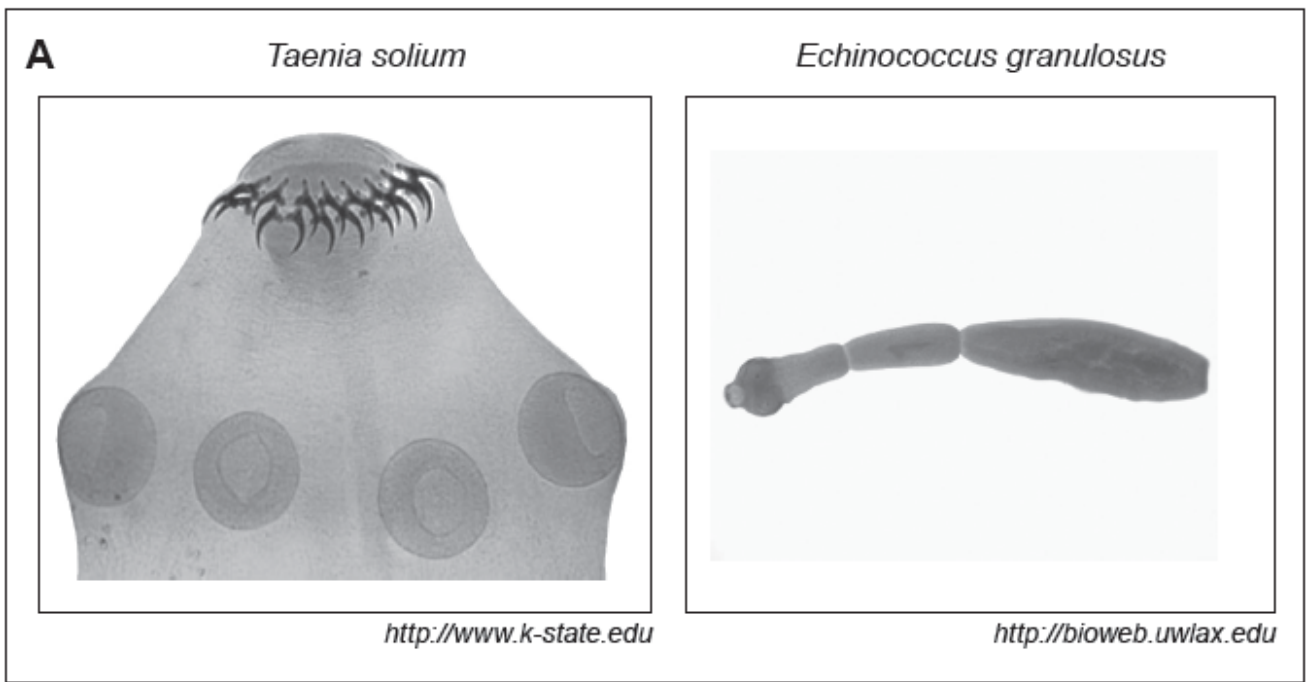
.....

.....

.....

.....

2. The diagrams below show the gut parasites *Taenia solium* and *Echinococcus granulosus* (A) and the skull of a mammal (B).



(a) (i) State what is meant by the term parasite.

[2]

.....

.....

.....

(ii) Using the photographs in A opposite, and your own knowledge, state three features of the gut parasites that are adaptations to their parasitic way of life.

[3]

.....

.....

.....

.....

.....

(iii) State the type of diet eaten by the animal shown in diagram B opposite. Give reasons for your answer.

[3]

.....

.....

.....

.....

.....

(b) Explain how a parasitic mode of nutrition is

(i) similar to the mode of nutrition used by the mammal in diagram B opposite,

[1]

.....

.....

(ii) different from the mode of nutrition used by the mammal in diagram B opposite.

[2]

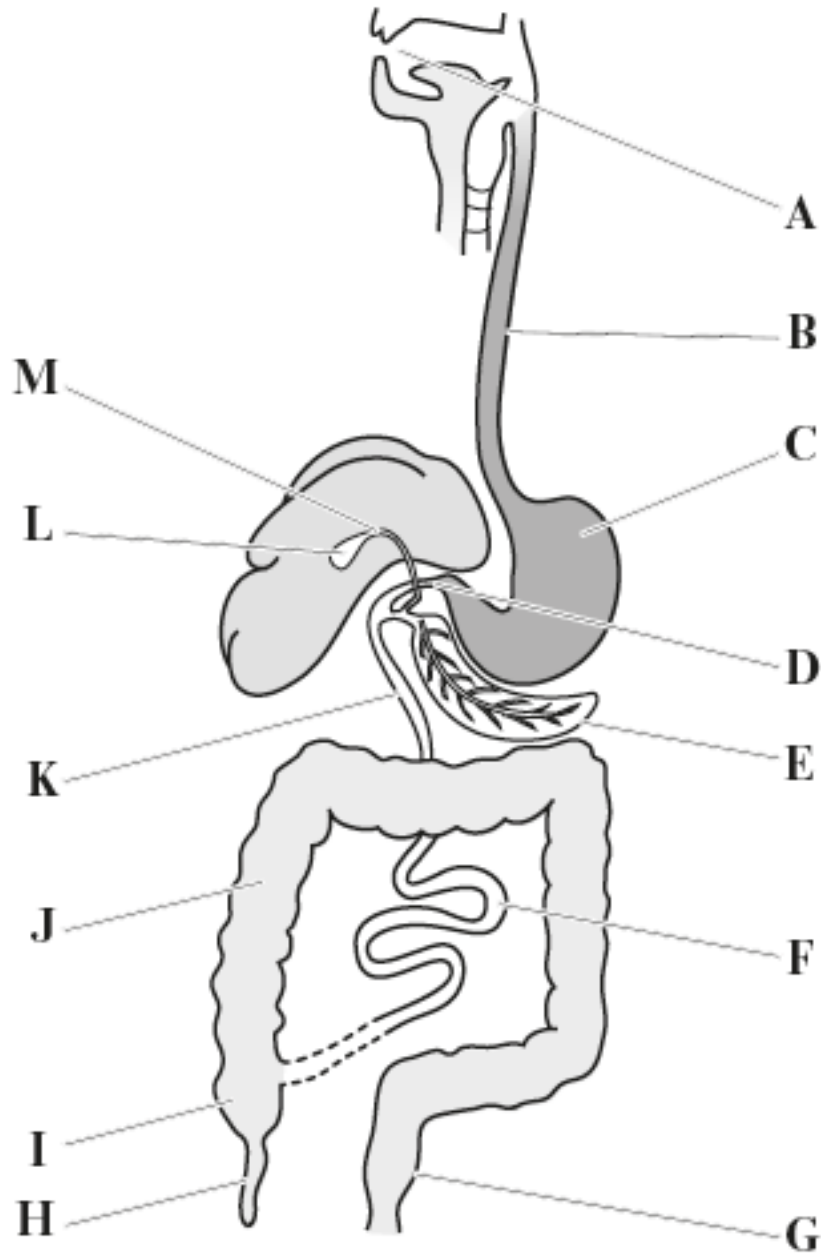
.....

.....

.....

.....

3. The diagram below shows the human alimentary canal.

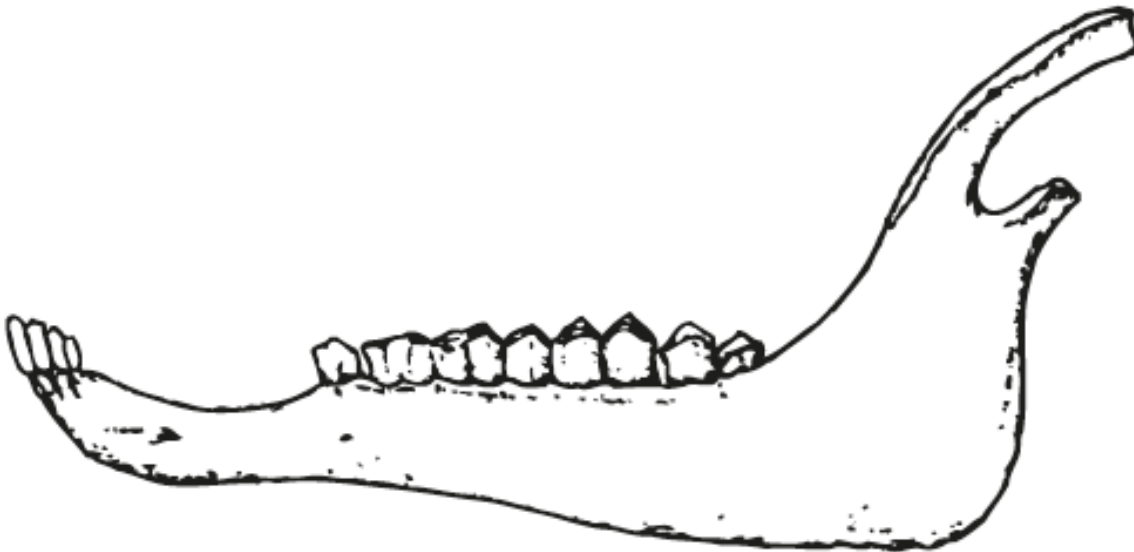


(a) Use a letter or letters from the diagram above to answer the following questions.

[6]

(i)	Which is the most acidic region of the alimentary canal?	
(ii)	In which <b>two</b> areas are proteins, carbohydrates and lipids digested together?	
(iii)	Where does the process of protein digestion begin?	
(iv)	Where is the main site of lipase production?	
(v)	The section of the alimentary canal where most absorption of digested products occurs.	
(vi)	The section of the alimentary canal whose main function is to absorb water.	

The diagram below shows the lower jaw of a mammal.



(b) Use the information in the diagram above to:

(i) State the name given to describe the mode of nutrition of this mammal.

[1]

(ii) Explain how the jaw and teeth shown above are adapted for this mode of nutrition.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

(iii) Explain how the **gut** of this mammal is adapted for digestion.

[2]

.....

.....

.....

.....

.....



# Marking Scheme

1.	Question	Marking details	Marks Available
4.	(a)	Teeth + reference to {chewing / grinding}/ reference to role of tongue; Contraction of {stomach/gut} wall/ peristalsis; Accept Bile + emulsification of fats	2
	(b)	Both for <b>one</b> mark	1
	(i)	<b>A</b> amylase <b>C</b> maltase	
		Both for <b>one</b> mark <b>B</b> maltose <b>D</b> glucose	1
	(ii)	Mouth / buccal cavity + Duodenum / small intestine (both needed for <b>one</b> mark)	1
	(c)	(i) <b>E</b> endopeptidase;  <b>F</b> exopeptidase;	2
	(ii)	<b>pepsinogen:</b> <u>hydrochloric acid / HCl</u> ; Accept pepsin <b>trypsinogen:</b> enterokinase;	2
	(iii)	Less mucus produced (because cells are killed)/ mucus lining destroyed; More {HCl/acid} produced (to compensate for neutralising action of NH <sub>3</sub> ); Acid in food / HCl can {attack / damage/erode} lining of stomach (wall); Pepsin can cause <u>autolysis / self-digestion</u> ;	Max 3
		<b>Question 4 Total</b>	<b>[12]</b>

2.	Question	Marking details	Marks Available
4	(a)	(i) organism that lives {on/in} another {organism/ host}; causes {harm/ damages} to host/ at the expense of the host;	2
		(ii) Any three from {suckers/hooks} (for attachment to host gut); <u>large surface area to volume ratio</u> ; {thin/ flattened}{proglottids/ segments}; covering resistant to host's digestive enzymes; NOT immune system hermaphrodite/ OWTTE; produces large number of eggs; no digestive system;	3 max
		(iii) Any three from Carnivorous/ carnivore; {Large/ pointed} canines for {tearing/grasping flesh/ killing prey}; molars/premolars for {cutting/ slicing} meat; NOT tearing (small) incisors for {gripping/ stripping} flesh; <u>carnassials</u> teeth for {crushing/cutting}; vertical movement of jaws;	3 max
	(b)	(i) obtains {food/ nutrients} from another organism/heterotrophic;	1
		(ii) <b>A</b> {requires food digested by host/ no digestive system}, <b>B</b> {digests food itself/ has digestive system}; <b>A</b> absorbs food {externally/at surface}, <b>B</b> internal absorption;	2
		<b>Question 4 Total</b>	<b>[11]</b>

3.

Question		Marking details	Marks Available
4.	(a)	(i) C/ D;	1
		(ii) K <u>and</u> F;	1
		(iii) C;	1
(iv) E;		1	
(v) F;		1	
(vi) J;		1	
(b)	(i) Herbivorous/ herbivore;	1	
	(ii) <u>{large/ridged/WM shape} {molars/premolars} for grinding;</u>  <u>{diastema/space with no teeth/ gap between teeth} to assist with {chewing/ (tongue to) manipulate food/ cud};</u>  <u>{well developed/ sharp/ long} incisors for {biting/ cutting/ slicing/ tearing} (vegetation);</u>  loose articulation/ jaw moves in a {horizontal/ circular} plane;  Very small/ no canines;  open roots to allow continuous growth of molars;	3max	
(iii) Four <u>chambered</u> stomach (NOT four stomachs) / rumen/ large caecum; Contain cellulose digesting bacteria/ have cellulase producing bacteria; NOT cellulose eating bacteria Long gut {to allow extra time for digestion of cellulose/ cellulose harder to digest}; Cud is regurgitated for further chewing;	2		
<b>Question 4 Total</b>		<b>[12]</b>	

## Examiner's Comments

1. This was a generally well answered question. Greater precision in answers was needed in some cases, e.g., teeth chew / grind food, not the mouth, and many candidates gave enzyme action as a form of mechanical digestion. Relatively few students recognised enterokinase as the activator of trypsinogen.

Most candidates could explain how *H.pylori* infection can lead to the development of a stomach ulcer from the information given but imprecise wording, such as HCl affects, or merely repeating the information given in the question, cost marks for many students. Few gave pepsin causing autolysis as a possible cause of a stomach ulcer.

*This comment originally referred to question 4 on paper 1072/02 (02/06/2014)*

2. In answer to question (a)(i) most candidates were able to give a full definition of a parasite. The answers to part(ii) were also high scoring. However, we did have a number of answers that referred to 'hookers' and few candidates referred to the surface area to volume ratio instead, focusing on descriptions of the shape of the parasite.

The type of diet of animal B was usually correctly identified though there were a variety of spellings of the term 'carnivore'. Many candidates thought that the incisors were 'large' and a number of candidates indicated that the absence of a diastema meant that it was a carnivore. Far too many candidates could not give an adequate description of the different types of teeth and describe an appropriate role.

Part (b) was poorly answered. Whilst many candidates correctly recognised that both organisms were heterotrophic few could state two appropriate differences with the commonest correct answer being references to digestion versus pre-digestion by the host.

*This comment originally referred to question 4 on paper 1072/01 (14/01/2014)*

3. Although only a minority of candidates scored full marks for part (a) there was no one section that caused a particular problem. Most candidates identified the jaw as being from a herbivore but were often unable to explain in detail how the teeth and jaw are modified for that type of diet. Many of the answers were GCSE in nature simply making a statement to the effect that molars/incisors were present. Many stated that the jaw could move in a horizontal/circular movement, though few gave a detailed account of the role of the diastema and tongue. Most candidates recognised that the herbivore gut would be modified to have symbiotic cellulose digesting bacteria present. However, a common mistake was to refer to the presence of 'four stomachs' and to describe how the intestine would be long but failing to relate that fact to the difficulty in digesting cellulose.

*This comment originally referred to question 4 on paper 1072/01 (03/06/2013)*