WJEC 2014 Online Exam Review

GCE Human Biology HB2 1072-02

All Candidates' performance across questions

Question Title	N	Mean	S D	Max Mark	F F	Attempt %
1	1388	2.1	1.2	4	52.3	100
2	1386	2.4	2	9	27	99.9
3	1387	2.2	1.5	6	36.7	99.9
4	1387	6.5	3	12	54.3	99.9
5	1387	7.7	2.3	12	63.9	99.9
6	1387	5.5	2	9	60.7	99.9
7	1388	4.2	1.8	8	52.4	100
8	1386	5.6	3.1	10	56	99.9

1

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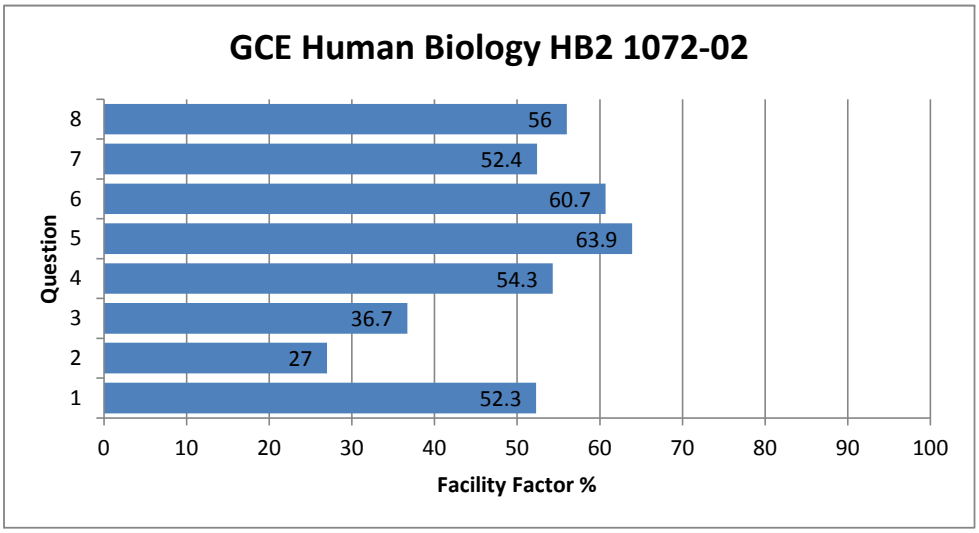

Examiner only

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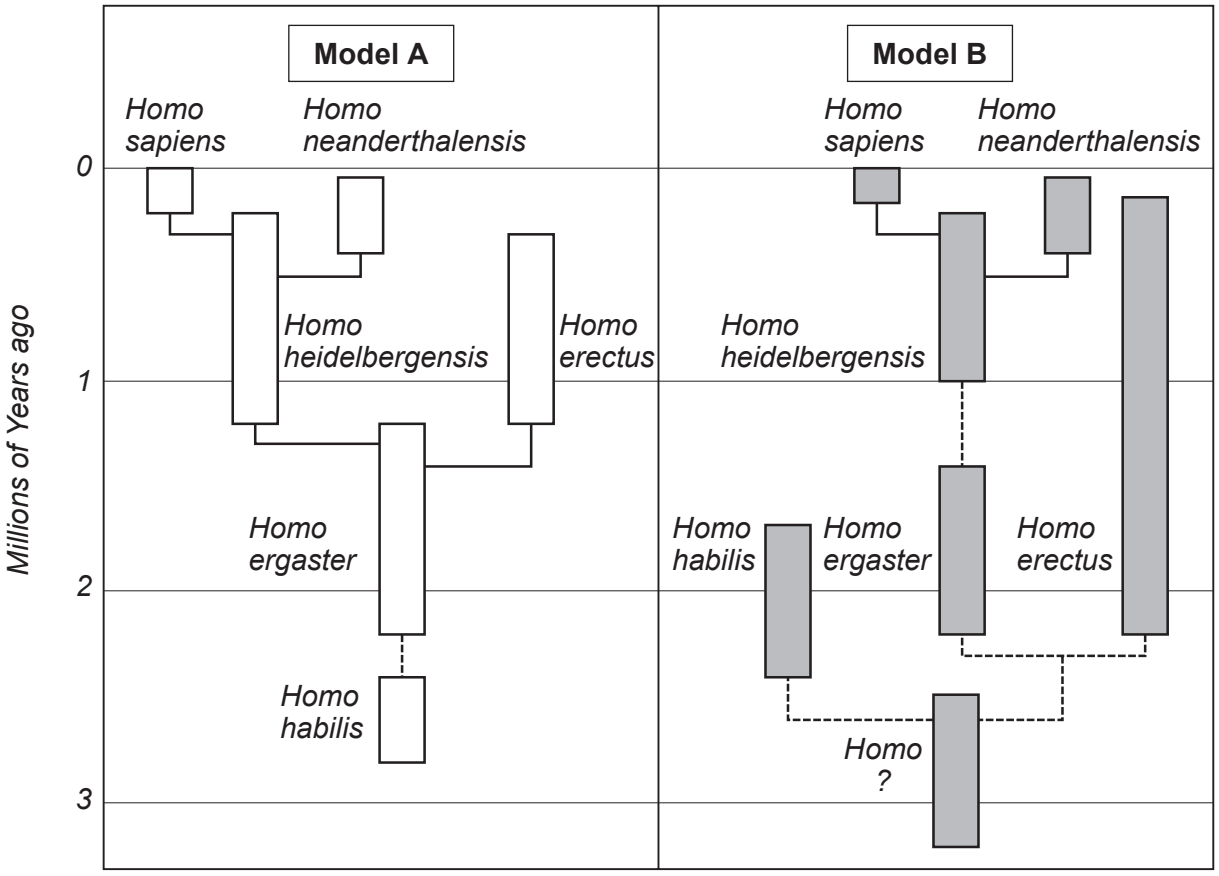

(i) Name the type of diagram used to represent these **evolutionary relationships**. [1]

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Similarity .....

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Difference .....

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Examiner only

(iii) Suggest why dotted lines have been used in parts of the diagrams. [1]

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(b) Evidence shows that *Homo sapiens*, *Homo neanderthalensis* and *Homo heidelbergensis* co-existed in Europe for several thousand years and may have interbred.

Suggest how DNA analysis is helping scientists to develop a better understanding of human evolution. [2]

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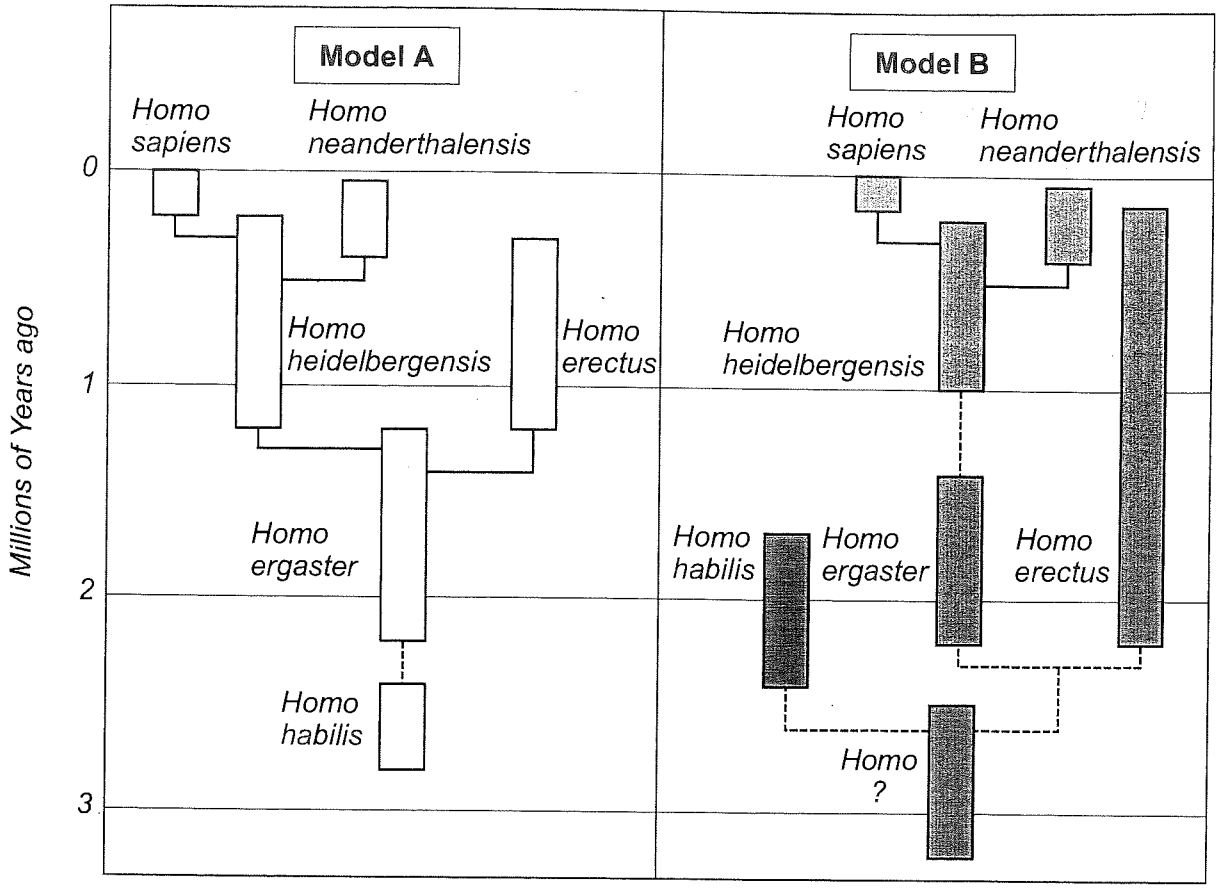

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Difference In model B the homo erectus was around longer than the in model A.

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These pathways are just guesses and therefore aren't proven but enough evidence makes them possible links

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Examiner only

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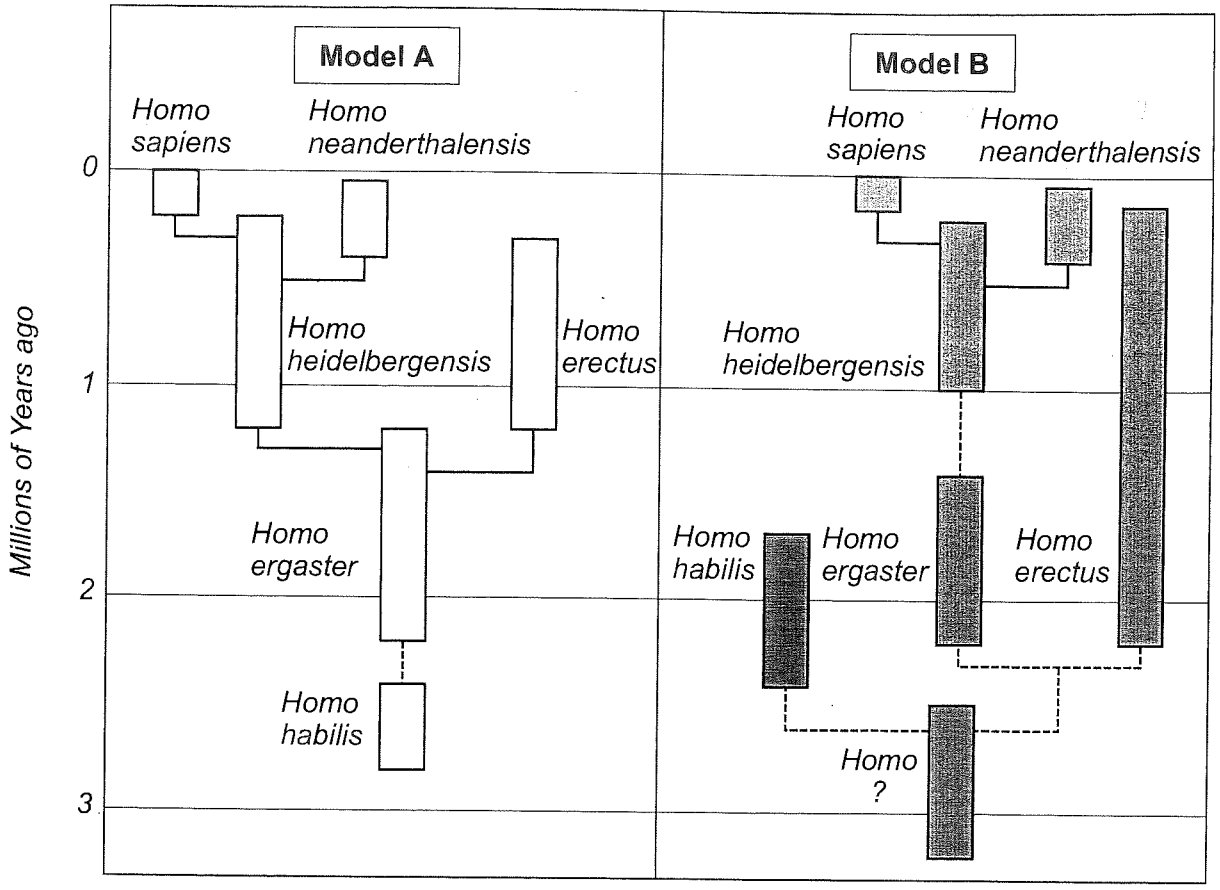

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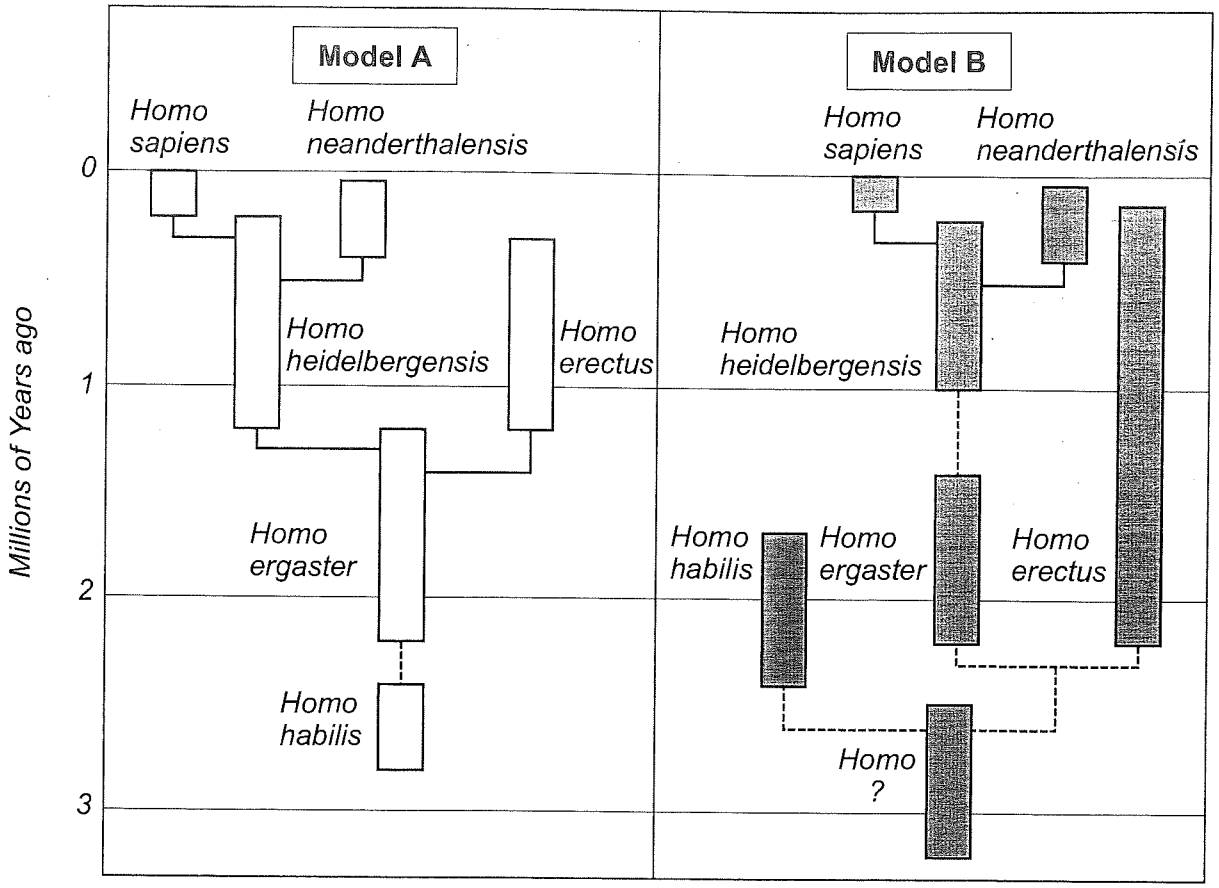

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Difference In model B, the Homo erectus existed at the same time as Homo sapiens, in model A Homo erectus was extinct before Homo sapiens evolved.

Examiner only

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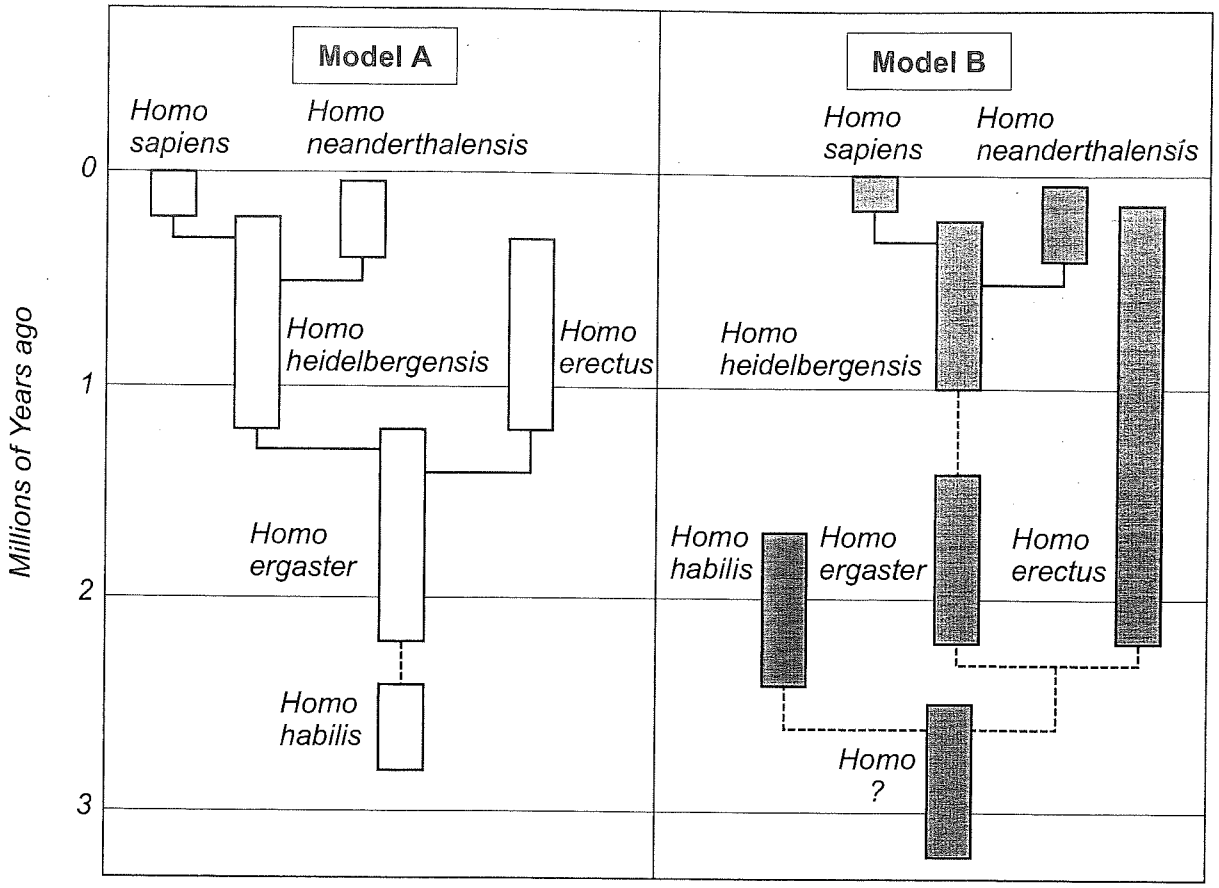

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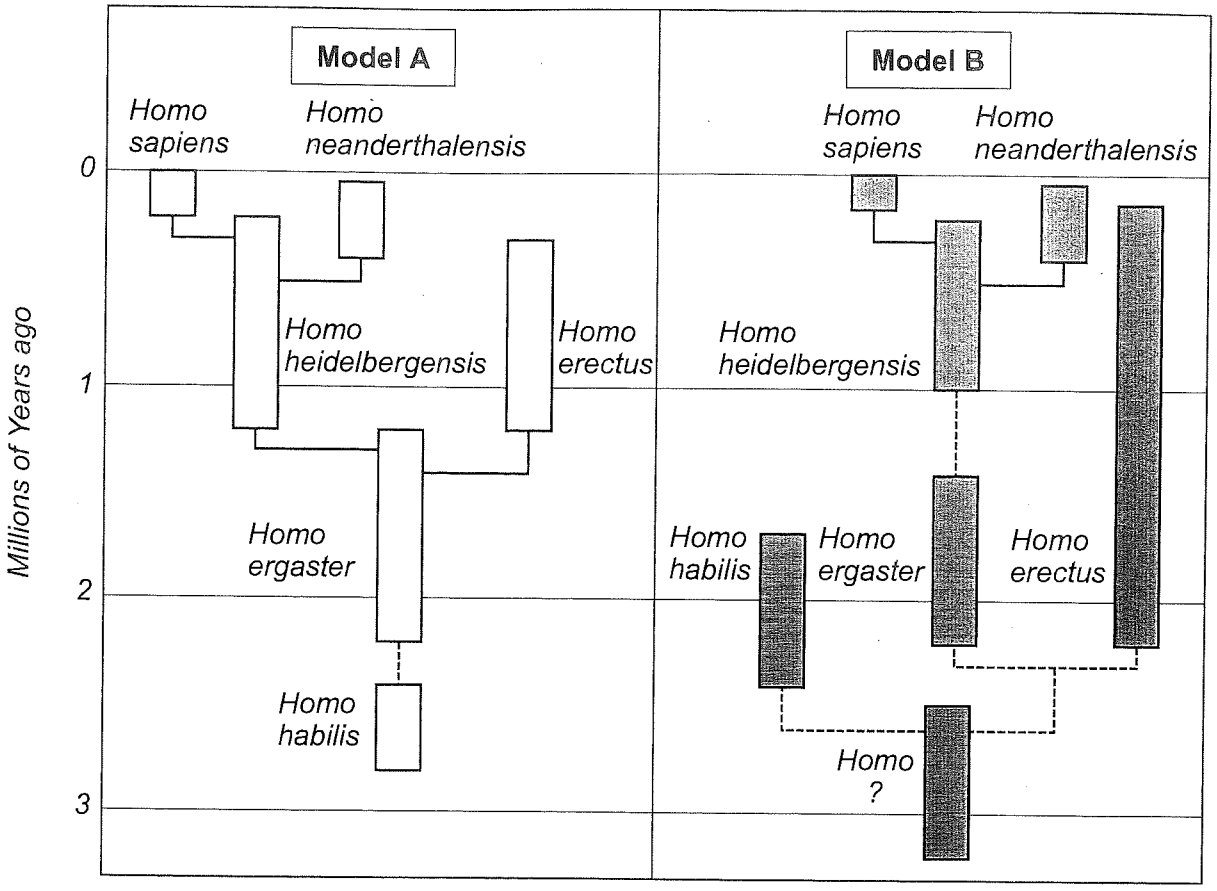

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Examiner only

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This suggests that there is uncertainty as it is only a theory.

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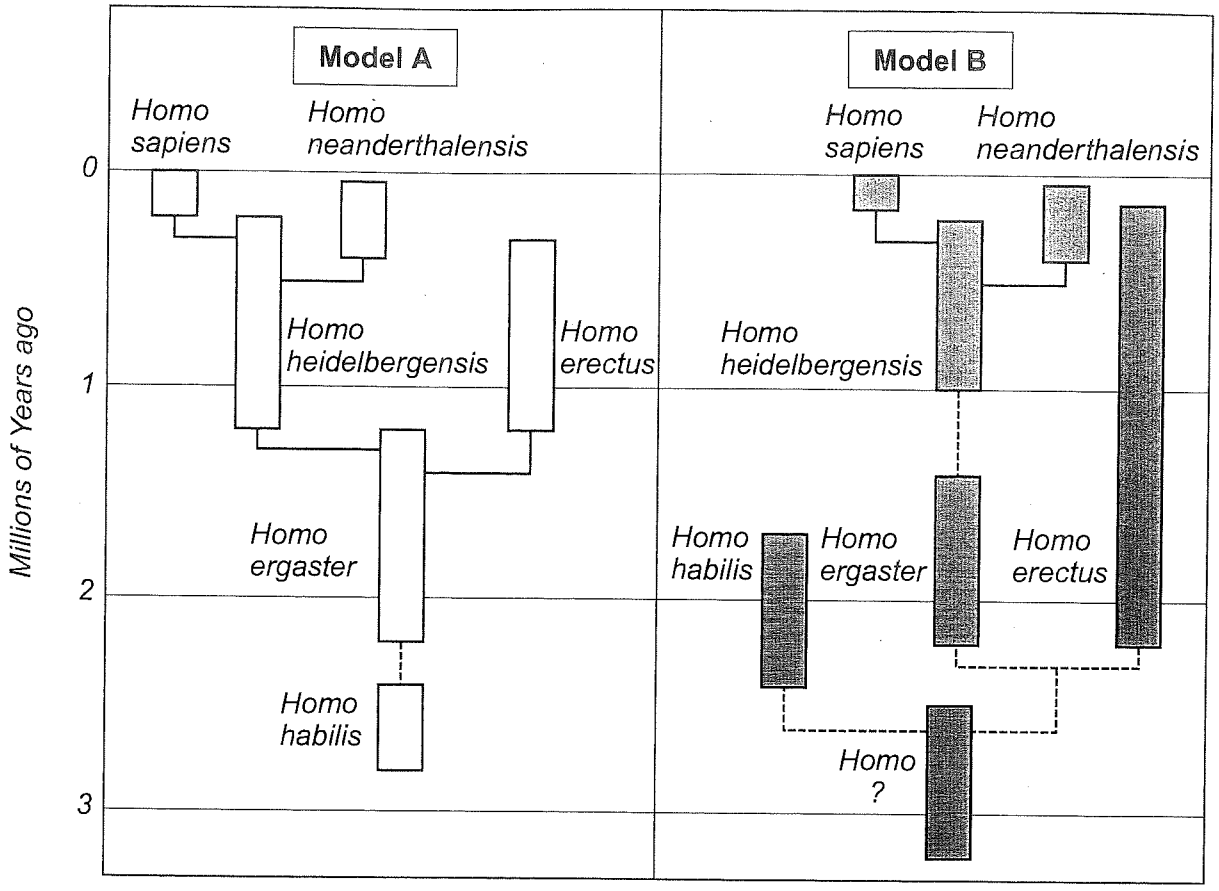

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Examiner only

4. 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]

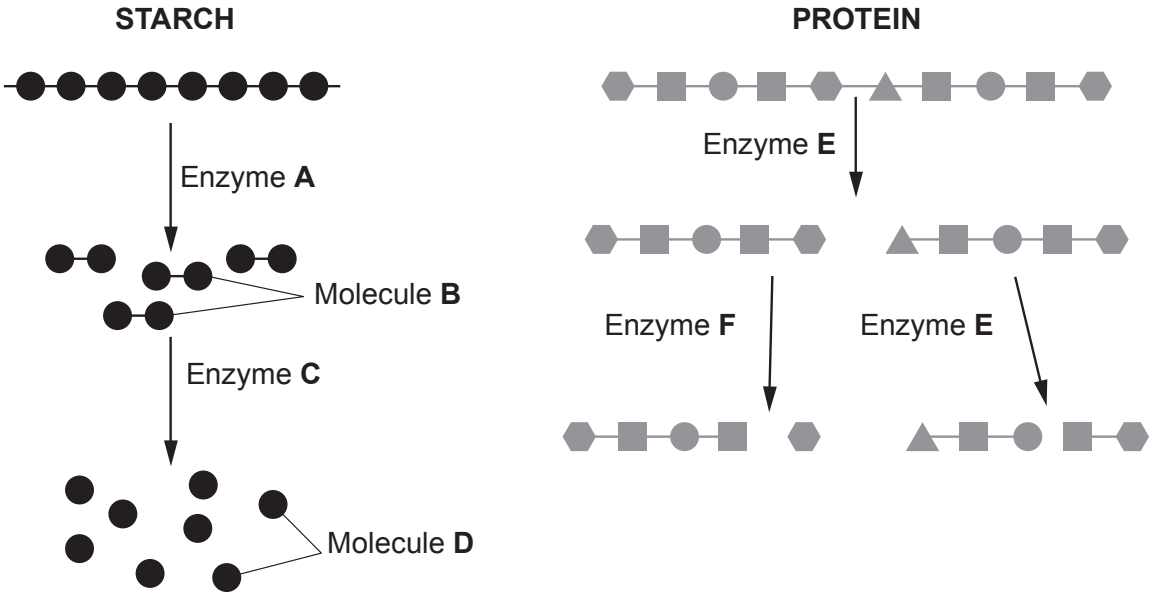
I. .....

.....

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]

....

Examiner only

(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]

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12

Turn over.

Examiner only

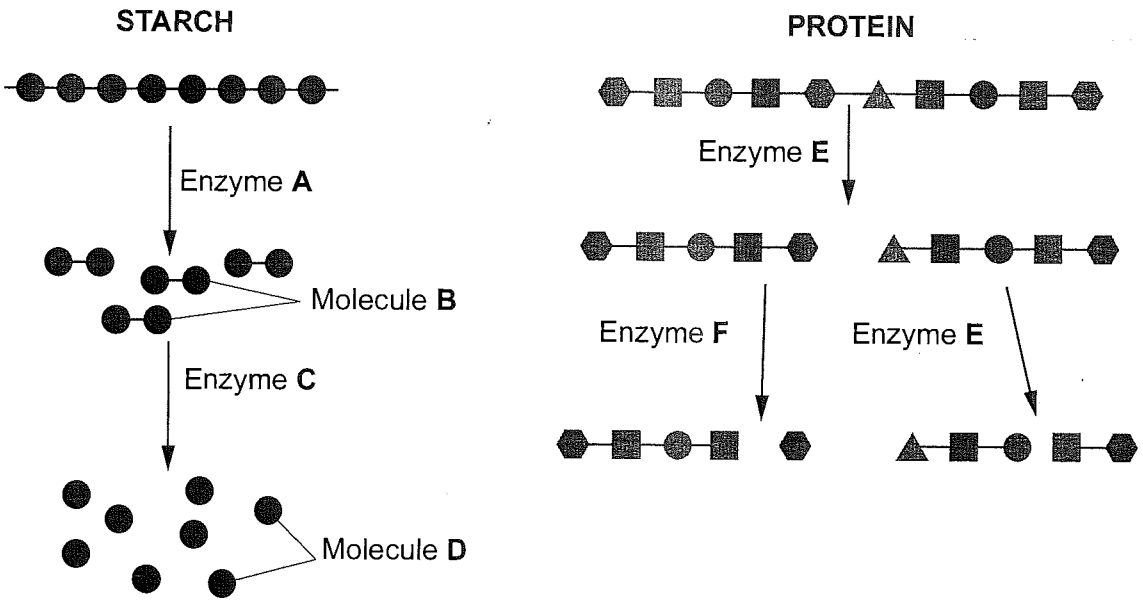
4. Digestion involves the breaking down of food by a combination of mechanical and chemical processes.

(a) Describe **two** ways in which food is broken down **mechanically** in the human alimentary canal. [2]

I. In the mouth food is crushed and chewed up by teeth

II. In the stomach muscles rythmically ~~churn~~ churn the food up, and ~~hence~~ heat

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



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Molecules **B** and **D**: [1]

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The Mouth The duodenum

Examiner only

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E Endopepsidases

F ~~Exopepsidases~~ Excopepsidases

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The H. pylori causes weaknesses in the mucus lining of the stomach. These weaknesses become inflamed and the hydrochloric acid along with the enzymes damage the epithelial cells and hence cause an ulcer. The H. pylori finds weaknesses in mucus layer and toxins given off by the bacteria inflame and cause ulcers in stomach lining

1072 020007

12

Examiner only

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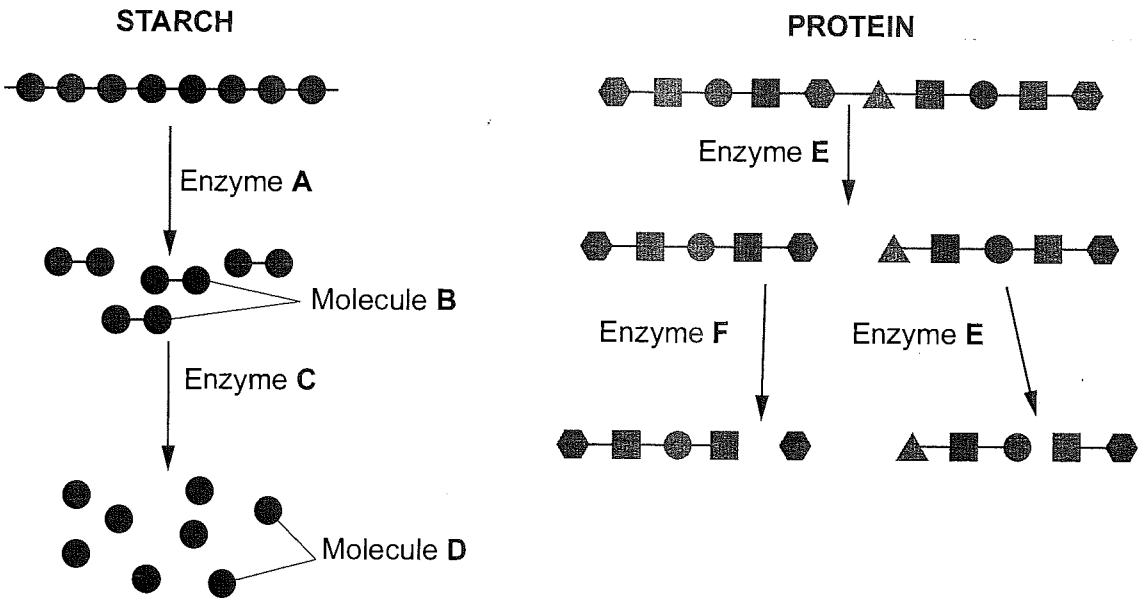

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The Mouth The duodenum

Examiner only

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Examiner only

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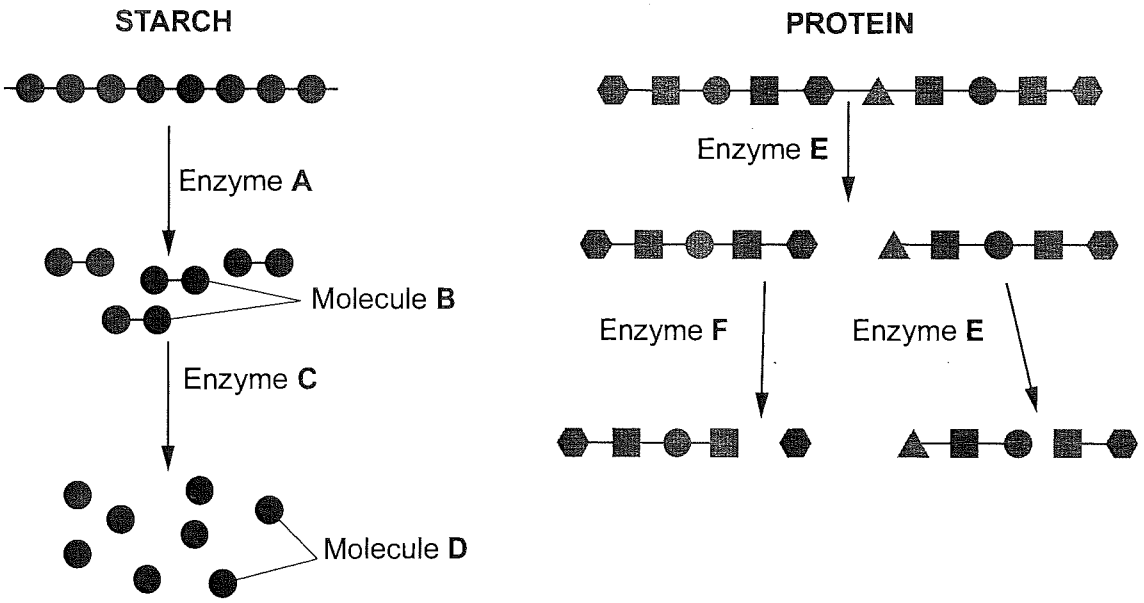

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Small intestine Stomach.

Examiner only

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F Endopeptidase

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Examiner only

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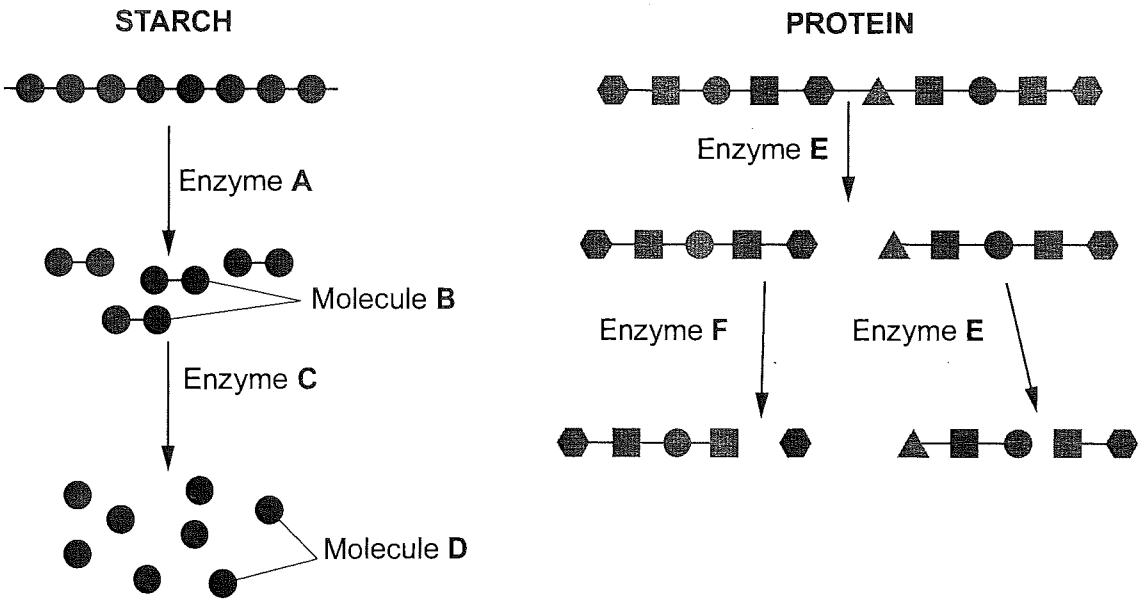

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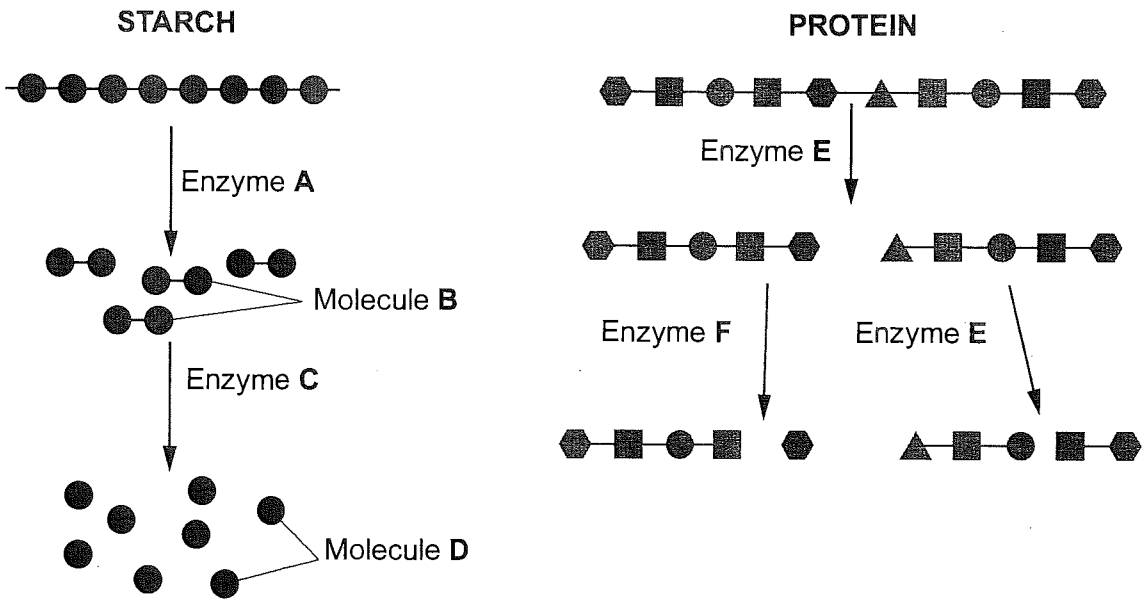

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mouth duodenum

Examiner only

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1072 020007

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Examiner only

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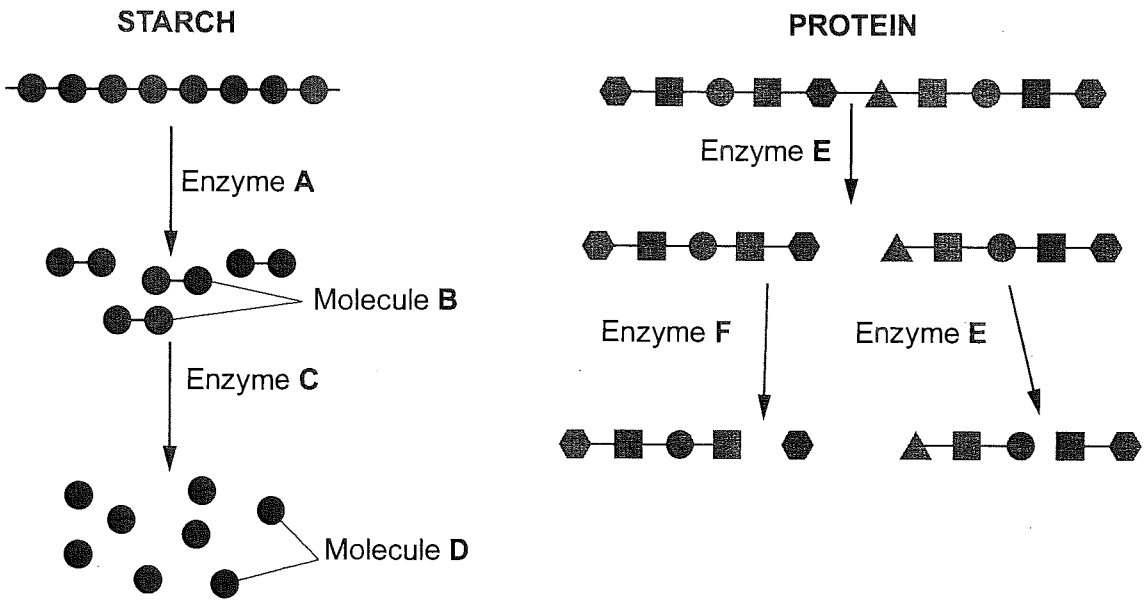

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mouth duodenum

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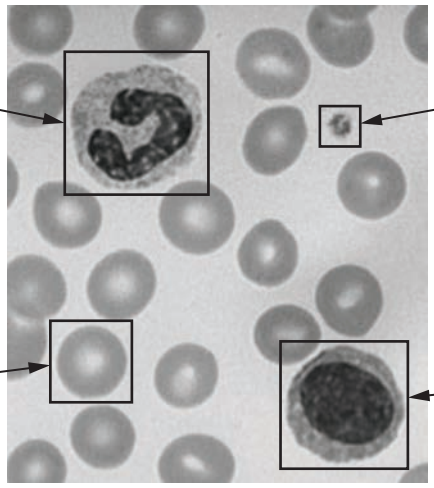
Examiner only

6. The image shows a smear of human blood.



(a) Label the components of blood identified on the image above. [2]

(b) (i) State the main function of the cell labelled **C** in the image. [1]

.....

(ii) Describe and explain **one** adaptation shown by cell **C** that enables it to carry out this function. [2]

.....

.....

.....

(c) Identification of the antigens present on the cell membranes of these cells is used to place people into different blood groups.

(i) What is meant by the term *antigen*? [2]

.....

.....

(ii) Explain why it is important to identify a person's blood group correctly before giving that person a blood transfusion. [2]

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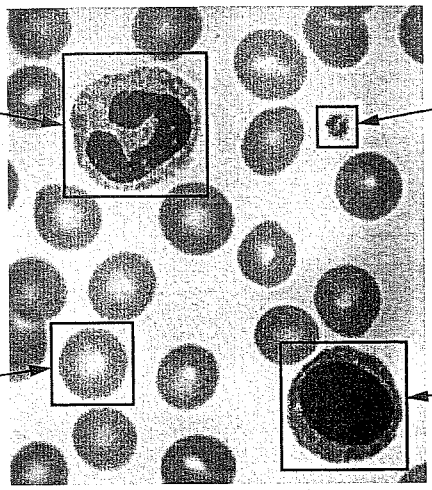
Plasma Cell?

Examiner only

6. The image shows a smear of human blood.



(a) Label the components of blood identified on the image above. [2]

(b) (i) State the main function of the cell labelled **C** in the image. [1]

To Carry otygen to respiring tissues

(ii) Describe and explain **one** adaptation shown by cell **C** that enables it to carry out this function. [2]

It doesn't have a nucleus this enables there to be more room in the red blood cell to carry more otygen

(c) Identification of the antigens present on the cell membranes of these cells is used to place people into different blood groups.

(i) What is meant by the term *antigen*? [2]

A protein that when enters the blood triggers the formation of antibodies

(ii) Explain why it is important to identify a person's blood group correctly before giving that person a blood transfusion. [2]

If the wrong blod group is given agglutination (blood clots) form because the antigens on the red blood cells and antibodies in the blood sit together and therefore ~~blog~~ cause blood clots.

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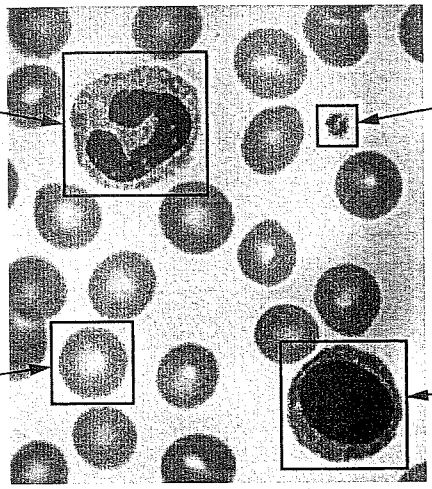

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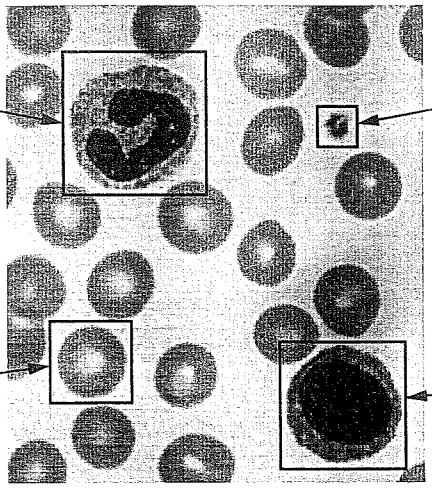

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Transport of oxygen in the blood.

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Red blood cells do not contain ~~haemoglo~~ a nucleus which allows more space for haemoglobin, which increases the amount of oxygen it can carry.

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A molecule found on the surface of a cell that identifies the cell. Can trigger an immune response if non-self.

(ii) Explain why it is important to identify a person's blood group correctly before giving that person a blood transfusion. [2]

To avoid agglutination of the red blood cells, as each blood type has different agglutinogens (AB has none). If, for example Blood group A is mixed with blood group b, the anti-b antibodies in A will cause agglutination. Also the rhesus has to be determined (positive and negative cannot mix.

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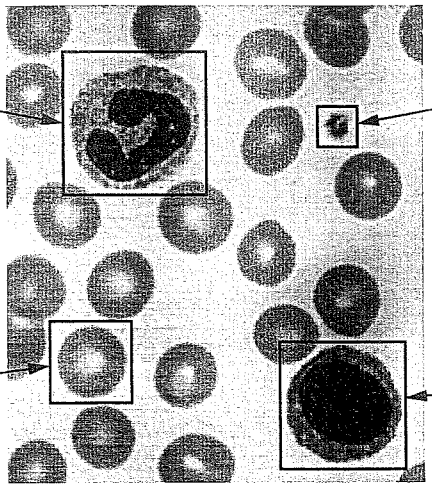

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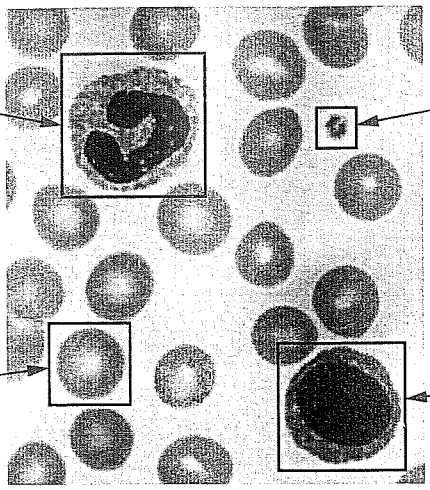

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If there has been a cut on the surface of the skin the white blood cells will have phagocytes will will clot the blood.

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Antigen is a 'flag' which is used to present the molecule and expla so other molecules can recognise it.

(ii) Explain why it is important to identify a person's blood group correctly before giving that person a blood transfusion. [2]

The a transfusion antigen from different blood groups have different antigens. If you were to give someone a different blood group they could have antibodies in their blood that fight the antigen this would lead to their body attacking the blood given in a blood transfusion and also agglutination as the red blood cells stick together.

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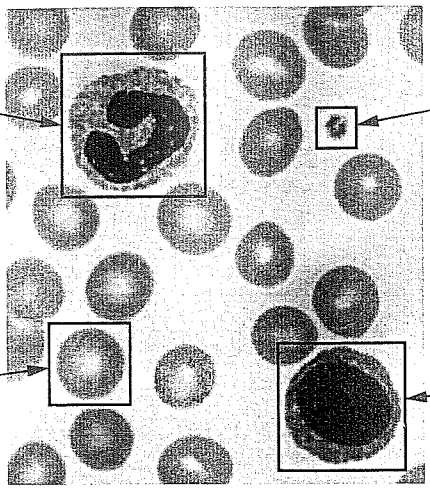

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