

2. (a) Peggy has been eating three meals a day and still feels weak and tired. She goes to the clinic and her doctor tells her that she could be lacking some vitamins and minerals.

- (i) List TWO vitamins **other than** vitamin A and ONE mineral that could be lacking in Peggy's diet.

Vitamins: B and D

Mineral: Calcium ( 3 marks )

- (ii) Name a water-soluble vitamin.

Vitamin C ( 1 mark )

- (iii) Name ONE nutrient **other than** a vitamin or mineral that could be lacking in Peggy's diet which could cause her to feel weak and tired.

Nutrient: Carbohydrates ( 1 mark )

- (iv) Identify the end-product of the digestion of the nutrient named in (a) (iii) above.

End-product: Glucose ( 1 mark )

- (b) Figure 3 is a diagram of part of the human alimentary tract.

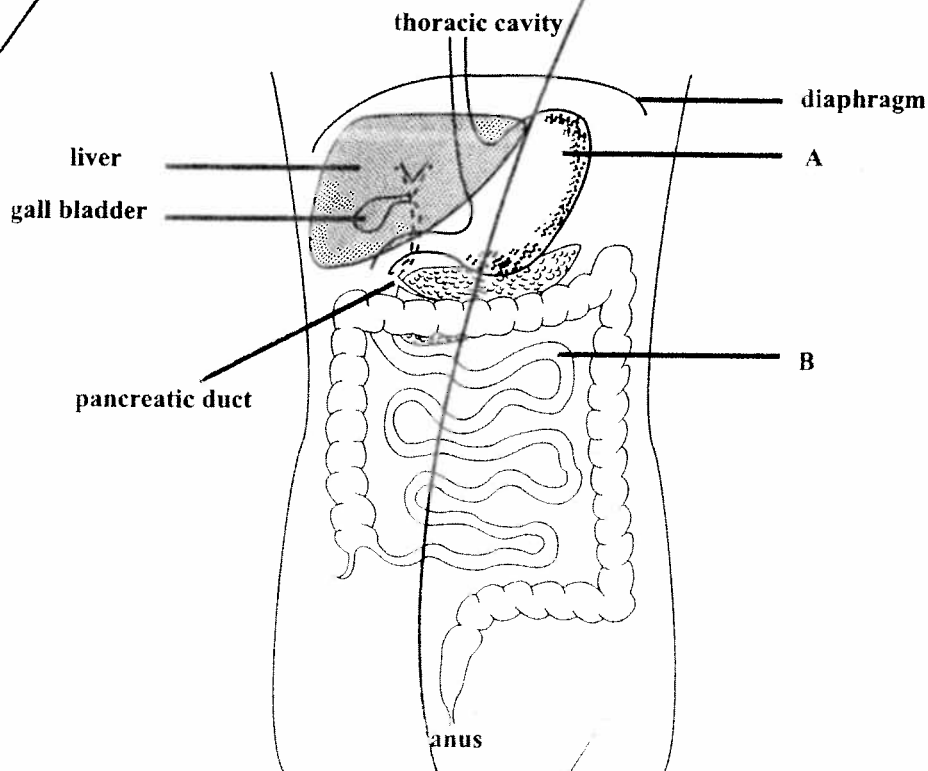


Figure 3. Diagram of part of the human alimentary tract

- (i) State ONE function of EACH of the parts labelled A and B in Figure 3.

A Digests proteins

B Absorbs digested nutrients

( 2 marks)

- (ii) Peggy's pharmacist suggests that she may need some amino acids in her diet so she adopts a protein-rich diet.

Describe the digestion of proteins in the stomach and the small intestine.

Stomach: Gastric juices are poured on proteins, including  
dilute hydrochloric acid and pepsin which neutralises the salivary  
amylase and breaks down poly peptides in proteins to peptides.

Small intestine: The pancreas secretes peptidase which breaks  
down peptides in proteins to amino acids. Amino acids  
are then absorbed into the blood.

( 5 marks)

- (iii) Suggest TWO benefits of amino acids to Peggy's body.

Amino acids may provide proteins to build up body cells  
to help with growth and repair and therefore, also giving muscles  
more strength.

( 2 marks)

Total 15 marks

## Human and Social Biology

### Paper 02

#### Question 2

Excellent response – candidate was awarded full marks.

#### SECTION A

- (i) Candidate had knowledge of different vitamins (B and D) as distinct from minerals (calcium).
- (ii) Candidate had knowledge of an example of water soluble vitamin (C).
- (iii) Candidate understood the role of 'carbohydrate' as a source of energy (based on Peggy's symptoms – weak and tired) and eliminated mineral and vitamin deficiencies as options.
- (iv) Candidate understood that glucose is the end product (the basic substance) that is derived from carbohydrate digestion.

#### SECTION B

- (i) Candidate was able to identify Parts (a) and (b) in the diagram and associate each with its appropriate function.
- (ii) Candidate was able to use his or her knowledge of digestion and apply it to that of protein including the following criteria:
  - Condition – HCl– suitable pH and appropriate enzymes pepsin in stomach peptidase in small intestine.
  - Substrate (protein) and products (polypeptides and peptones) in stomach.
  - Substrate (peptides) and amino acids in small intestines.
- (iii) Candidate was able to evaluate as he/she was able to view the benefits of amino acids in Peggy's body as serving the important roles of growth and repair.