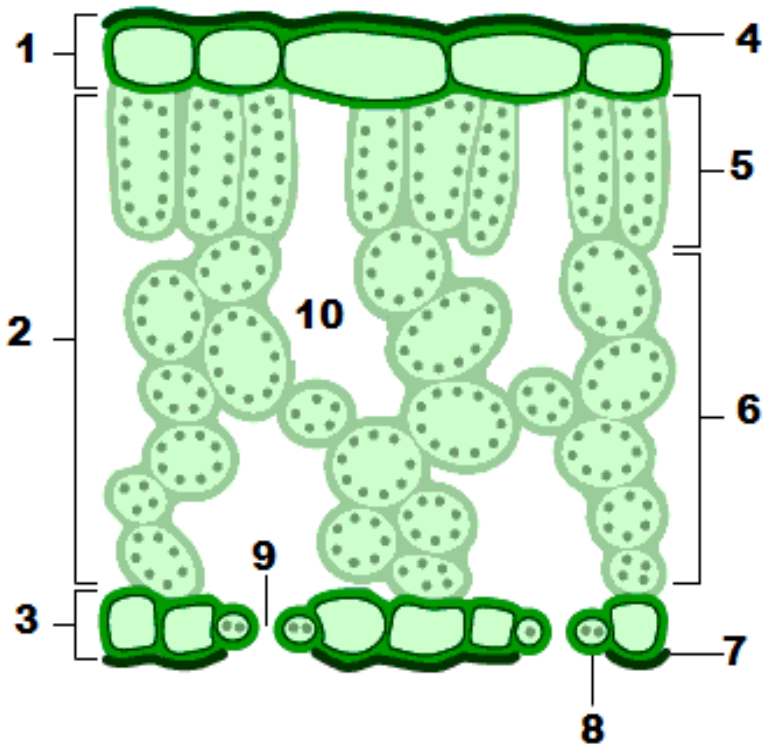
Exercise 1

1.4 Study the following diagram of a cross-section of a leaf and complete the table that follows. Write only the question number (1.4.1 to 1.4.5) and answer on your FOLIO PAPER.



No.	Structure	Function
1, 3	Upper epidermis and lower epidermis	1.4.1
4, 7	1.4.2	Reduces water loss to prevent dehydration.
5	Palisade mesophyll	1.4.3
6	Spongy mesophyll	Contains few chloroplasts for less photosynthesis.
8	Guard cell	1.4.4
9	Stomatal pore	1.4.5
10	Intercellular air space	Allows gaseous exchange and movement of water molecules.

(5)

Exercise 2

2.1 The following table provides nutritional information that appears on a breakfast cereal box. It indicates the nutritional information per 100 g.portion. Study the information and answer the questions that follow.

Ingredient	Quantity per 100 g.portion		Ingredient	Quantity per 100 g.portion
Energy	1 145 kJ		**Iron**	9,3 mg
Protein	3,2 g		**Calcium**	80 mg
Carbohydrate	39,6 g		**Sodium**	164 mg
Fat	2,0 g		**Vitamin B-complex**	17,8 mg
Fibre	26,5 g		**Vitamin D**	2,5 µg

2.1.1 Identify FOUR organic compounds listed on the above label. (4)

2.1.2 Identify the substances listed on the above label that serve as macro-elements in animals and humans. (2)

2.1.3 Name the deficiency disease that occurs when a child's diet lacks calcium and vitamin D. Also mention what happens when a child suffers from this disease. (2)

2.1.4 (a) Name the micro-element on the lable that plays an important role in the formation of haemoglobin. (1)

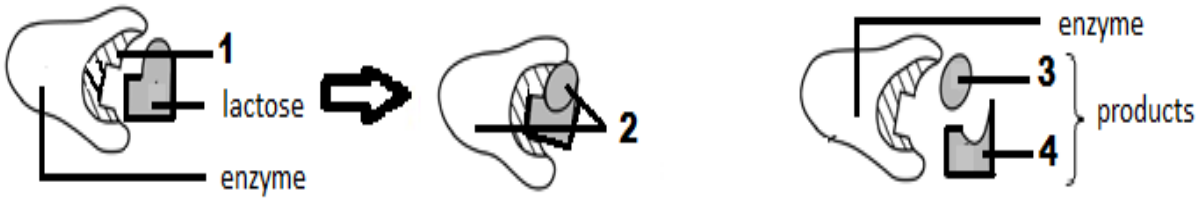
(b) Name the deficiency disease that will occur if the above-mentioned micro-element is not present in the body. (1)

2.1.5 This breakfast portion contains 2,0 g fats (lipids) per 100 g. Draw a simple diagram of a lipid molecule and label the monomers that the molecule consists of. (2)

(12)

Exercise 3

2.2 The following diagrams represent enzyme functioning. Study the diagrams and answer the questions that follow.



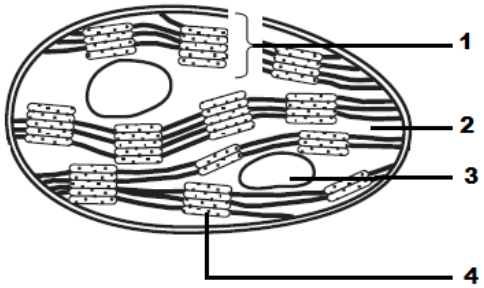
2.2.1 The substrate molecule in the diagram is lactose. Which TWO monosaccharides are illustrated by the structures numbered 3 and 4? (2)

2.2.2 Is the above-mentioned an example of a catabolic or an anabolic reaction? (1)

2.2.3 Name TWO factors that will lead to denaturation and identify the numbered structure that will be affected by denaturation. (3)

(6)

2.3 Study the following diagram of a specific organelle and answer the questions that follow.



2.3.1 Identify this organelle. (1)

2.3.2 Which anabolic process takes place in this organelle? (1)

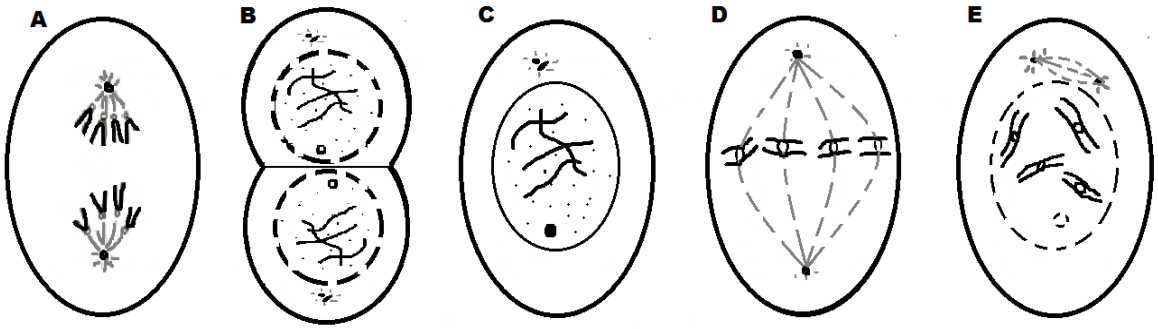
2.3.3 Discuss the biological importance of this process. (3)

2.3.4 Name the parts numbered 1, 2 and 3. (3)

(8)

Exercise 4

3.1 The diagrams below depict the phases of mitosis in an animal cell.



3.1.1 Arrange the phases in correct chronological order by writing down the LETTERS and NAMES OF THE PHASES in the correct order. (5)

3.1.2 How many chromatids can be observed in diagram D? (1)

3.1.3 How many chromosomes are found in the mother cell and daughter cells? (1)

3.1.4 Explain EACH of the following terms:

(a) Karyokinesis (1)

(b) Cytokinesis in animal cells. (2)

(10)