

7. Human nutrition

7.1 Diet

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

- 1 (c) State the vitamin deficiency that causes rickets.

..... [1]

- (d) Describe the dietary importance of the mineral ions calcium and iron.

calcium

.....

iron

.....

[2]

- (e) Fat, protein, vitamins and mineral ions are all required for a balanced diet.

State the names of **two other** components of a balanced diet.

1

2

[2]

2 (a) A balanced diet includes foods that contain calcium ions.

(i) **Circle** the food that has the highest calcium content.

cheese

egg

orange

potato

[1]

(ii) Table 4.1 shows the recommended calcium intake for different age groups.

Table 4.1

age group in years	recommended calcium intake /mg per day
0–3	500
4–8	800
9–18	1300
19–50	1000
51+	1200

The list shows five statements about the data in Table 4.1.

Tick (**✓**) **two** statements that are correct descriptions of the data shown in Table 4.1.

Age group 51+ has the highest recommended daily intake of calcium.	
As age increases, the recommended daily intake of calcium decreases.	
As age increases, the recommended daily intake of calcium increases, then decreases and then increases again.	
The recommended daily intake of calcium doubles from ages 0–3 to ages 19–50.	
The recommended daily intake of calcium is higher at ages 19–50 than at ages 9–18.	

[2]

- (iii) Suggest reasons why some age groups need more calcium in their diet than others.

.....
.....
.....
.....
.....

[2]

- (b) Some diseases are caused by an unbalanced diet.

The boxes on the left contain the names of two diseases.

The boxes on the right contain some sentence endings.

Draw **one** straight line from each box on the left to a box on the right to make **two** correct sentences.

Rickets

is caused by a lack of carbohydrate.

Scurvy

is caused by a lack of iron.

is caused by a lack of vitamin C.

is caused by a lack of vitamin D.

[2]

- (c) (i) State **one** dietary source of fibre.

..... [1]

- (ii) Describe the importance of fibre in the diet.

.....
.....
.....

[1]

- 3 (a) A balanced diet is needed to maintain health.

- (i) State what is meant by the term balanced diet.

.....
.....
.....
.....
.....

[2]

- (ii) Fat is an important component of a balanced diet.

Draw **circles** around **two** foods that are a good source of fat.

apples

beans

bread

cheese

pasta

rice

vegetable oil

[2]

- (iii) State **two** health problems associated with having an excessive amount of fat in the diet.

1

2

[2]

- (iv) List **two** nutrient groups, other than fat, in a balanced diet and outline their dietary importance.

nutrient 1

importance 1

.....
nutrient 2

importance 2

.....

[4]

- (b) Fig. 4.1 shows the estimated daily energy requirements for different groups of people.

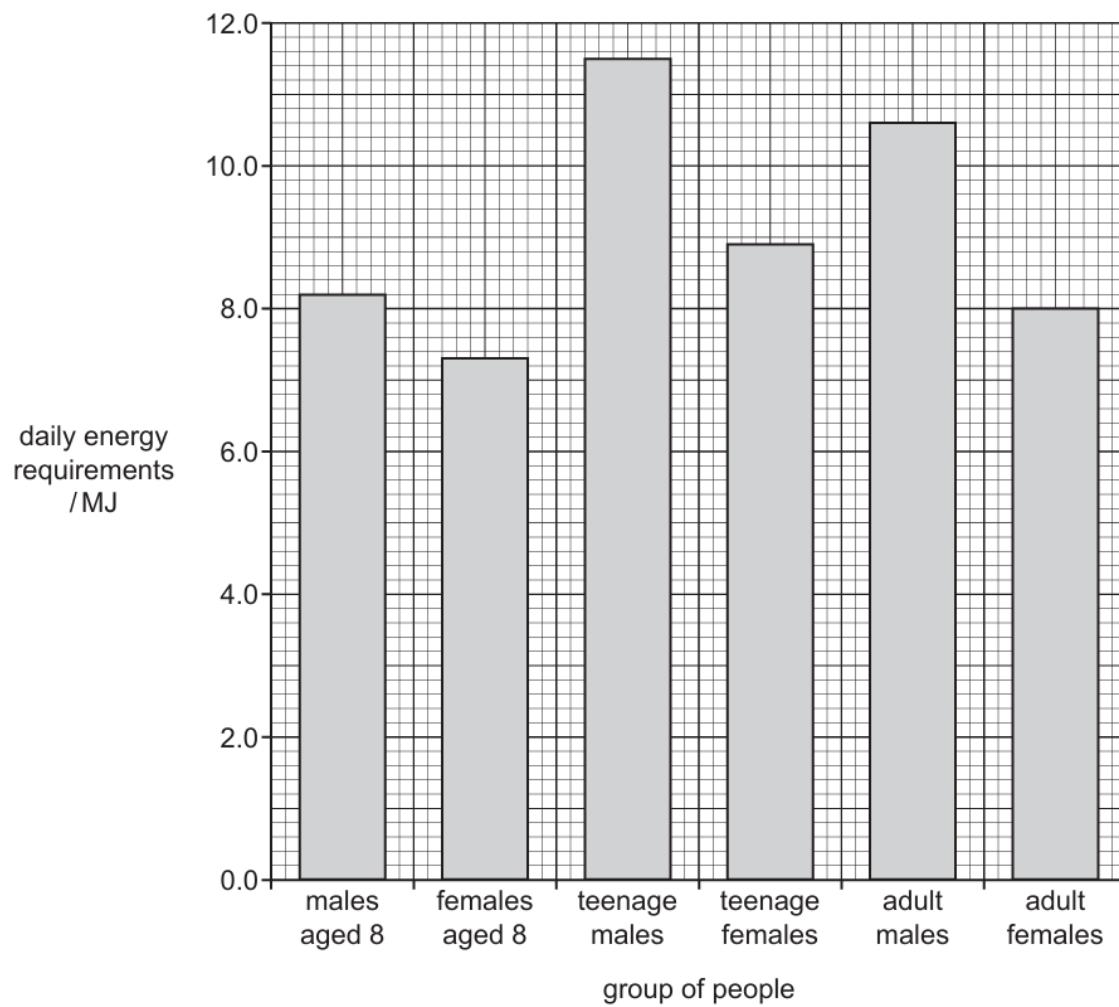


Fig. 4.1

- (i) State the group of people shown in Fig. 4.1 that have the greatest daily energy requirements.

..... [1]

- (ii) Using the information in Fig. 4.1, calculate the difference in energy requirements between adult males and adult females.

..... MJ [1]

- (iii) Describe the overall trend between males and females shown in Fig. 4.1.

.....
.....
..... [1]

- (iv) Pregnant females have a larger daily energy requirement than females who are not pregnant.

Suggest why.

.....
.....
.....

[1]

[Total: 14]

- 4 (a) It is important for humans to consume a balanced diet.

Describe what is meant by the term balanced diet.

.....
.....
.....
.....
.....

[2]

- (b) Table 4.1 shows some of the different components of a balanced diet and their principal sources.

Complete Table 4.1 using words from the list.

Each word can only be used **once** or not at all.

grapefruit milk olive oil rice tuna fish water

Table 4.1

component	example of principal source
calcium	
carbohydrate	
protein	
vitamin C	

[4]

- (c) A diet that does not contain component **X** can cause constipation.

State the name of component **X**.

.....

[1]

- (d) A person's diet contains too much energy and too much fat.

Describe the possible risks of this diet.

.....
.....
.....
.....
.....

[2]

- (e) State why a pregnant woman needs to eat more food than a woman who is not pregnant.

.....
.....
.....

[1]

5 (a) The boxes on the left contain the names of components of the diet.

The boxes on the right contain the functions of these components in the body.

Draw **one** straight line to link each component of the diet to its correct function.

Draw **four** lines.

component of the diet

function

calcium ions

bone formation

fat

growth of muscles

protein

insulation

vitamin D

[4]

- (b) Fig. 3.1 shows the average percentage composition of some common foods.

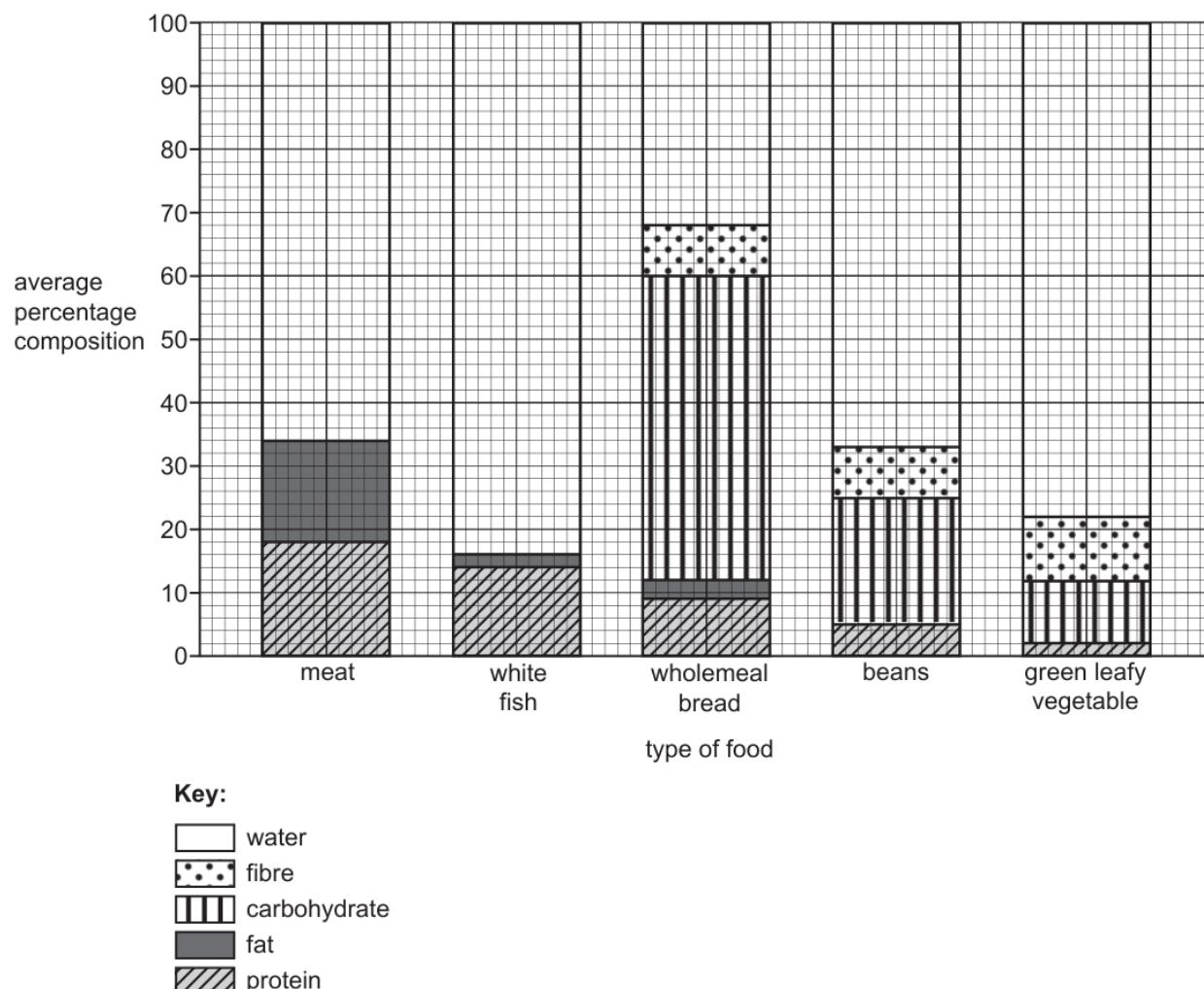


Fig. 3.1

- (i) State the type of food in Fig. 3.1 that contains the most fat.

..... [1]

- (ii) State **one** type of food in Fig. 3.1 that does **not** contain fibre.

..... [1]

- (c) Describe the importance of fibre in the diet.

.....
.....
..... [1]

(d) (i) State **one** food that contains vitamin C.

..... [1]

(ii) State **one** disease caused by a lack of vitamin C.

..... [1]

- 6 Fig. 1.1 is a diagram of a molecule of fat.

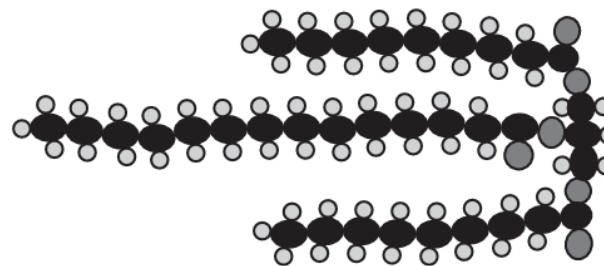


Fig. 1.1

- (a) (i) List the chemical elements present in fat.

..... [1]

- (ii) State the smaller units that fats are made from.

..... [2]

- (b) Fats are an important part of a balanced diet.

State the name of **three** other components of a balanced diet.

1

2

3

[3]

- 7 (b) Fig. 4.1 shows the average daily energy requirement of different groups of males and females.

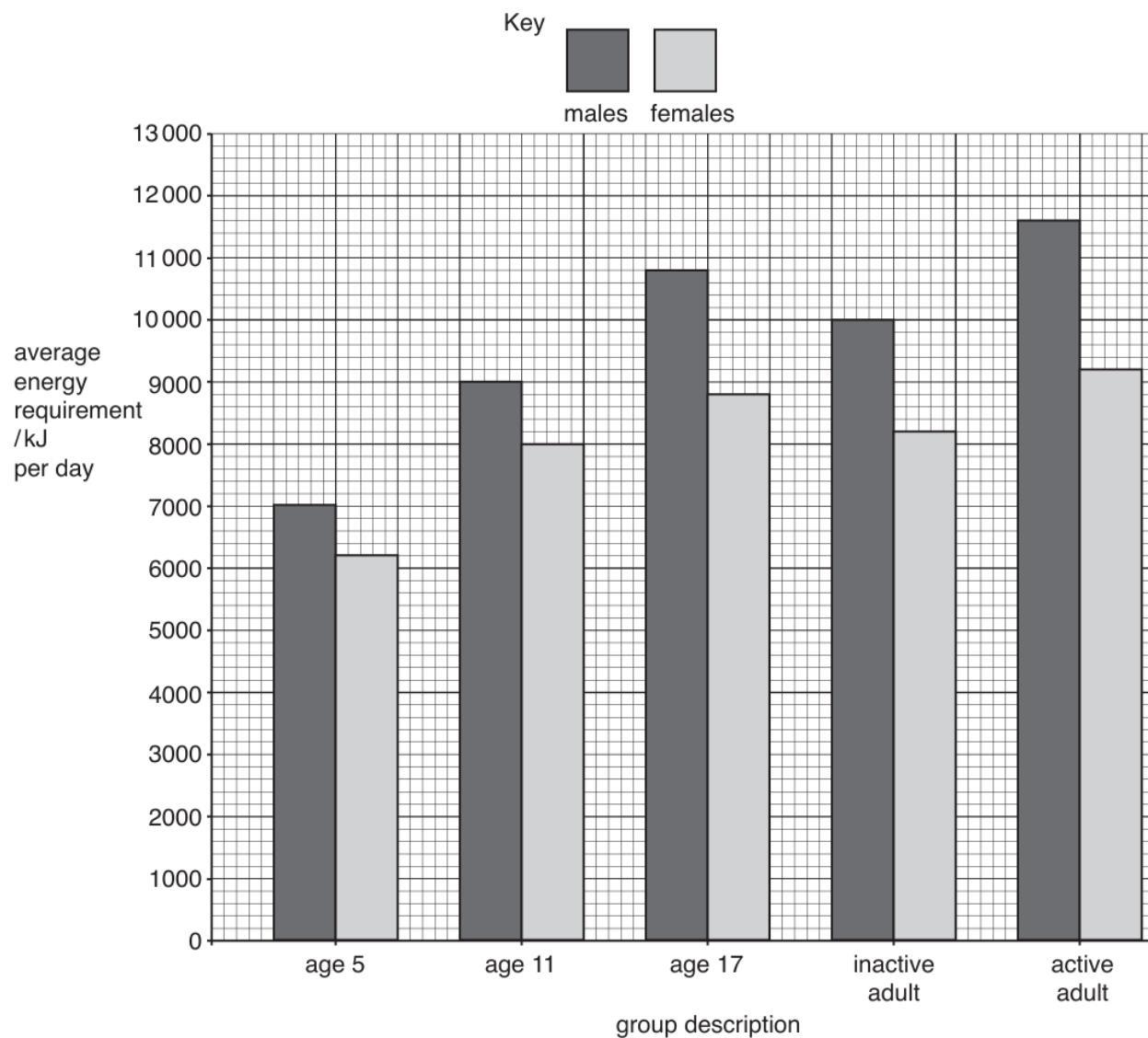


Fig. 4.1

- (i) State the average energy requirement of a five-year-old female.

..... kJ per day
[1]

- (ii) An eleven-year-old male received only 8000 kJ per day for four months.

Use the data in Fig. 4.1 to suggest **two** ways this could affect him.

1

2

[2]

- (c) Use the data in Fig. 4.1 to make **three** comparisons between the energy requirements of individuals aged 17 years and adults.

1

.....

2

.....

3

[3]

Paper 4

Questions are applicable for both core and extended candidates

- 8 (b) As part of a balanced diet, some governments recommend that children drink milk that has vitamin D added to it.

- (i) Suggest the dietary reasons for this advice.

.....
.....
.....
.....
..... [2]

- (ii) Describe what is meant by a balanced diet.

.....
.....
.....
.....
..... [2]

- 9 (c) *Chlorella* is sold as a nutritional supplement.

Spirulina is another nutritional supplement.

Table 1.1 shows some nutritional information for *Chlorella* and *Spirulina* supplements and the recommended daily intake for some nutrients.

Table 1.1

nutrient	mass of nutrient /mg per 100g of supplement		average recommended daily intake in adults /mg per day
	<i>Chlorella</i> supplement	<i>Spirulina</i> supplement	
vitamin C	0.74	0.00	80.00
calcium	120.00	5.10	1000.00
iron	37.00	75.50	12.00

- (i) One tablet contains 5g of *Chlorella* supplement.

Using the information in Table 1.1, calculate the number of tablets of *Chlorella* supplement a person needs to take to provide the recommended daily intake of iron.

Give your answer to **one** decimal place.

Space for working.

..... tablets [3]

- (ii) Explain the advantages of taking *Chlorella* as a dietary supplement rather than *Spirulina*.

Use the data in Table 1.1 to justify your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(iii) State the name of **one** food that is a principal dietary source of vitamin C.

..... [1]

10 (d) Mineral salts are important in the human diet. One of the most important is iron.

Explain:

- the importance of iron in the human diet
- the effects of an iron deficiency.

.....
.....
.....
.....
.....
.....
.....

..... [3]

11 The classification of giant pandas, *Ailuropoda melanoleuca*, is debated by many scientists.

Fig. 2.1 shows a giant panda eating bamboo plants.



Fig. 2.1

Fig. 2.2 shows a red panda, *Ailurus fulgens*, and a polar bear, *Ursus maritimus*.



red panda eating bamboo plants



polar bear eating fish

Fig. 2.2

- (a) State **one** dietary component that is more likely to be found in bamboo plants than in fish.

..... [1]

12 Milk is a source of some of the nutrients that are part of a balanced diet.

(a) Calcium and protein are two nutrients found in milk.

Describe the importance of calcium and protein in the diet.

calcium

.....

protein

.....

[4]

13 Fish are an important part of a balanced diet for many people.

(a) Fish are a good source of vitamin D.

State **one** effect of a diet that is deficient in vitamin D.

.....

.....

..... [1]