

Exercise walk-through

7.1

Diet

IGCSE Biology

A balanced diet



- too little vitamin C → **scurvy** (bleeding gums, slow healing).
- too little vitamin D → **rickets** (soft, bent bones), because the body cannot take in enough calcium.

Seven parts of a balanced diet

Carbohydrates

Carbohydrates

for energy – the everyday fuel.

Fats and proteins

Fats are the energy *store* and insulate; **proteins** are for growth and repair.

Vitamins

Small amounts, specific jobs: vitamin C for connective tissue, vitamin D for calcium uptake.

Mineral ions

Mineral ions : calcium for bones and teeth, and **iron** – from red meat and leafy greens – to make **haemoglobin**, the red pigment that carries oxygen.

Fibre and water

Fibre gives the gut muscles something to push against; water is the solvent everything else travels in.

“Balanced” means all seven, in the right proportions for that person’s age, sex and activity – not simply enough food.

Vitamins and deficiency

vitamin C

fruit & veg; short-
age → **scurvy**

vitamin D

helps absorb calcium; short-
age → **rickets**

The two deficiency diseases the syllabus names

scurvy

too little **vitamin C**: bleeding gums, and cuts that heal slowly

the source

fresh fruit and vegetables

rickets

too little **vitamin D** (or calcium): soft, weakened bones that bend under the body's weight

the source

dairy, oily fish, and sunlight on the skin

fats

and oils

butter, oil, nuts – an **energy store**, and they help keep you warm

fibre

not digested; it gives the gut muscles something to push against, preventing constipation

Both diseases are named in the syllabus with their vitamin *and* their symptoms. A question giving symptoms wants the vitamin, and one giving the vitamin wants the symptoms.

Exercises 2.1·2.2

2.1 State the main use of carbohydrates in the diet.

[1]

2.2 State why iron is needed in the diet.

[1]

Exercises 2.1·2.2

2.1 State the main use of carbohydrates in the diet.

[1]

2.1

- carbohydrates are the **main source of energy**
-

2.2 State why iron is needed in the diet.

[1]

2.2

- iron is needed to make **haemoglobin** in red blood cells that carry oxygen

Exercise 3.1

3.1 A lack of vitamin D causes:

[1]

☐

A scurvy

B rickets

C anaemia

D obesity

Exercise 3.1

3.1 A lack of vitamin D causes:

[1]

☐

A scurvy

B rickets

C anaemia

D obesity

3.1 B

- lack of vitamin D causes **rickets**
- A is vitamin C; C is iron; D is too much energy

Exercise 3.2 (a)

3.2 Proteins and fats are both parts of a balanced diet.

(a) State the use of protein in the body.

[1]

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3.2 Proteins and fats are both parts of a balanced diet.

(a) State the use of protein in the body.

[1]

(a)

- protein is used for **growth and repair** of cells

Exercise 3.2 (b)

3.2 Proteins and fats are both parts of a balanced diet.

(b) State the role of fibre (roughage).

[1]

Exercise 3.2 (b)

3.2 Proteins and fats are both parts of a balanced diet.

(b) State the role of fibre (roughage).

[1]

(b)

- fibre **keeps food moving through the gut**

Exercise 3.3

3.3 Explain why a person who eats too little vitamin C may develop scurvy. [2]

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3.3

- vitamin C keeps **skin and gums healthy**
- without it gums bleed and wounds heal slowly – **scurvy**