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2

Components of Food

You already know that our food has different chemical substances called **nutrients**. These nutrients can be grouped into the following classes:

- carbohydrates
- fats
- proteins
- vitamins
- minerals

Nutrients are essential for good health. It is important that our food includes all these nutrients in sufficient quantities. Besides these nutrients, our body also needs **water** and **roughage**.

CARBOHYDRATES

Sugars and starch are carbohydrates. They are nutrients that give us quick energy. Sugars are used to provide energy immediately. Starch releases energy more slowly than sugars.

Rice, wheat, potatoes, bananas, bread and sugar are good sources of carbohydrates. If the carbohydrates consumed are more than what is required by the body, then the excess

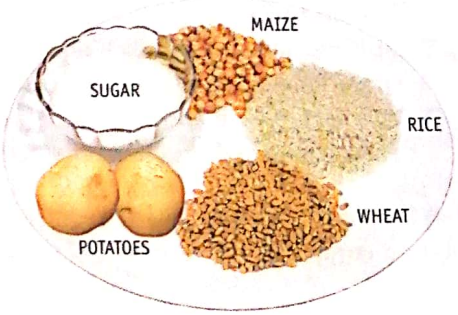

FIG. 2.1 Some sources of carbohydrates

IN THIS CHAPTER

CARBOHYDRATES ◆ FATS ◆ PROTEINS ◆ VITAMINS ◆ MINERALS ◆ WATER ◆ ROUGHAGE ◆ TESTING FOR NUTRIENTS ◆ NUTRIENTS IN SOME COMMON FOOD ITEMS ◆ BALANCED DIET ◆ DEFICIENCY DISEASES

*For detailed instructions, see inside front cover.

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FIG. 2.2 Some sources of fats

carbohydrates are normally stored in the body as fats.

FATS

There are many different kinds of fats. Our body uses fats as an energy store. Fats are stored under the skin and around the heart and kidneys. When we are short of energy, our body uses these fats. Fats actually contain more energy than carbohydrates. The fats stored in our body also help to keep us warm.

Fats are obtained from both plants and animals. Butter and ghee are animal fats. Groundnut oil, sunflower oil, coconut oil, mustard oil, other vegetable oils, and nuts such as almonds or cashewnuts, are obtained from plants. Meat, fish, eggs and cheese are also good sources of fats. An adult requires about 70–80 grams of fats per day.

PROTEINS

Our body is made up of billions of cells. These cells are made mainly from proteins. When we grow, our body needs proteins to make new cells. Our body also needs proteins to replace old and damaged cells. Our diet should have enough proteins for this. Growing children and sick people require more proteins in their diet.

Like fats, proteins are also obtained from both plants and animals. Pulses and soyabeans are plant proteins. Meat, fish, eggs and milk are animal proteins. The total requirement of proteins for an adult is about 50–60 grams per day (about 1 gram per kilogram body weight). Children have growing bodies and hence require more proteins per kilogram body weight.

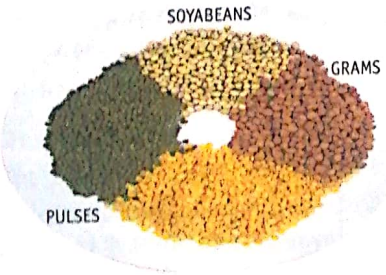

FIG. 2.3 Some sources of proteins

IT'S A FACT!

Eating too much fat is not good for us. If we eat too much animal fat, it gets deposited in the lining of our blood vessels. This makes our blood vessels narrower. Our heart then has to work harder to push the blood through the blood vessels. This can increase the risk of heart problems.

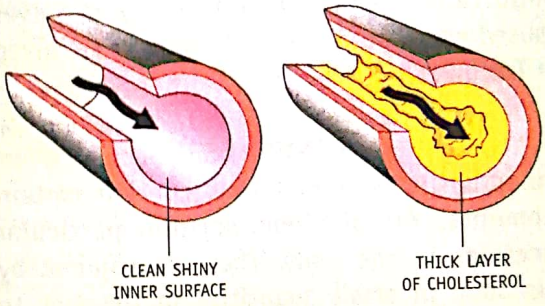

FIG. 2.4 Deposition of fat can make an artery narrow.

FIG. 2.5 Meat, fish and eggs are good sources of proteins and they also provide us with fats.

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VITAMINS

Vitamins are a group of nutrients that our body requires in small quantities. They are essential for the proper working of the body. If our diet is lacking in any vitamin, we suffer from certain diseases called **deficiency diseases**. There are about 20 known vitamins. The important vitamins, their sources, importance, and the deficiency diseases caused when we do not get enough, are given in Table 2.1.

MINERALS

Minerals are nutrients that contain certain elements. All of them perform particular functions in the body. They are required by our body in small quantities in the diet to maintain good health. Their deficiency in our diet also leads to deficiency diseases. Table 2.2 lists some important minerals, their sources, importance and deficiency diseases.

IT'S A FACT!

At the time when vitamins were discovered, their chemical compositions were not known. Hence, they were represented by letters of the English alphabet. Scientists now know their chemical composition and have given them chemical names. Vitamins are now manufactured by drug companies and are available at drug stores. They are given to patients suffering from deficiency diseases.

WATER

Water makes up almost 70 per cent of our body weight. Most of this water is present in the cells of our body. Some water lies in spaces between the cells. Also, water constitutes the liquid part (called plasma) of the blood. Life processes cannot occur without water.

TABLE 2.1 Some important vitamins

VITAMIN	SOURCES	IMPORTANCE	DEFICIENCY DISEASE
A	milk, butter, eggs, carrots cod-liver oil, tomatoes, green leafy vegetables	for normal growth; keeps the eyes and skin healthy	**night blindness**, which is the inability to see in dim light; irregular growth of teeth
B-Complex B_1	seafood, milk, meat, peas, cereals, green vegetables	for growth and development	**beri-beri**, which affects the nervous system
B_2	yeast, eggs, meat, peas	for healthy skin; for growth	skin disease and retarded growth
B_3 (Niacin)	whole cereals, potatoes, tomatoes, meat, fish	for healthy skin, for proper functioning of digestive and nervous system	**pellagra**, which affects the skin, digestive system and nervous system
B_{12}	liver, eggs, milk, fish	helps in the formation of red blood cells	kind of **anaemia** in which there is a deficiency of red blood cells
C	Indian gooseberry (*amla*), tomatoes, green leafy vegetables, citrus fruits, water chestnut (*singhara*)	for healthy growth and strong blood vessels	**scurvy**, in which gums swell up and bleed; wounds take longer to heal
D	sunlight (helps our skin prepare vitamin D), milk, butter, green vegetables, cod-liver oil	helps to use calcium for formation of strong bones and teeth	**rickets**, in which the bones become soft and out of shape, affects children
K	green vegetables like spinach and cabbage, soyabean oil	helps in the clotting of blood	excessive bleeding from wounds

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TABLE 2.2 Some important minerals

MINERAL	SOURCES	IMPORTANCE	DEFICIENCY DISEASE
iron	liver, eggs, meat, green vegetables, turnip, germinating wheat grains, yeast	for the formation of the substance that helps red blood cells carry oxygen to body cells	**anaemia**—the patient becomes weak
calcium	milk and milk products, tapioca, green leafy vegetables, finger millet (*ragi*)	for strong bones and teeth	weak bones; tooth decay
phosphorus	meat, fish, eggs, whole grains	for the development of strong bones and teeth; for making energy-rich compounds in the cells of our body	weakness; bad teeth and bones
potassium	green and yellow vegetables	for growth, for keeping cells and blood healthy	muscle weakness
sodium	common salt	for the proper functioning of the nervous system	muscle cramps; tiredness
iodine	iodized salt, seafood	helps in the secretion of thyroid hormone	**goitre**
fluorine	water in some areas	makes the enamel of the teeth hard and prevents dental caries	dental caries

Water plays a vital role in the body's system.

- It helps our body absorb nutrients from food.
- It transports nutrients throughout the body.
- It collects wastes from different parts of the body, and removes them from the body in the form of urine and sweat. Sweat is mainly water.
- The body is cooled by evaporation of sweat from the skin.

You lose a lot of water every day as you breathe, sweat, cry or get rid of your wastes. About half of this water is replaced by the water in the food you eat. Fruits and vegetables contain large quantities of water. Grapes, for example, contain 80 per cent water. Also, water is added to many food items while cooking. The other half is replaced when you drink liquids. Most people need 6–8 glasses of water or other liquids every day to stay healthy. Athletes and sportspersons should drink enough water to replace the water they lose through sweating.

Even though it is vital for our body, water does not provide any energy. It only serves as a solvent in which all chemical reactions take place.

IT'S A FACT!

If the body of a person loses too much water, for example, while playing or working in the hot sun, his body may get severely dehydrated. This causes the blood to become thicker and its movement in the body slows down. The consequences are severe pain and cramps in the muscles.

ROUGHAGE

Plant foods such as fruits and vegetables contain a carbohydrate that cannot be digested by the body. It is called roughage. It should form an important part of our diet because of the following reasons:

- Roughage adds bulk to our food. Since it is not digested, it passes down the entire digestive tract from the mouth to the anus. The muscles of the digestive tract need this bulk to push against—like squeezing toothpaste out of a tube.

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- It prevents constipation and ensures proper bowel movement.
- Many doctors believe that a high-fibre diet reduces the risk of heart diseases and bowel cancer.

TESTING FOR NUTRIENTS

ACTIVITY 1 (Experimental investigation): Testing for starch

Take a small quantity of the food item (for example, bread). Using a dropper, add 2–3 drops of iodine solution to it. If the colour of the food item changes to blue-black, it contains starch.

ACTIVITY 2 (Experimental investigation): Testing for sugar

Glucose is a kind of sugar our body uses the most. Put some glucose into a test tube. Add a few drops of Benedict's solution. Carefully heat the test tube in a water bath. The colour of glucose will turn orange. (**Warning:** Handle with care as Benedict's solution is harmful.)

ACTIVITY 3 (Experimental investigation): Testing for fat

Take a food item and rub it on a piece of brown paper. Let the paper dry. If a translucent mark is left on the paper, it means fat is present in the food.

Put 4–5 drops of cooking oil into a test tube. Add 2 mL of ethanol to the oil. Shake the test tube. Add 2 mL of oil more to the test tube and shake again. The oil turns cloudy. (**Warning:** Handle with care as ethanol is inflammable.)

ACTIVITY 4 (Experimental investigation): Testing for protein

Take a piece of meat or some beans, mash it with a mortar and pestle, and add a little water to make a suspension. Take a little of this suspension in a test tube. Add a few drops of copper sulphate solution to it. Very carefully add a few drops of sodium hydroxide solution. If the solution becomes purple, it shows the presence of protein. (**Warning:** Handle with care as sodium hydroxide is corrosive.)

ACTIVITY 5 (Experimental research)

Carry out the above tests on different food items such as raw potato, groundnut, milk, uncooked and cooked rice, uncooked and cooked pulses, slice of a vegetable, slice of a fruit, boiled egg, etc. Find out which nutrients are present in these food items. Tabulate your results.

ORAL QUESTIONS

1. What classes of nutrients are needed by our body?
2. If you need quick energy, what kind of food will you depend on—sugary food, starchy food or food full of vitamins? Why?
3. 'Fats are used as an energy store by our body.' What do you understand by this statement?
4. Whose requirement of proteins per kilogram body weight is greater—a 10-year-old child or a 24-year-old adult? Why? Why is 'per kilogram body weight specified here'?
5. In which foods is roughage present—plant foods, animal foods or both? Give reasons.

NUTRIENTS IN SOME COMMON FOOD ITEMS

Each food item that you eat has several nutrients—some in greater quantity, and others in lesser quantity. The following will give you an idea of the amount of major nutrients in some foods that you eat every day.

- Cereals (wheat, rice) have maximum carbohydrates (about 70 per cent), less proteins (about 10 per cent) and small amounts of vitamins and minerals. Cereals are, therefore, eaten with every meal to give energy. You must get most of your energy from carbohydrates.

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- Sugar is 100 per cent carbohydrates. But eating too much sugar is not good.
- In pulses, there are less carbohydrates (60 per cent) than in cereals but more proteins (20 per cent). They also have vitamins and minerals. Pulses are a good source of proteins especially for people who follow a strict vegetarian diet.
- Fish, meat and eggs are good sources of proteins. They also provide you with fats.
- Milk and milk products are rich in the mineral calcium, which is good for bones and teeth. They also provide you with vitamins.
- Carrots are rich in vitamin A, which is very good for the eyes.
- Spinach and cabbage are rich in vitamins and minerals. They also provide you with roughage.
- Clarified butter (*ghee*), butter and oil are 100 per cent fats. They must be included in your diet, but in limited amounts.

Food can be divided into the following groups:

- Foods rich in carbohydrates and fats provide energy to the body and are known as **energy-giving foods.**
- Foods rich in proteins help our body to grow and are known as **body-building foods.**
- Foods rich in vitamins and minerals are known as **protective foods.** They protect our body against diseases.

A balanced diet

To remain healthy you need all the nutrients in the right amounts. No single food item contains all the nutrients. Therefore, you need a combination of food items. A balanced diet is one that contains the proper amounts of each nutrient. However, a balanced diet is not the same for everyone. It depends on age, sex and the type of work that one does.

- In early childhood, the child grows rapidly. He or she needs more proteins.
- Nursing mothers and pregnant women also need more proteins to serve the needs of the growing baby.
- A hard-working labourer needs more energy, which he can get by eating more fats and carbohydrates.

Table 2.3 gives an example of a balanced diet for a 12-year-old child.

Cooking of food

Foods such as vegetables, cereals and meat

TABLE 2.3 Daily balanced diet for a 12-year-old child

FOODSTUFF	QUANTITY (VEGETARIAN)	QUANTITY (NON-VEGETARIAN)
cereals	320 g (rice 160 g, wheat 160 g)	320 g (rice 160 g, wheat 160 g)
pulses	70 g	60 g
green leafy vegetables	75 g	100 g
other vegetables	75 g	75 g
fruits	50 g	50 g
milk	250 g	250 g
fat	35 g	35 g
sugar or jaggery (*gur*)	50 g	35 g
meat, fish or egg	—	30 g or 1 egg

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are cooked before eating. Cooking makes the food soft, tasty and easy to digest. But wrong cooking methods destroy several nutrients in it.

Vegetables and fruits should not be washed after cutting or peeling them. This results in the loss of some vitamins and minerals. Washing rice and pulses repeatedly also results in the loss of vitamins and minerals.

Food should be cooked in just enough water. Cooking in too much water and then throwing the extra water away makes food lose its nutrients.

Vitamin C gets destroyed during cooking due to heat. We should therefore eat raw fruits and vegetables to get vitamin C.

DEFICIENCY DISEASES

Many people in the world cannot afford a balanced diet due to poverty. Some others do not get a balanced diet because of wrong food habits. For example, many children do not eat green vegetables, which are full of vitamins and minerals. Many people practise wrong cooking habits which destroy the nutrients in food.

People who do not get the right amounts of all nutrients from their food suffer from deficiency diseases. The effects of the deficiency of different nutrients are discussed below.

Deficiency of carbohydrates

Most of the energy we need comes from carbohydrates. About 320 g of cereals can provide a 12-year-old with the energy he or she needs per day.

If your diet gives less energy than required by your body, it is deficient in carbohydrates. People with carbohydrate deficiency in their diet are weak and do not have enough stamina. They cannot bear physical and mental strain.

Eating too much of carbohydrates also leads to ill-health. Most of the extra carbohydrates are converted and stored as fat in the body. This leads to an increase in the body weight. This is called **obesity**. Overweight people are not very active and often suffer from diseases such as that of the heart.

Deficiency of proteins and fats

Deficiency of proteins in the diet leads to severe malnutrition especially in children.

Kwashiorkor is a disease caused by protein deficiency in children. The stomach becomes swollen, the legs become thin and the skin shows ugly patches. If the disease is not treated in time, the mental and physical growth of the child slows down.

Marasmus is a disease in children caused by the deficiency of proteins, carbohydrates and fats. The child becomes so thin that loose folds of skin can be seen all over the body.

FIG. 2.6 A child suffering from marasmus

Deficiency of vitamins and minerals

Vitamins are called essential nutrients because they are necessary for the normal development and functioning of the body systems. They regulate body activities.

Each vitamin is needed for a specific purpose. Deficiency of one or more vitamins leads to deficiency diseases. These diseases affect the eyes, skin, bones, hair and general growth of the body. Table 2.1 lists a few of these vitamins, and the deficiency diseases caused by the lack of these vitamins.

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Like vitamins, minerals are needed by the body in very small amounts. They are supplied to our body in the form of salts by various foods. Deficiency of minerals in a body causes deficiency diseases. Table 2.2 shows the important minerals required by our body and the diseases caused by their deficiency in the body.

Let us study in detail about some deficiency diseases caused by the lack of vitamins and minerals in the diet.

Scurvy is a disease caused due to the lack of vitamin C. The main symptoms of scurvy are swelling and bleeding of gums, and wounds not healing properly. In the 16th and 17th centuries, sailors who went on long voyages suffered from this disease, as they did not get fresh fruits to eat during the voyage. In the year 1747, a doctor named **James Lind** discovered that if these sailors were given lemons and oranges, the disease was cured very quickly. This led to the discovery that scurvy is a deficiency disease caused by the lack of vitamin C.

Rickets is a disease of the bones. In children suffering from rickets, bones become soft and hence get bent and deformed. Bow legs, pigeon-type chest, and bending of the spine are symptoms of the disease. There may also be pain in the bones and loss of tooth enamel. In adults, bones become brittle and can get fractured easily. Rickets is caused by the lack of vitamin D and the mineral calcium. Lack of the mineral phosphorus also affects bones and teeth.

FIG. 2.7 A child suffering from rickets has bow legs.

Anaemia is caused by the deficiency of iron in the diet. It is a disease in which there is deficiency of a substance (called haemoglobin) found in the red blood cells of our body. Because of this, the blood is unable to carry the full supply of oxygen to cells of the body. A person suffering from the disease looks pale, gets tired quickly, and suffers from loss of appetite. Another type of anaemia results from the lack of vitamin B_{12}. In this disease there is a reduced formation of red blood cells in the body.

Goitre is caused by the lack of the mineral iodine in the diet. The thyroid gland situated in the neck region becomes swollen, and there is reduced production of a chemical (called thyroxin) in the body that controls growth. A child suffering from goitre shows slow or retarded physical and mental growth. Goitre used to be common among people living in the Himalayan region in our country, as the iodine content of soil and water is low in these areas. However, consumption of iodized salt has helped to reduce the incidence of goitre.

IT'S A FACT!

The **Mid-day Meal** Scheme is a Government scheme where school-going children in India are provided free nutritious food in their schools. This scheme tries to solve two main problems—malnutrition among children of the poor, and improving attendance in schools. The scheme was introduced in Madras (now Chennai) way back in 1925. It has now been implemented in all states of India. So far 12 crore (120 million) children are covered under the Mid-day Meal Scheme. It is the largest school lunch programme in the world.

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ORAL QUESTIONS

1. Name one deficiency disease that can arise due to the deficiency of the following in the diet.
   a. proteins
   b. vitamin A
2. Identify the possible disease from the given symptoms, and the reason for the disease.
   a. A child has bow legs.
   b. A man has swollen and bleeding gums.
   c. A child looks pale and gets tired quickly.
   d. A woman has swelling in the neck.

NEW WORDS

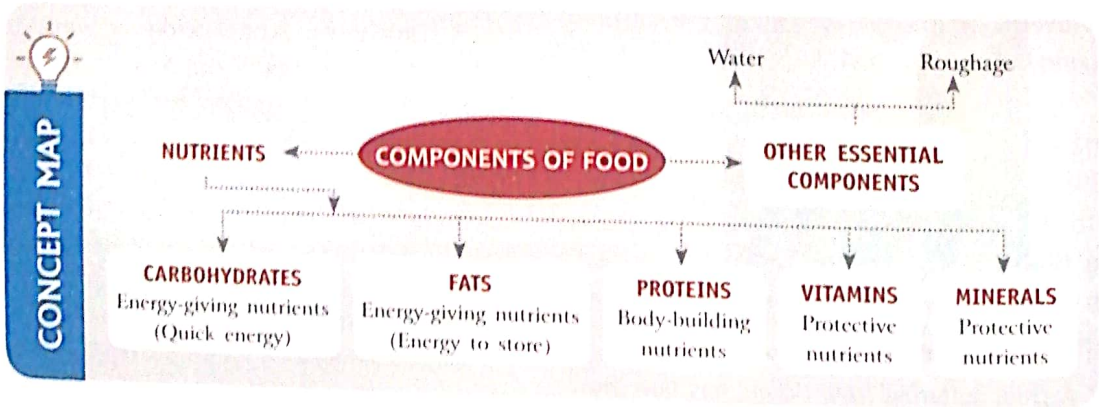
ROUGHAGE—carbohydrates present in plant foods that cannot be digested and which move food through the digestive system

BALANCED DIET—a diet that contains the proper amounts of each nutrient

DEFICIENCY DISEASES—diseases caused by the lack of nutrients in food

NOW YOU KNOW

- Nutrients are chemical substances in food that your body needs.
- Nutrients in food can be grouped under the classes—carbohydrates, proteins, fats, vitamins and minerals.
- In addition to the above nutrients, our body needs water and roughage.
- Carbohydrates and fats are energy-giving foods. Sugars and starch are carbohydrates. Fats provide us with energy that the body can store.
- Proteins are needed for the growth and repair of the body by building new cells. They are body-building foods.
- Vitamins and minerals are protective foods. They are required in small quantities and are essential for the normal working of the body.
- Deficiency of vitamins and minerals in the diet leads to deficiency diseases.
- Water makes up about 70 per cent of our body weight. It plays a vital role in the body's systems.
- Fibre or roughage is necessary in food for the proper functioning of the digestive system.
- A balanced diet contains the proper amounts of each nutrient required by the body. It is necessary to remain healthy.



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EXERCISES

A. Choose the most appropriate answer.

1. Which of these provides energy?
   a. vitamins b. minerals c. carbohydrates d. water
2. Which of these is the quickest source of energy?
   a. sugars b. starch c. proteins d. fats
3. In which vitamin would your body be most deficient if you did not eat fresh fruits and green vegetables?
   a. vitamin A b. vitamin B c. vitamin C d. vitamin D
4. Which mineral is necessary for the formation of strong bones and muscles?
   a. iron b. calcium c. phosphorus d. potassium
5. Which of these forms most of our body weight?
   a. proteins b. fats c. carbohydrates d. water
6. Iron is a
   a. mineral. b. fat. c. vitamin. d. protein.
7. Obesity occurs due to
   a. overeating of carbohydrates and fats. b. not eating enough carbohydrates and fats.
   c. overeating of vitamins and minerals. d. not eating enough vitamins and minerals.
8. In which of the following diseases will you advise the intake of iodized salt?
   a. beri-beri b. goitre c. scurvy d. rickets
9. For developing strong bones and teeth, which two minerals will you take more in your diet?
   a. iron and sodium b. iron and calcium
   c. iodine and fluorine d. calcium and phosphorus
10. Marasmus is caused due to diet insufficient in
    a. proteins. b. carbohydrates. c. fats. d. all of these

B. VERY SHORT-ANSWER QUESTIONS: Give one-word answers.

1. Lack of nutrients leads to _____ diseases.
2. Sugars provide energy faster than starch. True or false?
3. The place where fats are mainly stored in the body is under the _____
4. Deficiency of which vitamin is likely to cause rickets in children?
5. Which mineral is vital for bones and teeth?
6. Which substance plays an important role as a solvent in the transport of materials, digestion of food and excretion of waste products?
7. A diet that contains the proper amounts of each nutrient is called a _____ diet.
8. Meat does not contain roughage. True or false?
9. Fibre cannot be digested by the body, so it is better to eliminate it from food. True or false?
10. Which vitamin is easily destroyed during cooking?

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C. SHORT-ANSWER QUESTIONS: Answer in a sentence or two.

1. Into which classes are nutrients divided? Which of these provide energy to the body?
2. What are protective foods?
3. How are the proteins important for the body?
4. Mention two cooking methods that destroy nutrients in food.
5. Name the two kinds of carbohydrates. Which of these provides us quick energy?
6. Which nutrients are needed by our body in small quantities only?
7. Write the symptoms of rickets.
8. What are the symptoms of marasmus?
9. The incidence of goitre among the people living in the Himalayan region was quite high. Why?

D. LONG-ANSWER QUESTIONS: Answers these questions.

1. Explain the importance of the following vitamins for the body.
   a. vitamin A **b.** vitamin C **c.** vitamin D **d.** vitamin K
2. Explain the importance of the following minerals for the body.
   a. calcium **b.** sodium **c.** potassium **d.** iron
3. Why should you drink 6–8 glasses of water every day even when water does not provide any energy?
4. What do you mean by a balanced diet? Is it the same for everybody? Why?
5. What are deficiency diseases? Name four deficiency diseases and the associated nutrients.
6. Discuss the importance of roughage in our diet.

HOTS QUESTIONS: Think and answer.

1. It is observed that constipation is common among people in the western countries who eat more meat and processed food than us. What can be the reason for this?
2. An overworked computer software engineer works on the computer the whole day. He gets very tired after work. Somebody advised him to eat more carbohydrates and fats to get more energy. Do you think this will help him? Why?
3. Will you remain healthy if you only drink milk? Why?
4. Explorers going to the North or South Poles must carry green vegetables and fruit juices with them. Why is this necessary?

BE A SCIENTIST

A scientist prepared a table showing the percentage of protein, fat, carbohydrate and water in some food items. Unfortunately, he did not write the names of the constituents and labelled them as A, B, C and D.

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Study the table and say which constituents are represented by A, B, C and D.

FOOD	A (%)	B (%)	C (%)	D (%)
Butter	0.5	16.5	0	83
Meat	25	55	0	20
Potatoes	2	82	16	0

VALUES

A large number of people in India, including children, do not get enough food to eat. For them, a balanced diet with all nutrients is a distant dream.

On the other hand, you may have seen people attending parties filling up their plates with more food than they can eat and wasting the food. Do you think this is justified? What message would you like to give to such people?

ENRICHMENT ACTIVITIES

In the Library—Research Projects

- **Is your diet balanced?** Make a list of the food items that you ate yesterday from morning to night. Divide each item into the food groups you have learnt about in this chapter. See if you ate a balanced diet. If your diet is not balanced, decide in what way it should be modified so that it becomes balanced. Take the help of your teacher and elders at home.
- **Food for domestic animals** Find out about the food requirements of some domestic animals—what do balanced diets for cows or hens contain?

My Virtual Library—Research/Activities on the Internet

- Visit rsgr.in/lsc-6 and click on LINK 4 to find out more about food and health.
- Visit rsgr.in/lsc-6 and click on LINK 5 to get tips for good health and much more—join for free.
- Visit rsgr.in/lsc-6 and click on LINK 6 to learn about nutrition through fun activities.
- Visit rsgr.in/lsc-6 and click on LINK 7. Now click on the play button to see an interactive activity on health and growth.

In the Laboratory—Designing an Experiment

- Design an experiment to compare the energy content of different food items. Keep the following in mind.
  - Energy content of food can be found by burning a measured quantity of food and measuring the amount of heat liberated.
  - Foods burn only when they are completely dry.
  - An idea of the heat released on burning can be obtained by using it to heat water and measuring the temperature rise.
  - The following are some food items that can be compared—bread, chips, peanuts, fruits (What will you do to dry them?)

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- You will need to design the apparatus you will use to burn the food, use it to heat water in a beaker, and measure the rise in temperature of water.
- You will also have to figure out how to minimize loss of heat to the surroundings.

HINTS: The container in which food is burnt should be small and light. Otherwise it will take away a lot of heat and results will be inaccurate. The container can be made from wire gauge to minimise this effect. For the same reason, the beaker used to heat the water should be small and thin-walled. Food with water in them can be dried in the sun or in an oven at a low temperature (If the temperature is high, food can get cooked).

Talk to the Class—Presentation

Make a presentation on the experiment you designed above. Highlight the difficulties you encountered and how you solved them.

LIFE SKILL

Eating a balanced diet in a different region

A group of students plan to visit two different states of India. To get the real feel of these states, they plan to eat only local food. You are their tour advisor. Pick out two states of India which are far away from your state, which you think they should visit. Find out 4–5 main dishes eaten in these states and their nutrient content. Now make a balanced diet for the students using these dishes.

TEACHER'S NOTES

- Point out to students that deficiency as well as excess of any type of nutrient is bad for health. Being obese is also dangerous. Let children realise that while some people suffer from malnutrition because they do not get enough to eat, others suffer because they do not eat to keep their weight down. Discuss why this is as dangerous as not eating properly.
- Emphasize the importance of water and roughage in food, even though these are not nutrients.

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