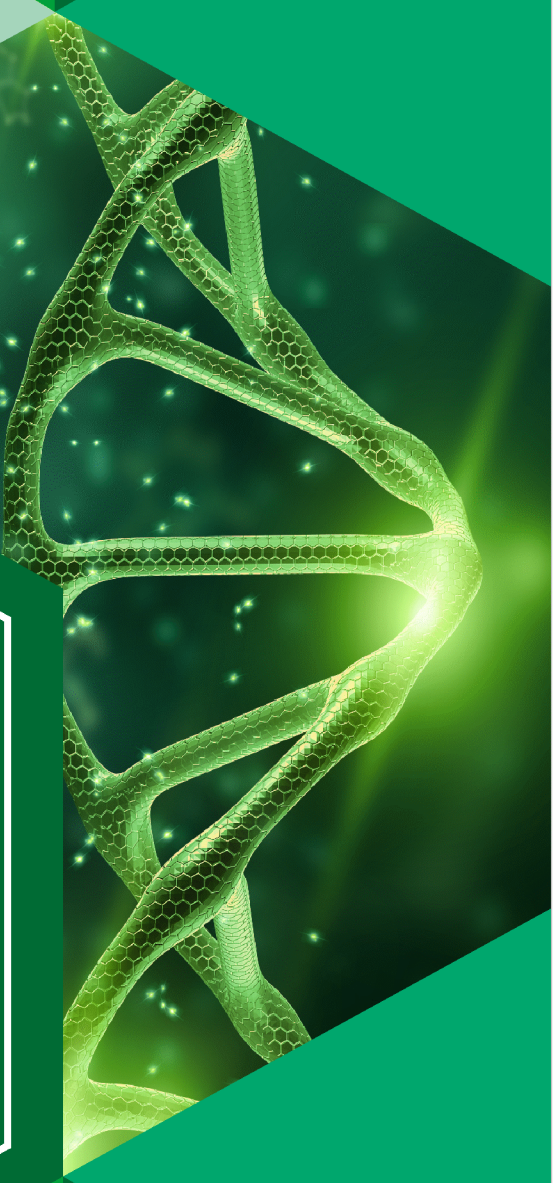
MATRIX OLYMPIAD

The Most Innovative Talent Recognition Exam



BIOLOGY

Class - VI

MATRIX

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Few words for the Readers

Dear Reader,

"*Matrix Olympiad is established to encourage school students to go a step further than their regular studies, and get a chance and exposure to competition on a wide scale. It also helps students enhance their learning of basic cognitive skills and deeper knowledge of subjects like Science, Mathematics, English, Mental Ability, Social Studies. "Matrix Olympiad helps students nurture their minds for higher targets of tomorrow and enables them to study School for JEE, NEET, CLAT, NDA, Olympiads , NSEJS, NTSE , STSE etc.*"

The above thought has been our guiding principle while designing and collating the study material for **Matrix Olympiad** . And hence, we hope that this particular material will be helpful towards your preparation for **Matrix Olympiad**.

Our team at **MATRIX** has put in their best efforts for making this particular module interesting and relevant for you. Additional efforts have been made to ensure that the content is easy to understand and error free to the extent possible. However, there might remain some inadvertent errors in answer keys and theoretical portion and we would welcome your valuable feedback regarding the same.
If there are any suggestions for corrections, please write to us at **smd@matrixacademy.co.in** and we would be highly grateful.

Finally, we would like to end this message by a famous quote by Ernest Hemingway - "*There is no friend as loyal as a book*." So, please give your study material the time and attention it deserves, and it will surely help you reach newer heights in your fight with competition examinations.

With love and best wishes !
Team MATRIX

CONTENTS

FOOD : WHERE DOES IT COME FROM ?

1

INTRODUCTION

• All living organisms need energy to sustain life. This energy comes from food.

Organisms require food for the following purposes:

(i) To provide energy required for various activities of the body

(ii) For growth and development of the body

(iii) To protect the body from diseases and keep it healthy

(iv) For repair and replacement of worn out cells

(v) For reproduction

1. VARIETIES OF FOOD

- There is a lot of variety in the food we eat. We eat different foods during different times of the day. Food eaten during breakfast, lunch and dinner is different. According to their taste, habits, lifestyle and availability of foods different people eat different kinds of food.
- India is a vast country with different types of soil and climate which determine the crops, vegetables and fruits that grow best at a particular place. Due to this, people from different states in India eat different kinds of food.

LAB TIME
Let's Do & Learn

To find out the varieties of food eaten by different people.

• Make a list of students in your class who come from states different from yours. Collect information from them about the food they have taken in lunch. Compare your information with the table given below.

Table : Food eaten by different people

Name of the friend	State	Food items taken in lunch
1.	Punjab	Paratha, dal
2.	Rajasthan	Dal, baati
3.	Karnataka	Idli, sambhar
4.	Gujarat	Dhokla
5.	Goa	Seafood, rice
6.	Maniour	Fish, rice

- After performing the above mentioned activity, you will notice that people belonging to different regions of India eat different kinds of food, i.e., food habits of people from different states are different.
- Although there is a huge variety of food eaten by different people in different states of India, but there is one common factor; we all eat cereals like wheat, rice, millet, etc., along with pulses, meat, vegetables, dairy products and fruits.

Rajasthan

Gujarat

Odisha

Figure : Varieties of food eaten in different states of India

1.1 INGREDIENTS OF FOOD

- Materials which are used to prepare food are called ingredients. Some food consist of just one or two ingredients whereas others consist of several ingredients, e.g., a dish of boiled rice consists of just two ingredients, i.e., rice and water whereas a dish of vegetable curry consists of different types of vegetables, salt, spices, oil, water, etc.

LAB TIME
Let's Do & Learn

To find out ingredients in different food.

• Make a list of various food and find out the ingredients used to prepare them. For this you can take your mother's help.

• Some examples of food and their ingredients have been given in the following table. Add some more to this list.

Table : Different food and their ingredients

Food	Ingredients
Vegetable fried rice	Rice, peas, carrot, beans, salt, oil, sauce, spices, water, etc.
Chicken fried rice	Chicken, rice, spices, water, oil, etc.
Dosa	Rice, urad, dal, salt and water
Chapati	Wheat flour and water
Puri-sabji	Wheat flour, vegetables, salt, spices, oil and water
Aloo ka paratha	Wheat flour, boiled and mashed potatoes, salt, spices, oil and water

1.2 SOURCE OF FOOD

- Most of the ingredients that we use in our food come from plants and animals. Plants are the sources of food ingredients like cereals, pulses, vegetables, fruits, sugar, oil, spices, etc. Animals provide us with milk and milk products (cheese, curd, butter, cream, ghee, meat, eggs, etc.)

→ **Plants as a source of food**

- Green plants can prepare their own food, hence they are known as producers. The extra food prepared by plants is stored in different parts of the plant body such as roots, stems, leaves, flowers, seeds and fruits.
- The plant parts which are eaten by humans are called **edible parts** whereas the parts which cannot be eaten by humans are called **non-edible parts.**
- For example, in a tomato plant we eat the fruit, i.e., tomato is edible whereas root and stem of tomato are non-edible. In the same way, the edible part in a mango plant is the fruit while the non-edible part is root. The edible part in ginger and potato, is the stem; in radish and carrot, it is the root and in cabbage, leaf is the edible part.
- In some plants, more than one parts of the plant are edible e.g., we eat root and leaf of radish plant, seed of mustard plant give us oil and the leaves of mustard plant are used as a vegetable.

LAB TIME
Let's Do & Learn

To understand that ingredients from many different sources are used to prepare a single dish.

• Make a list of various food the ingredients used to prepare them and the souces of these ingredients. Some of the examples have been given in the following table. Add some more examples to this.

Food	Ingredients of food	Sources of ingredients
Idli	Raw, rice	Plant
	Urad dal	Plant
	Water	City water supply
Chicken Curry	Chicken	Animal
	Spices	Plant
	Oil / ghee	Plant/ animal
	Water	City/water supply
Kheer	Milk	Animal
	Rice	Plant
	Sugar	Plant
	Dry fruits	Plant

- From this activity, we conclude that ingredients from different sources (e.g., plants and animals) are used to prepare a single dish.

→ **Food obtained from plants**

(i) Cereals (wheat, rice, maize)

(ii) Pulses (pea, bean, soybean, gram, groundnut)

(iii) Vegetables (carrot, radish, potato, onion, spinach, cabbage, tomato)

(iv) Fruits (banana, apple, mango, grapes, orange, pineapple)

(v) Sugar (sugarcane)

(vi) Oil (mustard, groundnut, coconut, soybean, cotton seed, sunflower)

(vii) Spices (turmeric, chilli, ginger, saunf or fennel, elaichi or cardamom)

LAB TIME
Let's Do & Learn

To identify the plant parts from which the ingredients of certain foods are obtained.

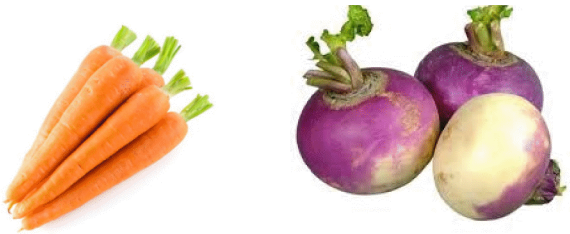
• Obseve your mother in the kitchen while she is cooking food and find out what is she preparing at differenttimes . Make a list of food ingredients which she uses to prepare different foods. Try to find out the plant parts from which the ingredients are obtained and make a table to note down your observations.

An example of the food along with its ingredients and the plant parts from which the ingredients are obtaiend have already been in the following table. Add more examples to it.

Food item with plant as the major source	Ingredients/source	Plant part which gives us the ingredient
1. Brinjal curry	Brinjal Chilli as spice (any other) Oil from groundnut, mustard soybean, any other plant	Fruit Fruit Seed
2.		
3.		

- Some examples of various plant parts that are used as food are as follows :

Roots : In some plants, roots store food. These roots become swollen due to stored food in them. E.g., roots of sweet potato, carrot, radish, beet, turnip, etc. are edible.



Carrot Turnip

Figure : Edible roots

Stems : Many plants store food in their stems, e.g., potato, sugarcane, ginger, turmeric, etc., are the edible stems.

Potato Ginger

Figure : Edible stems

Leaves : We eat the leaves of many leafy vegetables, e.g., spinach, mustard, cabbage, lettuce, fenugree.

Spinch Wheat grains

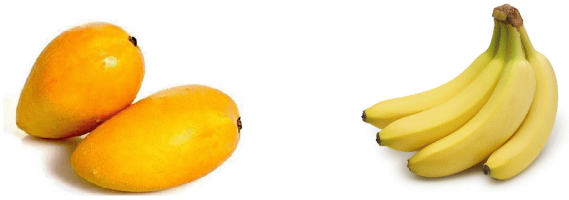
Figure : Edible leaves

Flowers : Flowers of some plants are edible and serve as good source of food. e.g., cauliflower, broccoli, etc. Flowers of banana, pumpkin, rose, etc. are used in a wide variety of delicious food.

Cauliflower Broccoli

Figure : Edible flowers

Fruits : Plants give us a variety of delicious and nutritious fruits, e.g., apple, mango, banana, orange, grapes, papaya, guava, etc.



Mango Banana

Figure : Edible fruits

Seeds : Seeds of plants are a good source of food for human beings because they contain nutrients necessary for the plant's initial growth. In fact, a majority of foods consumed by human beings are seed-bassed foods. Edible seeds include cereals (maize, wheat and rice), legumes (beans, peas, and lentils) and nuts. Oil seeds such as sunflower, repeseed and sesame are oftern used to produce rich oils.

Lentils Wheat grains Nuts

Figure : Edible seeds

- The seed of a plant contains the stored food material. It is because a baby plant is present in the seed.
- When the baby plant starts growing, it uses the food stored in the seed until it can make its own called **cotyledons.** The baby plant rests in the seed till it gets all the necessary conditions to grow. The growth of a baby plant from a seed is called **germination.** Seeds which have germinated are called **sprouted seeds.** A young growing plant is called **seedling**.

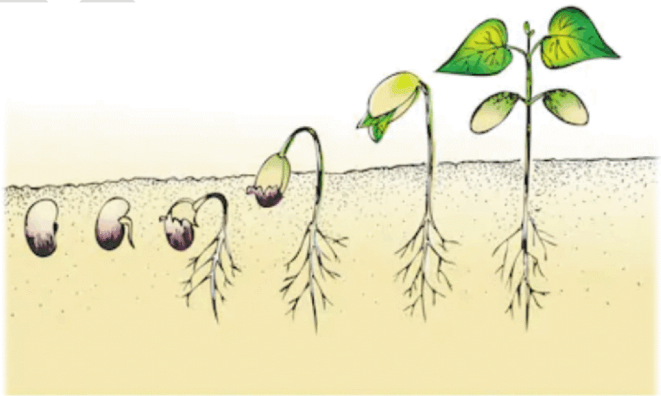


Figure : Germination of a seed

- There are some foods which are not obtained from animal or plant sources. e.g., various edible fungi, especially mushrooms and blue-green algae such a Spirulina.
- Cartain fungi and ambient bacteria are used in the preparation for taste, preservation, etc.
- Salt is not obtained either from plants or animals but is used in most preparations for taste,preservation, etc.
- Inorganic substances such as baking soda and cram of tartar are used to preserve or chemically after an ingredient.

LAB TIME
Let's Do & Learn

To sprout the seeds.

• **Materials required :** Green gram (moong) seeds, container, water.

Figure : Sprouting of green gram seeds

• **Procedure :**

(i) Take some dry seeds of green gram (moong).

(ii) Wash the seeds and soak them in water for a dry in a container.

(iii) Next, day drain the wter completely. Wrap the seeds in a wet cloth and set them aside in a warm place for at least 24 hours.

• **Observation :** You will find white structures coming out of seeds. These seeds have germinated sprouted.

• **Conclusion :** The green (moong) seeds have germinated (sprouted).

→ **Animal as a source of food**

- A variety of food products are obtained from animals. Animals are both direct as well indirect source of food.
- Food obtained from animals include milk, milk products, eggs, meat and honey.

Milk

- Milk is an important animal product. Main milk producing animals in India are cows and buffaloes but milk of goat,sheep and camel is also used in some parts of our country. Milk producing animals are called **milch animals.** Many products are obtained from milk which are called **dairy products**.

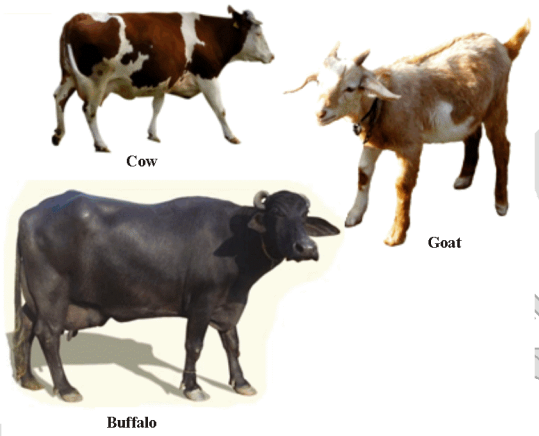


Figure : Milch animals

Some common dairy products are :

(i) Cottage cheese : Common methods of making cheese include adding lemon juice or vinegar to milk. Then, the liquid portion of milk is drained off and the solid part forms cheese. This process is called curdling. Cheese is made from curdled milk of cow, goat, sheep or buffalo.

(ii) Cream : Cream is made by collecting the top fatty layer of the milk.

(iii) Butter : Butter is made by churning fresh cream.

(iv) Ghee : Cream is made by collecting the top fatty layer of the milk.

(v) Curd : Common methods of making curd include adding a small sample of curd in warm milk. The microorganisms (bacteria) present in the curd sample turn the milk into curd.

Milk **Cheese** **Butter** **Curd**

Figure : Dairy products

Egg

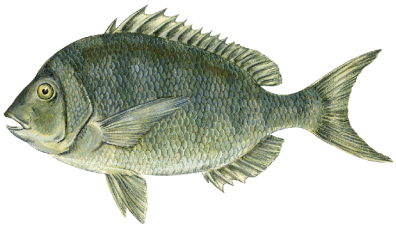
- Eggs of certain birds like hen, goose, duck, etc., are oftern eaten as food. The term poultry is used for birds which are domesticated for eggs and meat.

Figure : Eggs

Meat

- The flesh of some animlas is eaten as food. These include animals like chicken, goat, pig and fish. In many parts of the world, prawns, snails, crabs, shrimps, etc., are also eaten. These are referred to as **seafood.**

Chiken



Fish

Prawn

Figure : Meat

Honey

- Honey is a sweet liquid made by honeybees using nectar from flowers. Honeybees store honey in their beehives. The beehives which contain honey are called **honeycombs.**
- Flowers and their nectar may be available only for a part of the year. So, bees store this nectar for their use through the year. People collect honey from the beehives.

Focus Point

- To produce 500g of honey, honeybees have to travel the equivalent of three times around the world.
- Honeybees have honey stomach in which they carry nectar. The honey stomach holds almost 70 mg of nectar when full.

1.3 GROUPING OF LIVING ORGANISMS ON THE BASIS OF THEIR FOOD HABITS

- Food is the basic necessity for all living organisms, but each living organisms has a different way of obtaining food, i.e., they have different food habits. On the basis of food habits, we can categorise living organisms into (i) autotrophs and (ii) heterotrophs.

(i) Autotrophs

- The organisms which can prepare their own food are called autotrophs. All green plants manfacture their own food from carbon dioxide and water in the presence of sunligh and chlorophyll by the process knows as **photosynthesis.** Hence, all green plants are autotrophs. They are also called **producers** as they produce food for them selves as well as for other organisms.

Focus Point

- Insectivorous plants or insect eating plants which feed on insects, are green and synthesise their own food by the process of photosynthesis but they also feed on insects to obtain their nitrogen nutrition.
- These plants grow in the soils that are usually nitrogen-deficient, therefore they use the nitrogen nutrition they also feed on insects to supplement the food they prepare by photosynthesis. Examples of such plants are **pitcher plant** (Nepenthes), **Venus flytrap** (Dionaea), **sundew**, **bladdwerword,** etc. These plants have developed special mechanisms to trap, digest and absorb the insects.

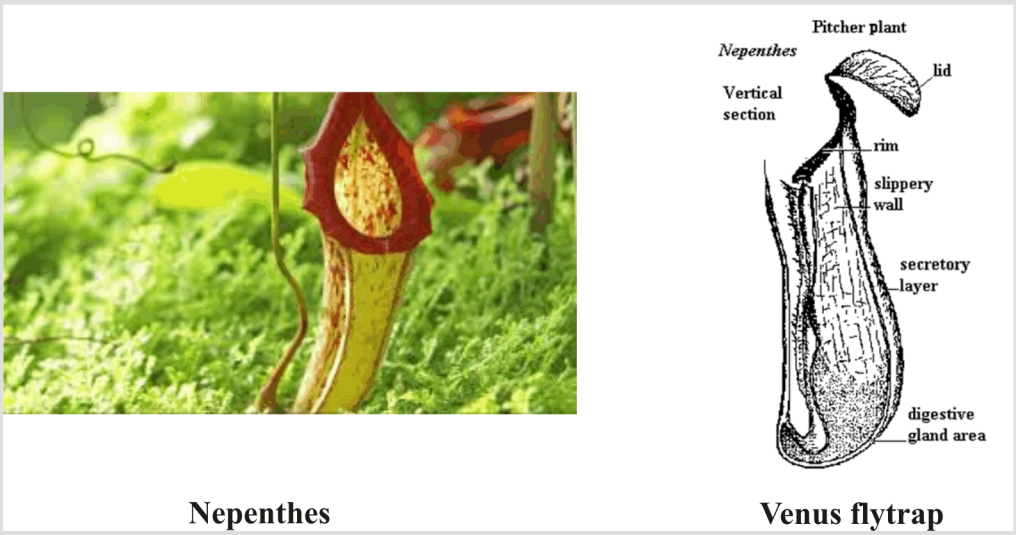


Figure : Insectivorous plants

(ii) Heterotrophs

- Living organisms which cannot prepare own food and depend on autotrophs directly or indirectly for the fullfilment of their food requirements are called **heterotrophs**. They are also called **consumers**, e.g., animals, human beings,etc.

  On the basis of their eating habits, heterotrophs can be divided into

  (a) herbivores, (b) carnivores and (c) omnivores.

(a) Herbivores : Animals that eat only plants are called herbivores, e.g., rabbit, bufflo, cow, elephant, deer.

(b) Carnivores : Animals that eat the flesh other animals are called carnivores, e.g., lion, wolf, tiger, leopard,crocodile, etc.

(c) Omnivores : Animals that eat both plants as well as other animals are called omnivores, e.g., crow, bear, fox, cat, human beings, cockroach, etc.

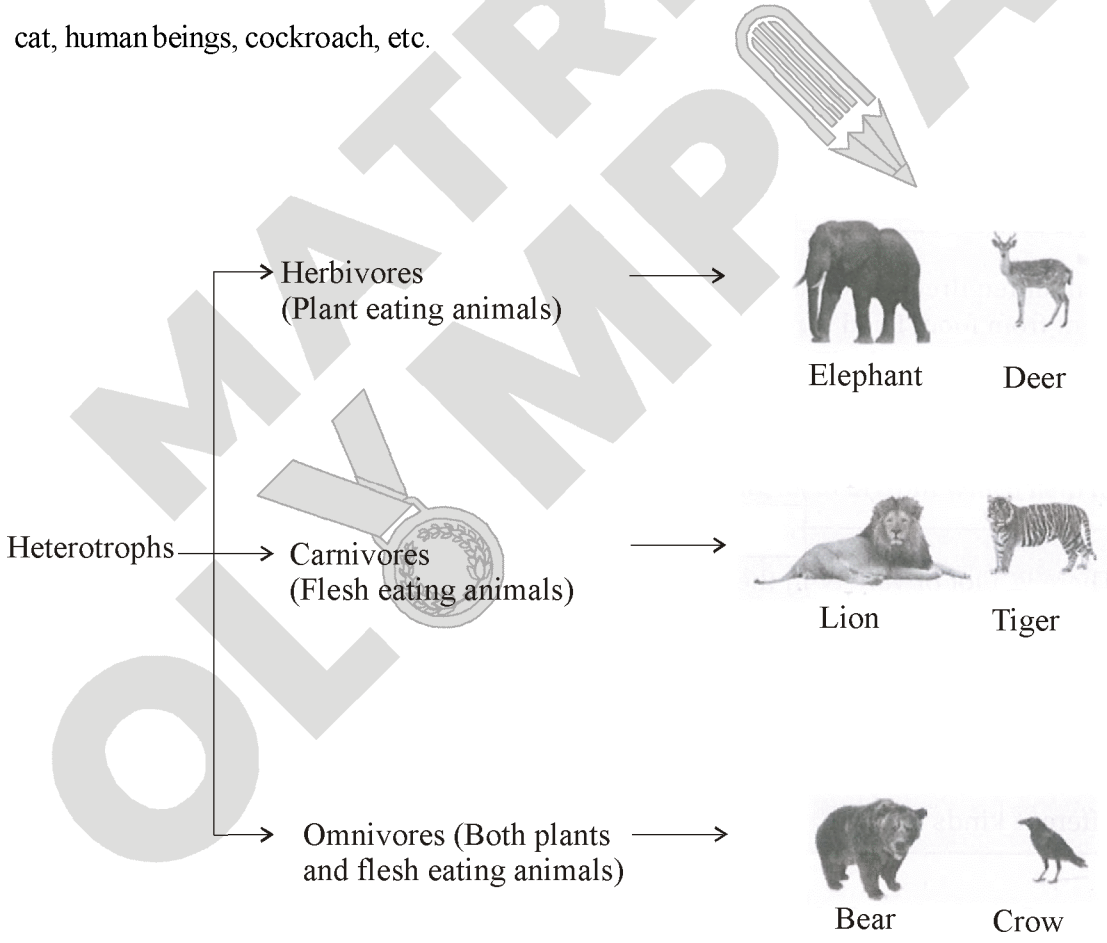


Figure : Types of heterotrophs

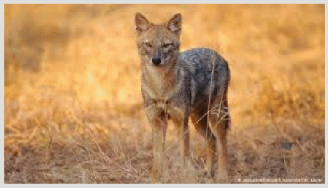
Focus Point

- **Scavengers**

  Instead of hunting live animals, soms birds and animals eat the flesh of dead animals. These animals are called scavengers, e.g., crow, jackal,vulture, etc. As scavengers food on dead bodies, so they help to clean our environement.

Crow

Jekal



Hyne

Vulture

Figure : Scavengrs

- **Decomposers**

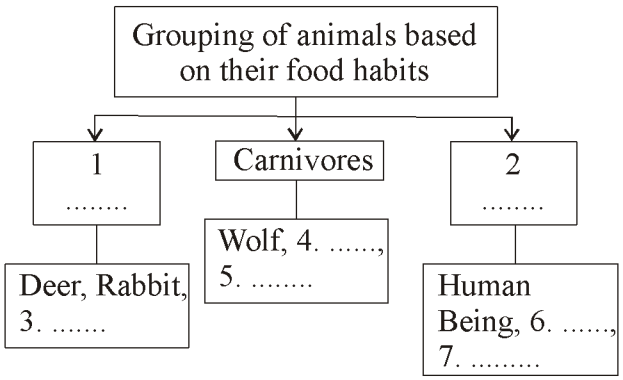
  Some organisms feed on dead plant and animals remains by decomposing (breaking down) them. They are called **decomposers**. For example, fungi and many bacteria. These organisms secrete digestive juices on the dead matter. These juices decompose or breakdown materials of dead matter into simple constituents. This simplified, digested food is then absorbed food is then absorbed by decomposers.

  Scavengers and decomposers are also heterotrophs. They help to kepp our environement clean.

SOLVED EXAMPLES

SE. 1

Refer to the following flow chart and write down the correct words for blank spaces (1 to 7).



Ans. 1 – Herbivores 2 – Omnivores

3 – Goat 4 – Lion

5 – Crocodile 6 – Crow

7 – Bear

SE. 2

How do green plants make their food?

Ans. Green plants prepare their food by using carbon dioxide and water in the presence of sunlight and chlorophyll. This process is called photosynthesis.

SE. 3

Fill in the blanks

(a) Plant parts which cannot be eaten are called ____ parts.

(b) Flowers of some plants are edible, e.g., _____ and _____.

(c) Seeds which have germinated are called _____,

(d) Food helps in _____ and _____ of body.

Ans. (a) non-edible

(b) cauliflower, broccoli

(c) sprouts

(d) growth, development

SE. 4

Match the columns.

Column I	**Column II**
(a) Potato	(i) Scavenger
(b) Vulture	(ii) Decomposer
(c) Cheese	(iii) Stem of plant
(d) Mushroom	(iv) Omnivore
(e) Human	(v) Animal product

Ans. a – (iii), b – (i), c – (v), d – (ii), e – (iv)

SE. 5

State whether the following statements are true or false.

(a) Carnivores feed on dead and decaying plant and animal remains.

(b) Spices such as turmeric and chillies are obtained from animals.

(c) Green plants prepare their food by the process of photosynthesis.

(d) In sweet potato and carrot, stem is the edible part.

(e) Food provides us protection against diseases.

Ans. (a) False : Decomposers feed on dead and decaying plant and animal remians.

(b) False : Spices such as turmeric and chillies are obtained from plants.

(c) True

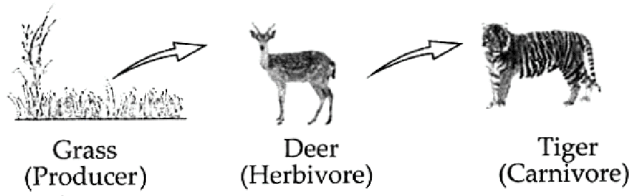
(d) False : In sweet potato and carrot, root is the edibled part.

(e) True

SE. 6

What does a food chain show?

Ans. All living organisms depend on each other for food either directly or indirectly. A food chain shows the interrelationship of plants and animals in terms of food and energy, i.e., a food chain shows the sequence of eating and being eaten. For example, deer eats grass and in turn is eaten by lion as shown below in the form of food chain.



SE. 7

Refer to the given figure showing an activity to demonstrate the process of transpiration and answer the following questions.

Ans. Yes, I agree with this. We must not throw away food or waste food. There is a shortage of food in many places and the quantity of food that is grown is not enough to support the entire population of the world. Hence, any wastage of such a precious resource is disrespectful and must be avoided.

SE. 8

In what ways are the scavengers useful to the environment?

Ans. Scavengers are those animals which feed on dead animals. They help in keeping our environment clean as they consume dead bodies of animals and dispose them off.

SE. 9

Why do different people eat different types of food?

Ans. Different people eat different types of food because they have different tasters, habits and lifestyles. It is also due to the different places where people live as availability of food varies at different place.

EXERCISE – I

ONLY ONE CORRECT TYPE

1. Select the incorrect statement out of the following.
(A) People living in different states of India eat different kinds of food.
(B) Food protects us from diseases
(C) Materials which are used to prepare food are called ingredients.
(D) All the ingredients of food that we eat come only from plants.

2. Herbivores eat -
(A) Animals only
(B) Plants only
(C) Both plants and animals
(D) Dead bodies of animals

3 Which of the following is a carnivore?
(A) Horse (B) Goat
(C) Crocodile (D) Deer

4. The plant part eaten in case of radish is :-
(A) Stem (B) Root
(C) Flower (D) Seed

5. Select the correct statement out of the following.
(A) There are many people around us who do not get enough food to eat.
(B) Products obtained from milk are called poultry products.
(C) The edible part of spinach is seed.
(D) Honey is prepared by butterflies using nectar of flowers.

6. Which of the following is not a funciton of food?
(A) Provides us energy
(B) Replaces worn out cells
(C) Provides us oxygen
(D) Keeps us healthy

7. Which of these food is obtained from plants?
(A) Honey (B) Curd
(C) Rice (D) Egg

8. Which of these food is obtained from animals?
(A) Pulses (B) Cheese
(C) Cereals (D) Sugar

9. Which of these food ingfedients is not obtained from either plants or animals?
(A) Salt (B) Honey
(C) Milk (D) Wheat

10. The first link in almost all food chains are-
(A) Herbivores (B) Carnivores
(C) Producers (D) Omnivores

11. Which of these animals feeds upon the food digested by other animal?
(A) Cow (B) Lion
(C) Cockroch (D) Tapeworm

12. Stem of which of the following plants are eaten?
(A) Onion and beetroot
(B) Ginger and radish
(C) Radish and potato
(D) Potato and ginger

13. Which of the following are cereals?
(A) Chickpea and kidney bean
(B) Wheat and rice
(C) Wheat and green gram
(D) Kidney bean and rice

14. Which of the following animals give us eggs?
(A) Goat an hen (B) Camel and goat
(C) Camel and duck (D) Hen and duck

15. Which of the following are examples of dairy products?
(A) Cheesse, butter, egg
(B) Cheese, curd, butter
(C) Egg, milk, honey
(D) Cheese, honey, curd

16. Which of the following animals have sharp cutting teeth in from and flat, griding teeth a the back?
(A) Cow and horse (B) Giraffe and lion
(C) Camel and tiger (D) Horse and tiger

17. Plants make their own food in the presence of -
(A) Sunlight and chlorophyll
(B) Water
(C) CO_2
(D) All of these

18. Food -
(A) Gives us energy (B) Helps us in growth
(C) Repairs body parts (D) All of these

19. _____ is not a milk product.
(A) Bread (B) Curd
(C) Cheese (D) Butter

20. Autotrophs are called producers because they -
(A) Produce oxygen gas
(B) Prepare their own food
(C) Obtain their food from other organisms
(D) None of these

21. Which of the following groups of animals contains only omnivores?
(A) Man, sparrow, cow, buffalo
(B) Tiger, lizard, deer, cat
(C) Bear, dog, man, ant
(D) Deer, man, dog, cat

22. Which among the following has different eating habits as compared to the others?
(A) Elephant (B) Cow
(C) Dog (D) Giraffe

23. Which of these is not a cereal?
(A) Wheat (B) Rice
(C) Turmeric (D) Corn

24. Both the seeds and the leaves of this plant are edible. Which plant is this?
(A) Potato (B) Cabbage
(C) Radish (D) Mustard

25. The plant products used as ingredients for making tea are -
(A) Sugar and tea leaves only
(B) Tea leaves and water only
(C) Stem and leaves of tea plant only
(D) Sugar, tea leaves, water and milk

FILL IN THE BLANKS

1. Honey is produced by _____ using ____ from flowers.
2. _____ make their own food and are called autotrophs.
3. The main sources of our food are _____ and ____.
4. Parts of the plant that we eat are called _____ parts while the other parts which are not eaten by us are called ____ parts.
5. There is a large _____ of food eaten in different regions of India.

TRUE / FALSE TYPE

1. We require food to get energy for carrying out various activities of life.
2. All organisms need food to survive.
3. Heterotrophs are living organisms which can prepare their own food by the process of photosynthesis.
4 Honey is a dairy product.
5. Different parts of different plants are eaten as food.

EXERCISE – I

VERY SHORT ANSWER TYPE

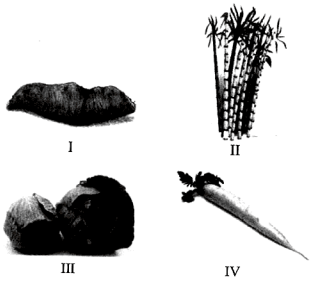
1. Name the parts of plant that we eat in case of
   (a) Radish, (b) Gram, (c) Sugarcane, (d) Mango.
2. Give two examples in each of the following.
   (a) Poultry products (b) Dairy products
3. Give one word for each of the following.
   (a) Animals that eat only plants
   (b) Animals that eat only animals
   (c) Animals that eat both plants and animals
4. Give two examples of herbivores.
5. Is an elephant a herbivore or carnivore? Give reason.
6. Give two examples of vegetables having edible leaves.
7. Which parts of mustared plant are used as food?
8. Name the process by which plants manufacture their food.
9. Give the names of two decmoposer and two scavengers.
10. Give the names of two oil seeds.
11. Give the names of two milch animals.
12. Name the insect which makes honey.
13. Give three examples of seafood.
14. What is honeycomb?
15. Name the main ingredients used to make kheer.

SHORT ANSWER TYPE

1. Why do living organisms require food?
2. How are animals classified on the basis of their food habits?
3. Briefly describe the variety of food products obtained from animals.
4. Differentiate betwen autotrophs and heterotrophs.
5. What are edible and non-edible parts of plant?
6. What is the difference between milch animals and poultry animals? Give examples of each.
7. Differentiate between scavenges and decomposers.
8. What are sprouted seeds? How are they eaten?
9. Plants are the main source of food for all living organisms. Justify this statement.
10. Crow is an omnivore as well as scavenger. How?
11. Is there any food ingredient that is not obtained either from plants or animals? If yes, from where is it obtained?

LONG ANSWER TYPE

1. Which plant parts serve as a source of food to us? Explain your answer giving examples.
2. (a) Name any three spices along with the plant parts from which they are obtained.
   (b) Why does a food chain usually start from a producer?
3. (a) All living organisms need food to survive but the type of food eaten by each organism is different. Justify this statement.
   (b) Mention the ingredients of chiken curry and idli.
4. Write a short notes on :
   (a) Varieties of food (b) Ingredients of food
5. (a) The skeleton of an animal found during excavations had broad and sharp teeth in teh front and flat teeth at the back. What according to you can be the kind of food habit of the animal?
   (b) How are scavengers useful to our environment?
   (c) Identify the plant food shown in the given figures and write the names of their parts that we eat.



6. (a) Draw a simple food chain.
   (b) What are parasites? Give examples.
   (c) Name two beverages examples.
   (c) Name two bavarages made from plant products. Name the plants parts from which they are obtained.

Answer Key

EXERCISE I														
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
D	B	C	B	A	C	C	B	A	C	D	D	B	D	D
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**					
A	D	D	A	B	C	C	C	D	A					

FILL IN THE BLANKS

1. honeybees, nectar 2. Green plants 3. plants, animals 4. edible, non-edible
5. variety

TRUE / FALSE

1. True 2. True 3. False 4. False 5. True

SELF PROGRESS ASSESSMENT FRAMEWORK

(CHAPTER : FOOD : WHERE DOES IT COME FROM ?)

CONTENT	STATUS	DATE OF COMPLETION	SELF SIGNATURE
Theory			
In-Text Examples			
Solved Examples			
Exercise I			
Exercise II			
Short Note-1			
Revision - 1			
Revision - 2			
Revision - 3			
Remark			

NOTES :

1. In the status, put "completed" only when you have thoroughly worked through this particular section.
2. Always remember to put down the date of completion correctly. It will help you in future at the time of revision.

COMPONENTS OF FOOD

2

Concepts

INTRODUCTION

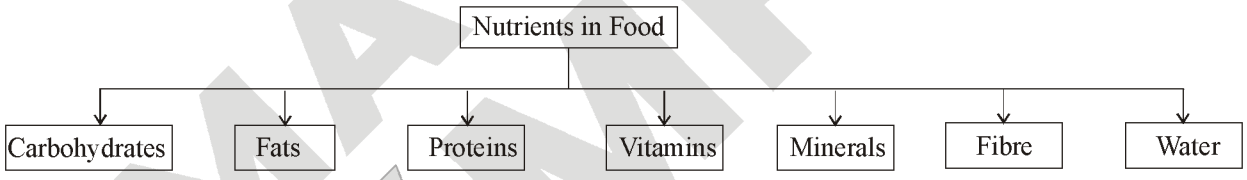
• We all eat variety of food items, i.e., milk, cereals, pulses, eggs, fish, etc., to stay alive, as it provides energy to carry out various lfie activities.

• Food is any substance consumed to provide nutritional support to the body.

• Food eaten by organism is used by the cells of the body to produce energy, maintain life and stimulate growth.

1. COMPONENTS OF FOOD

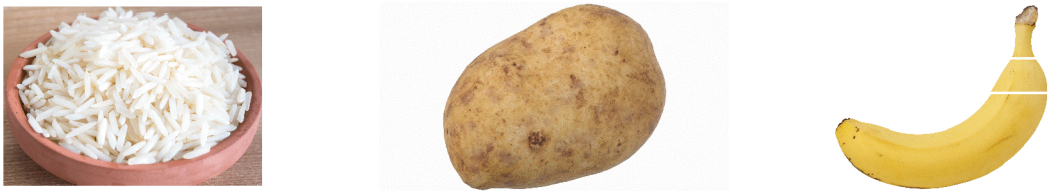
- We know that the food, we eat, are usually made up of one or more ingredients, which we get from plants or animals. These ingredients contain different components that are needed by our body. These components are called nutrients.
- Nutrients are, in fact, chemical substances present in food which provide energy and materials needed by the body.
- The major nutrients present in food are carbohydrates, proteins, fats vitamins and minerals.
- In addition to this, food contains dietary fibres and water which also needed by our body.



- Every food does not contain all the nutrients. Some foods may be rich in one or more nutrients but may lack the other one. For example, wheat and rice contain singnificantly more carbohydrates then proteins and vitamins. Therefore, it is important to consume a variety of food to ensure tha the body is provided with all kinds of nutrients.

1.1 CARBOHYDRATES

- Carbohydrates are the chemical substances which contain carbon, hydrogen and oxygen. The bulk of wheat of carbohydrates. They are the main source of energy for our body. Foods rich in carbohydrates are also kown as energy-giving foods or energy suppliers.
- Good sources of carbohydrates are rice, wheat, maize, potatoes, banana, etc.



Rice Potato Banana

Figure : Food rich in carbohydrates

→ **SUGARS**

- Sugars are the simplest carbohydrates. For example glucose, fructose, etc. Fruits and honey, are some sources of sugars.
- Glucose is a sugar that is broken down very quickely in the body to release energy. Hence, it is given to patients and sportspersons for quik supply of energy.

LAB TIME
Let's Do & Learn

To rest the presence of sugar in a food.

- **Materials required :** Food sample, Benedict's solution, test tube, water, burner, test tube holders etc.
- **Procedure :**

(i) Take a small amount of crushed food sample in a test tube.
(ii) Add some water to it and shake it well, (iii) Add a few drops of Benedict's solution and heat it gently over a burner for about a minute.

- **Observation :** Benedict's solution (blue in colour) turns reddish orange.
- **Result:** Change in colour of Benedict's solution indicates that the given food item contains sugar.

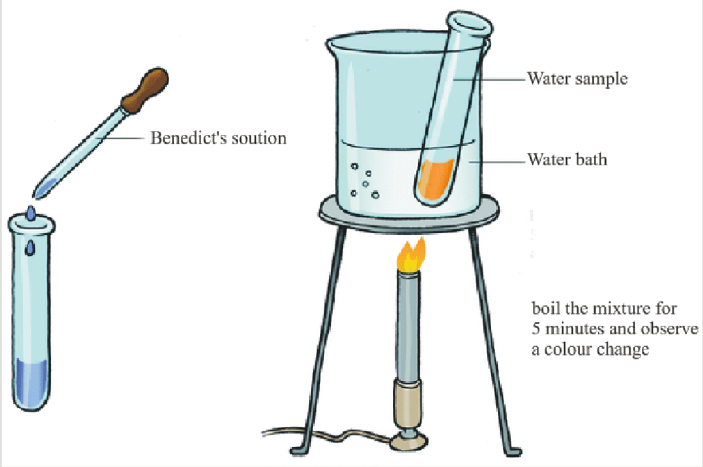


Figure : To rest the presence of suagar in food

→ **STARCH**

- Starch is a complex carbohydrate. It is formed by many molecules of sugars arranged in a particular manner. Plants produce carbohydrates and store them in the form of starch. Rice, wheat, corn, potato are some sources of starch.

LAB TIME
Let's Do & Learn

To test the presence of starch in a food

- **Materials required :** Iodine solution, potato slice, petridish, dropper, etc.
- **Procedure :**

(i) Take a small piece of freshly cut potato slice in a petridish.
(ii) Pour 2-3 drops of iodine solution over it with the help of a dropper.

- **Observation :** The piece of potato will turn blue-black.
- **Result:** Potato has high content of starch which turns blue black with the addition of iodine solution.

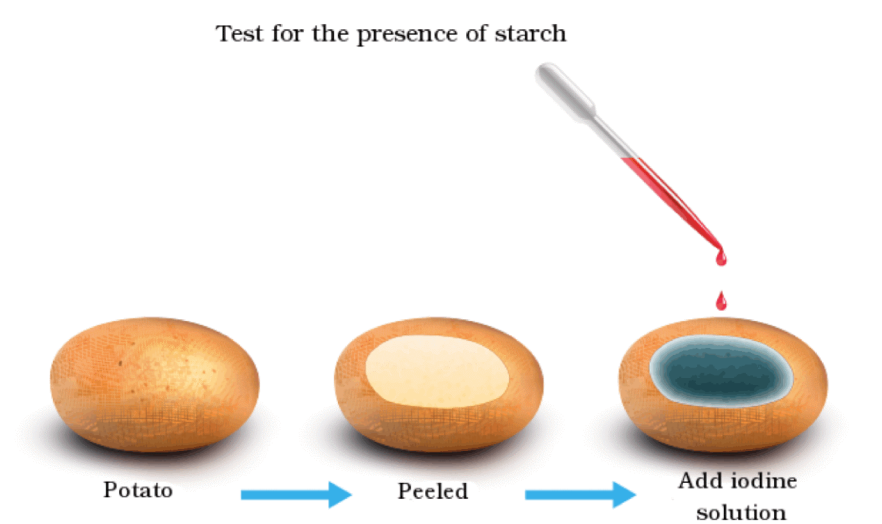


Figure : To test the presence of starch in a food

1.2 FATS

- Fats, like carbohydrates, are compounds of carbon, hydrogen and oxygen. They are also energy-giving components of food. Fats get stored in our body for future use, hence fats are also known as energy banks of our body.
- Fats give much more energy than carbohydrates. Our body, however uses carbohydrates more easily than fats for producing energy.

- Fats are obtained from both plant and animal sources. Oils such as groundnut, sunflower, coconut, mustard, etc., are obtained from plants. Butter and ghee are the fats obtained from animal sources. Meat, fish, and cheese are also good sources of animal fats. Nuts possess considerable amounts of oils and fats.
- When we eat more carbohydrates than our body requirement, they are converted into fats.
- These fats are stored under the skin and around various organs like eyes, heart and kidneys. Fats, which form a layer under skin, provide warmth.

Honey Apples Spinach

Figure : Food rich in fats

- Fats around certain organs such as eyes and kidneys provide protection to these organs by acting as shock absorbers. Fats are essential for our body but eating too much of fat-rich food can make us overweight and finally lead to obesity.

LAB TIME
Let's Do & Learn

To test the presence of fats in the given food sample.

- **Materials required :** Food samples of groundnut, almond, etc., and paper.
- **Procedure :** The food item to be tested is placed between the folds of a piece of paper and crushed.
- **Observation :** An oily patch is observed on the paper.
- **Result:** The presence of the oily patch proves the presence of fats in the given food sample.

1.3 PROTEINS

- Our body is made up of billions of cells. When we grow, our body needs proteins to make new cells. Our body also needs proteins to replace old and damaged cells. Thus, food containing proteins are called body building foods.
- Growing children and sick people require more proteins in their diet. Like fats, proteins are also obtained from both plants and animals. Pulses and soybeans 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.

Figure : Food rich in proteins

LAB TIME
Let's Do & Learn

To test the presence of proteins in the given food sample.

• **Materials required :** Food sample, solution of copper sulphate, solution of caustic soda, test tube, ropper, etc.

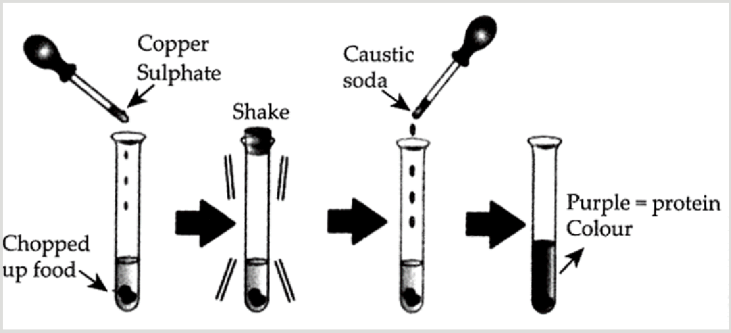


Figure : To test the presence of proteins in the given food sample

- **Procedure :**

  (i) Grind/mash a small quantity of the food item (if solid) and put it in the test tube,

  (ii) Add 5 mL of water into the test tube and shake it.

  (iii) Using a dropper, add 2-3 drops of solution of copper sulphate and ten drops of solution of caustic soda into the test tube.

  (iv) Shake well and let the test tube stand for few minutes.

- **Observation :** The colour of the solution changes to purple or violet.
- **Result:** Appearance of violet colour indicates the presence of proteins in the given food sample.

1.4 VITAMINS

- Vitamins are the nutrients that are required by our body in small amounts, but are essential for the proper functioning of our body.
- Vitamins and minerals are collectively called as protective foods because they help in protecting our body against diseases. Vitamins also help in keeping our eyes, bones, teeth and gums healthy. Vitamins are of different types and known by different names. There is also a group of vitamins called vitamin B-complex. Our body needs all types of vitamins. Shortage of any of these vitamins over a long period, results in deficiency diseases. The important vitamins, their sources, functions and deficiency diseases have been listed in the following table. :-

Vitamin	Sources	Functions	Deficiency disease
A	Spinach, carrots, pumpkins, butter, sweet potatoes, mangoes, papayas, liver and fish-liver oil	Keeping eyes hair and skin healthy	Poor vision, night blindness, low resistance to disease
B_1	Eggs, meat, whole cereals, green vegetables, fish and meat	Proper functioning of digestive healthy	Beriberi, weakness
B_2	Eggs, peas, beans, milk, green vegetables, fish and meat	Keeping skin and mouth healthy	Poor growth, bad skin, sores in mouth
B_3	Whole wheat, other whole cereals, potatoes, tomatoes, meat, fish and peanuts	Keeping skin, nervous and digestive system healthy	Pellagra
B_{12}	Animal products like meat, fish, liver, eggs and milk	Helps in formation of blood and proper growth	Anaemia
C	Citrus fruits, guava, amla and tomatoes	Keeping gums and joints healthy and building resistance to infections	Scurvy-bleeding gums, loose teeth and aching joints
D	Fish-liver oil, milk and butter, sunlight	Building strong bones and teeth	Rickets in children and soft bones in adults
K	Green leafy vegetables, tomatoes and egg yolk	Clotting of blood	Excessive bleeding after injury

1.5 MINERALS

- Like vitamins, minerals are also required by our body in small amount and are essential for proper functioning of the body.
- Their deficiency in the diet also leads to deficiency diseases.
- Following table lists some important minerals, their sources, functions and deficiency diseases:

Minerals	Sources	Importance	Deficiency disease
Iron	Dates, meat, green vegetables, banana, honey and dry nuts	For the formation of haemoglobin	Anaemia Weak bones and tooth decay
Calcium	Milk and milk products, pulses and egg	For strong bones and teeth	
Phosphorus	Meat, fish, eggs, wheat	For the development of strong bones	Weakness; weak teeth and bones
Potassium	Green vegetables, meat, cereals and fruits	Help is maintaining body's water balance	Muscle and body weakness
Sodium	Common salt	For the proper functioning of the nervous system	Muscle cramps; dehydration
Iodine	Iodised salt and seafood	Constituent of thyroxine hormone that is secreted by thyroid gland	Goitre (glands in the neck become swollen) mental disability in children
Fluorine	Water supply, tea and fish	Makes the enamel of the teeth hard and prevents dental caries	Dental caries

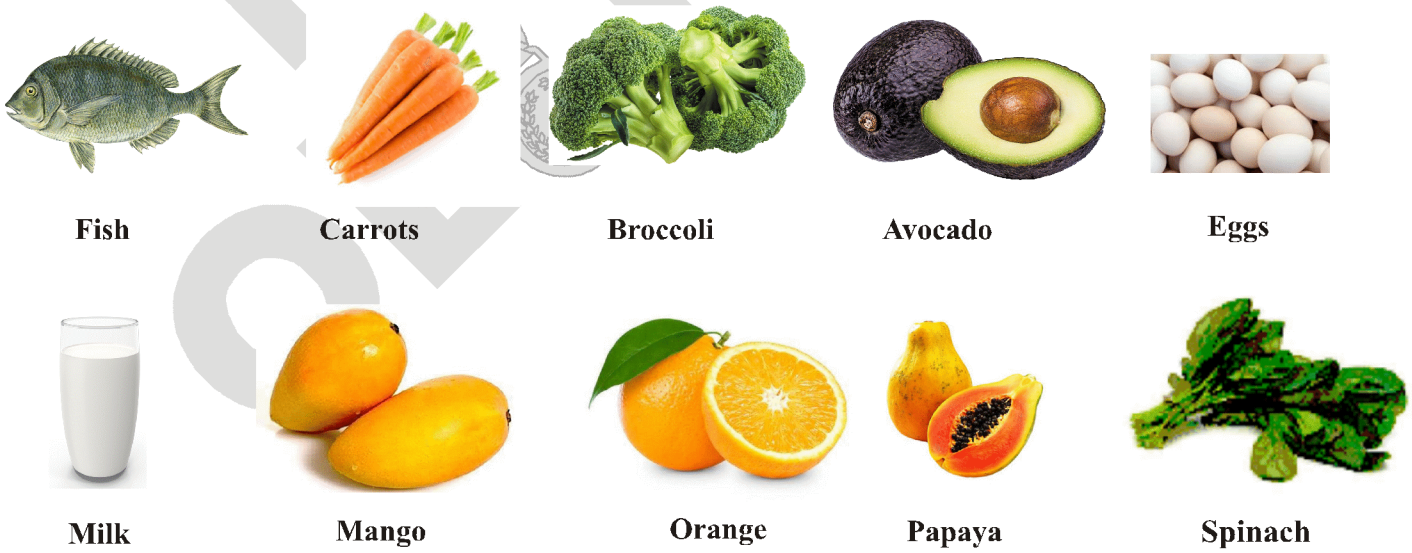


Figure : Source of Vitamins and minerals

1.6 ROUGHAGE OR DIETARY FIBRE

- Roughage is mainly provided by plant products in our food. Whole grains, pulses, fresh fruits and vegetables are main sources of roughage. These food items contain a lot of fibre in the form of cellulose.
- This dietary fibre or roughage cannot be digested and does not provide any nutrient to our body, but constitutes an important part of our diet.
- Roughage adds bulk to the undigested food material. This helps in easy bowel movement and to get rid of the undigested food. Thus, roughage helps to prevent constipation.

1.7 WATER

- Water makes up almost 70 percent of our body weight. Most of this water is present in the cells of our body. Some water lies in the spaces between the cells. Water also constitutes the liquid part (called plasma) of the blood. Life processes such as absorption, transportation, excretion, etc., cannot occur without

  water. Water is needed for many vital functions of the body. For example :

(i) It helps our body to absorb nutrients from food.

(ii) It helps to transport nutrients throughout the body.

(iii) It helps in collecting wastes from different parts of the body and removes them in the form of urine and sweat.

(iv) It helps to regulate our body temperature through sweating. Evaporation of sweat from the skin causes cooling.

(v) It is needed as a solvent for various chemical reactions that take place inside our body.

Our body loses water continuously as sweat, urine and vapour (while breathing). So, we need to replenish our body with water by drinking liquids such as water, milk, juice, etc. otherwise it could lead to a condition of dehydration. In addition, water is added to most of food items while cooking. A large amount of water is replenished by the water present in the foods that we eat e.g. fresh fruits and vegtables.

Focus Point

- Most people need to drink 8-10 glasses of water every day to stay healthy
- 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.
- Athletes and sportspersons need to drink enough water to replace the water they lose through sweating.
- Even though water is vital for our body, it does not provide us any energy.

2. NUTRIENTS IN SOME COMMON FOOD ITEMS

- Most food items have more than one nutrients—some in greater quantity and others in lesser quantity. However, in a given raw material, one particular nutrient may be present in much larger quantity than in others.
- For example, cereals (wheat, rice, etc.) have more carbohydrates than other nutrients. Thus, we say that cereals are carbohydrate - rich sources of food. Cereals are usually eaten with every meal to give energy Similarly pulses contain more proteins than other nutrients. Pulses are a good source of proteins especially for people who follow a strict vegetarian diet.

Food can be divided into the following groups:

(i) Foods rich in carbohydrates and fats provide energy to the body and are known as energy-giving foods.

(ii) Foods rich in proteins help our body to grow and are known as body-building foods.

(iii) Foods rich in vitamins and minerals are known as protective foods. They protect our body against diseases.

2.1 BALANCED DIET

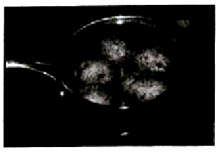
- The food that we normally eat in a day is our diet. Our diet must include various nutrients in the right quantities i.e., neither too little nor in excess. The diet should also contain a good amount of roughage and water. A diet that contains all the nutrients in right amount according to the requirements of an individual's body is called a balanced diet. Balanced diet of a particular person depends on various factors such as age, sex, type of physical activity done, physical state whether healthy or diseased, etc. Growing children need more proteins. Labourers need more carbohydrates and fats. Pregnant women and lactating mothers requires more proteins, vitamins and minerals.

3. COOKING OF FOOD

- Foods such as cereals, vegetables and meat are cooked before eating. Cooking makes the food tasty and easy to digest. But wrong cooking methods destroy several nutrients present in it. Overheating, overboiling and deep frying are not good ways of cooking food as they destroy the nutrients present in food.
- 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 away the extra water results in loss of nutrients of the food.
- Vitamin C gets destroyed during cooking due to heat. We should therefore eat raw fruits and vegetables to get vitamin C.

Retain the skins of fruits whenever possible

Wash fruits or vegetables before cutting or peeling them



Use minimum water for cooking

Figure : Healthy cooking habits

4. DEFICIENCY DISEASES

Deficiency Diseases

- Intake of an unbalanced diet can lead to malnutrition i.e., poor health. Malnutrition can occur either due to intake of food that is deficient in nutrients or taking food with wrong proportions of nutrients. This eventually leads to diseases in the body. Taking a well balanced diet can prevent this. Poverty is one of the major reasons of malnutrition in our country. Malnutrition includes both undernourishment and over-nourishment.
- If our diet does not contain appropriate amounts of any of the nutrients, our body starts showing signs and symptoms of deficiencies. These deficiencies over a long period of time lead to deficiency disease. The deficiency diseases are the result of malfunctioning of the body due to lack of one or more nutrients in the diet.
- Deficiency diseases are not transmitted from one person to another.

4.1 DEFICIENCY OF CARBOHYDRATES

- Carbohydrates are the main energy sources. Lack of carbohydrates in the diet results in lack of energy, weakness and tiredness.
- 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.

Focus Point

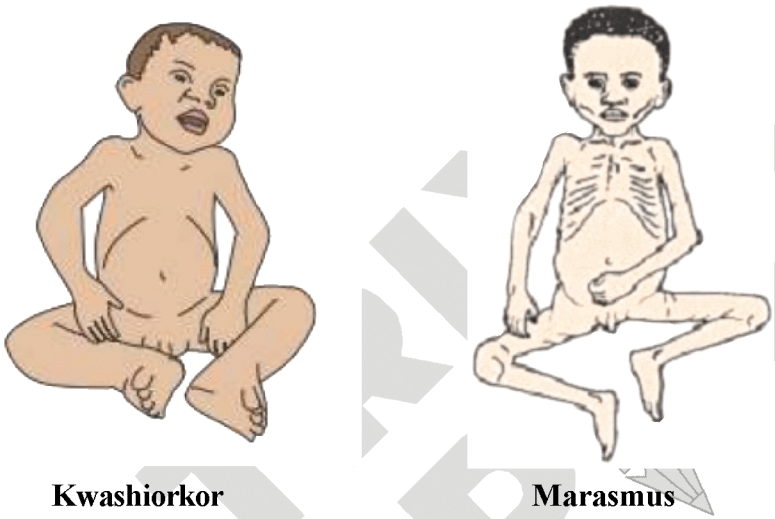
- Excess intake of carbohydrates also leads to ill-health. Most of the extra carbohydrates are converted and stored as fat in the body.
- Stored fat in the body leads to an increase in the body weight. This is called obesity. Overweight people are not very active and often suffer from diseases related to heart, diabetes, etc.

4.2 DEFICIENCY OF PROTEINS

- If a person does not get enough proteins in his/her diet for a long time, he/she is likely to have stunted growth, swelling of face, discolouration of hair, skin diseases and diarrhoea.

→ **Kwashiorkor and marasmus**

- Deficiency of proteins leads to a disease called kwashiorkor, and deficiency of proteins along with carbohydrates and fats lead to a disease called marasmus.



Kwashiorkor **Marasmus**

Figure : Deficiency disease of proteins, carbohydrates and fats

- A child suffering from kwashiorkor has some or all of the following symptoms : large pot like belly, stunted growth, swelling of limbs, skin diseases (skin shows patches), mental retardation and diarrhoea. If the treatment is started in time, improving protein intake may correct this disease.
- 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.

Focus Point

- The Mid-day meal is a scheme started by government of India where school going children are provided with free nutritious food.
- This scheme lies to solve the problem of malnutrition and attendance in schools.
- This scheme was first implemented in Chennai in 1925 and has now been implemented all over India. It is the largest school lunch programme in the world as so far 120 million children are covered under this scheme.

4.3 DEFICIENCY OF WATER

- Water is very essential for proper functioning of our body. Excess loss of water from the body leads to a condition called dehydration. Dehydration causes loss of salts and leads to weakness in the body. Oral rehydration solution (ORS) should be given to the patient to recover from dehydration. It is easily available at primary health centres. It can also be made at home by mixing 8 teaspoons of sugar and 1 teaspoon of salt in 1 litre of clean drinking water.

4.4 DISEASES CAUSED BY DEFICIENCY OF VITAMINS AND MINERALS

→ **Scurvy**

- This disease is caused by the deficiency of vitamin C. Symptoms of this disease are swelling and bleeding of gums, wounds take longer time to heal. The disease can be prevented by an intake of food rich in vitamin C especially citrus fruits such as oranges, grapes, lemons, etc.

→ **Rickets**

- This disease is caused by the deficiency of vitamin D. Vitamin D helps to absorb calcium and controls calcium deposition for the formation of strong bones and teeth. Rickets is a disease of bones which occurs in children.
- In this disease, bones become soft, get bent and deformed. Bow legs, pigeon-type chest, and bending ot the spine are symptoms of this disease. There may also be pain in the legs and loss of tooth enamel. In adults, bones become brittle and can get fractured easily.
- Vitamin D is found in cod-liver oil, milk, butter and green leafy vegetables. It is also synthesised by our body on exposure to sunlight.

→ **Anaemia**

- This disease 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. A person suffering from the disease looks pale, get tired quickly and suffers from loss of appetite. Another type of anaemia results from the lack of vitamin B12. In this disease there is a reduced formation of red blood cells in the body.

→ **Goitre**

- Goitre is caused by the deficiency of mineral, iodine in the diet. The thyroid gland situated in the neck region becomes swollen and there is reduced production of a chemical (called thyroxine) 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 iodised salt has helped to reduce the incidence of goitre.

SOLVED EXAMPLES

SE. 1

Name the components of food. Which of these components provide us energy?

Ans. The different components of food are carbohydrates, fats, proteins, vitamins, minerals, roughage and water. Out of these seven components of food, carbohydrates and fats are energy-rich components which provide energy to our body.

SE. 2

Why is it necessary for everybody to take a balanced diet?

Ans. A diet which contains all the major nutrients (carbohydrates, fats, proteins, vitamins and minerals) in right amount according to the requirement of an individual's body is referred to as a balanced diet. If we do not take a balanced diet, our body becomes deficient in anyone or more of these nutrients and starts showing the symptoms of deficiencies. These deficiencies over a long period of time lead to deficiency diseases, which result in malfunctioning of the body.

SE. 3

What type of food will help to repair damaged tissues and replace dead cells?

Ans. Our body is made up of cells. When we grow, our body need proteins to make new cells and replace the old ones. Food rich in protein, i.e., eggs, fish, meat, pulses, milk, etc., will help in repair of damaged tissues and replace dead cells.

SE. 4

Read the following statements containing 1-2 blanks in each one of them.

A. Body-building foods are the foods which are rich in (i) .

B. Eating too much of fat-rich food can make us overweight and finally lead to (ii) .

C. Deficiency of vitamin A causes (iii) whereas deficiency of vitamin C causes (iv) .

D. Benedict's solution is used to test the presence of (v) in a food item.

Ans. (i) proteins, (ii) obesity, (iii) night blindness, (iv) scurvy, (v) sugar

SE. 5

Why is water considered as an important component of food?

Ans. Water is considered as an important component of food because it performs many vital functions in our body. These functions are as follows:

(i) It helps our body to absorb nutrients from the food.

(ii) It helps to transport nutrients throughout the body.

(iii) It helps in collecting wastes from different parts of the body and removing them from the body in the form of urine and sweat.

(iv) It helps to regulate our body temperature through sweating. Evaporation of sweat from the skin causes cooling.

(v) It is needed as a solvent for various chemical reactions that takes place inside our body.

SE. 6

The deficiency of X leads to goitre while deficiency of Y leads to anaemia.

(a) What are X and Y?

(b) How do the persons suffering from goitre and anaemia be cured?

Ans. (a) X is iodine (I) and Y is iron (Fe).

(b) Person suffering from goitre should take more amount of iodine in his/her diet. Foods rich in iodine are iodised salt and seafood. Person suffering from anaemia should take more amount of iron in his diet. Foods rich in iron are meat, green leafy vegetables, liver, etc.

SE. 7

How would you test the presence of protein in a given food sample?

Ans. Presence of protein in a given food sample can be tested by the following experiment:

Take a small amount of food sample. Grind it, if it is solid and put it in a test tube. Add 5 mL of water into the test tube and shake it well. Using a dropper, add 2-3 drops of copper sulphate solution and ten drops of caustic soda solution into the test tube. Shake well and let the test tube stand for few minutes. Appearance of violet colour in the test tube indicates the presence of proteins in the given food sample.

SE. 8

In our country, children belonging to poor families usually suffer from the diseases caused due to the deficiency of proteins, carbohydrates and fats. Name the diseases and explain them.

Ans. Deficiency of proteins, carbohydrates and fats results in severe malnutrition, especially in children. Kwashiorkor is a disease caused by protein deficiency in children. A child suffering from kwashiorkor has some or all of the following symptoms : large pot-like belly, stunted growth, swelling of limbs, skin diseases {skin shows patches); mental retardation and diarrhoea. If the treatment is started in time, improving protein intake may correct this disease. Marasmus is a disease in children caused by the deficiency of proteins, carbohydrates and fats. A child suffering from marasmus becomes so thin that loose folds of skin can be seen all over the body. The child also show impaired growth and replacement of tissue proteins, thin limbs and prominent ribs; and diarrhoea.

SE. 9

Write down the sources, functions and deficiency diseases of following minerals:

(a) Iron (b) Calcium (c) Iodine

Ans. (a) Iron

Sources : Liver, meat, green vegetables, etc.

Functions : Iron is required for the formation of a red coloured pigment, haemoglobin, in our blood. Haemoglobin helps to carry oxygen to different body cells.

Deficiency disease : Anaemia is the disease caused by the deficiency of iron in diet. Symptoms of this disease are low energy level and paleness as oxygen supply to the body decreases.

(b) Calcium

Sources : Milk and milk products, cheese, green leafy vegetables, etc.

Functions : Calcium is essential for the development of healthy bones and teeth.

Deficiency disease: Calcium deficiency results in weak bones and tooth decay.

(c) Iodine

Sources : Iodised salt, seafood such as fish, prawns, etc.

Functions: Iodine is a constituent of thyroxine hormone, secreted by thyroid gland.

Deficiency disease : Goitre in which thyroid gland in the neck become swollen; mental disability in children.

SE. 10

Enlist a few functions of fats in human/ animal body.

Ans. (i) Fats are energy-giving components of food.

(ii) Fats form a layer under the skin and thus provide warmth. Animals living in colder regions such as polar bear have a thick fatty layer under the skin that helps them to survive under extreme cold conditions.

(iii) Fatty tissue around certain organs such as eyes and kidneys provides protection to these organs by acting as shock absorbers.

EXERCISE – I

ONLY ONE CORRECT TYPE

1. Match column I with column II and select the correct option.

Column I	Column II
P.An energy giving food	(i) Kwashiorkor
Q.Prevents constipation	(ii) Carbohydrates
R.Protect us from diseases	(iii) Roughage
S.Caused by deficiency of proteins	(iv) Vitamins and minerals

(A) P-(iii), Q-(ii), R-(iv), S-(i)

(B) P-(ii), Q-(iii), R-(iv), S-(i)

(C) P-(iv), Q-(i), R-(iii), S-(ii)

(D) P-(ii), Q-(i), R-(iv),S-(iii)

2. Which of the following statements is incorrect?

(A) Marasmus is a disease caused by the deficiency of proteins and carbohydrates.

(B)Iron is required for the formation of haemoglobin.

(C) Calcium and potassium are examples of vitamins.

(D) Excessive loss of water from the body causes dehydration.

3. Which of the following statements is true about fats?

(A) Fats are used as an energy store by our body.

(B) Fats provide much less energy than carbohydrates.

(C) Decrease in fat intake often leads to obesity.

(D) Presence of fats in a food sample can be tested by using Benedict's solution.

4. Solution of iodine when dropped on a piece of potato turns

(A) yellow-red in colour

(B) violet in colour

(C) red-brown in colour

(D) blue-black in colour.

5. Who among the following is taking a balanced diet?

(A) Shikha - eating a bowl full of fruits

(B) Madhur - drinking a glass of milk along with a sandwich made of sprouts.

(C) Teena - eating a sandwich with some french fries

(D) Apoorva - eating a burger

6. Select the incorrect pair.

(A) Fibre - Proper bowel movement

(B) Vitamins - Prevent diseases

(C) Proteins - Prevent constipation

(D) Minerals - Keep bones healthy.

7. Fruits are eaten raw because cooking

(A) makes them tasteless

(B) destroys vitamin C present in them

(C) destroys vitamin D present in them

(D) both (b) and (c).

8. Match column I with column II and select the correct option from the given codes.

Column I	Column II
(i) Kwashiorkor	A. Excess of fat
(ii) Goitre	B. Lack of iodine
(iii) Scurvy	C. Protein deficiency
(iv) Obesity	D. Vitamin C deficiency

	(i)	(ii)	(iii)	(iv)
(A)	C	B	D	A
(B)	C	D	B	A
(C)	B	A	D	C
(D)	A	D	C	B

9. Read the given statements and select the true and false (T/F) ones,

(i) Soybean and peas help to build and repair body tissues.

(ii) Papaya and oranges are rich source of vitamin A.

(iii) Dietary fibres has no nutritive value, hence are not considered as an important component of food.

	(i)	(ii)	(iii)
(A)	T	T	F
(B)	T	F	T
(C)	T	F	F
(D)	T	T	T

10. Select the correctly matched pair.

(A) Fats : Milk, almonds, butter

(B) Carbohydrates : Papaya, cashewnuts, paneer

(C) Proteins : Bananas, cheese, carrots

(D) Vitamin D : Mango, beans, tunafish

11. Which of the following food will make the paper translucent?

(A) Groundnut (B) Fish

(C) Cream (D) All of these

12. Puneet is eating lunch consisting of chapatis, vegetable curry and orange juice. Which of the following food components is missing from his food?

(A) Proteins (B) Carbohydrates

(C) Fats (D) Vitamins

13 Eating which one out of the following helps in blood clotting?

(A) Spinach (B) Nuts

(C) Guavas (D) Papaya

14. Which of the following activities helps human body to produce vitamin D?

(A) Swimming (B) Practicing yoga in shade

(C) Standing in the Sun (D) Cooking

15. Vitamin (i) makes bones and teeth strong.

This vitamin is synthesised by the body on exposure to (ii) Deficiency of this vitamin in children causes (iii).

Select the correct option for (i), (ii) and (iii).

	(i)	(ii)	(iii)
(A)	D	Sunlight	Rickets
(B)	D	Air	Osteomalacia
(C)	C	Sunlight	Scurvy
(D)	C	Sunlight	Rickets

16. Which of the following statements is true regarding vitamin A?

(A) It keeps eyes and skin healthy.

(B) Its deficiency results in night blindness.

(C) It is rich in cod-liver oil, yellow or orange coloured fruits and green leafy vegetables.

(D) All of these

17. Which of the following is the immediate source of energy?

(A) Sugars (B) Starch

(C) Fats (D) Proteins

18. Select the mismatched pair out of the following.

(A) Vitamins and minerals - Protective foods

(B) Anaemia - Caused by deficiency of iron

(C) Pulses and eggs - Rich sources of proteins

(D) Roughage - Easily digested by our body

19. Which mineral is necessary for the formation of strong bones and teeth?

(A) Iron (B) Calcium

(C) Sodium (D) Potassium

20. Which of these forms most of our body weight?

(A) Proteins (B) Fats

(C) Carbohydrates (D) Water

21. Obesity occurs due to

(A) over eating of carbohydrates and fats

(B) not eating enough carbohydrates and fats

(C) over eating of vitamins and minerals

(D) not eating enough vitamins and minerals.

22. In which of the following diseases, will you advise the intake of iodised salt?

(A) Beri-beri (B) Goitre

(C) Scurvy (D) Rickets

23. Marasmus is caused due to diet insufficient in

(A) proteins (B) carbohydrates

(C) fats (D) all of these.

24. Given food are the main source of

(A) carbohydrates and fats

(B) vitamins and minerals

(C) proteins and fats

(D) carbohydrates only.

25. Which of the following represents the role of water in our body?

(A) Absorption of nutrients

(B) Transportation of nutrients and O_2

(C) Elimination of waste matter

(D) All of these

FILL IN THE BLANKS

1. Body building foods are the food that are rich in ____.
2. ____ and ____ help to protect our body against diseases.
3. Roughage does not provide us any ____ but helps to get rid of _____ food.
4. If the fruits and vegetables are wasted after cuitting or peeling them, then it results in the loss of some _____.
5. The disease beri-beri is caused by the deficiency of _____ in our body.

TRUE / FALSE TYPE

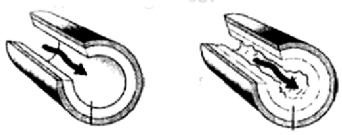
1. Appearance of blue-black colour after putting some iodine solution over a food indicates the presence of starch in it.
2. Carbohydrates are required in very small amount by our body.
3. Anaemia is caused by the deficiency of sodium in diet.
4. Proteins are required for the growth and repair of the body.
5. Sodium is a mineral present in common salt and required for the proper functioning of nervous system.

EXERCISE – II

VERY SHORT ANSWER TYPE

1. Which substance plays an important role as as solvent in the digestion of food, absorption and transport of nutrients, excretion of wastes, etc?
2. Deficiency of which nutrient is likely to cause scurvy in humans?
3. Mention any two food sources of dietary fibre.
4. What is a balanced diet?
5. Which mineral is mainly supplied by iodised salt?
6. Give three examples of food items which should be eaten by an anaemic person.
7. Expand ORS.
8. Why does our body needs proteins?
9. Name the simplest carbohydrate which is immediately absorbed by the body to release energy.
10. Which nutrients are needed by our body in small quantities only?
11. Which two minerals are important for the formation of strong bones and teeth?
12. Foods rich in which nutrients are called as 'energy giving foods'?
13. Given food items are the rich source of which nutrients?

14. Name the body organ which is mainly affected by the deficiency of vitamin A.
15. Refer to the given figures.



What is the most probable cause of this condition?

SHORT ANSWER TYPE

1. Why fruits and vegetables should not be washed after cutting?
2. What are protective foods? Why are they called so?
3. Name the diseases caused by the deficiency of
   (a) iron (b) vitamin A
   (c) iodine (d) proteins.
4. How can we prevent the deficiency diseases?
5. Mention any two functions of fats in our body.
6. Although water does not provide us any nutrient, yet it is essential for our survival. Why?
7. Differentiate between the diseases kwashiorkor and marasmus.
8. Why is it important to cook food?
9. How would you test the presence of starch in a given food sample?
10. How does roughage helps to prevent constipation?
11. Is balanced diet same for every person? Why or why not?
12. Name two deficiency diseases caused by the deficiency of minerals along with their associated symptoms.
13. Give one word for the following.
    (a) A condition caused by excessive loss of water from the body.
    (b) Disease caused due to the deficiency of proteins along with carbohydrates and fats.
    (c) A condition caused by excessive intake of fats into the body.
    (d) The chemical used to test the presence of starch in a food item.?

LONG ANSWER TYPE

1. (a) You are given some peas. How would you test the presence of proteins in these?

   (b) What happens to the excess carbohydrate in the body?

2. (a) Why is milk considered as a complete meal? Will you remain healthy if you drink only milk?

   (b) Explain the importance of vitamin C and vitamin D in our body.

3. (a) What is obesity?

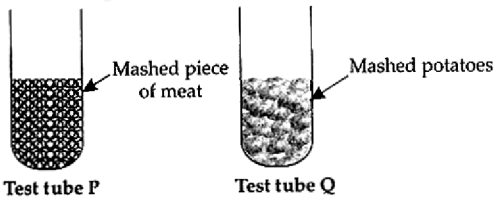
   (b) What are the sources of roughage?

   (c) Name the animal sources and plant sources of fats.

4. (a) Describe the effect of protein deficiency in children.

   (b) What is ORS ? How can you prepare it at home?

5. Refer to the given figures.



   (a) when a solution of copper sulphate and caustic soda is added to the test tubes P and Q and then the test tubes are shaken?

   (b) When iodine solution is added to the test tubes P and Q?

6. (a) Describe the two forms in which carbohydrates are present in our food.

   (b) Describe the major nutrients required for the growth of our body.

7. Name the different kinds of vitamins along with their sources, functions and deficiency diseases.

Answer Key

EXERCISE I

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B	C	A	D	B	C	B	A	C	A	D	A	A	C	A
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**					
D	A	D	B	D	A	B	D	B	D					

FILL IN THE BLANKS

1. protiens 2. vitamins, minerals 3. nutrient, undigested 4. nutreints 5. vitamin B_1

TRUE / FALSE

1. True 2. False 3. False 4. True 5. True

SELF PROGRESS ASSESSMENT FRAMEWORK

(CHAPTER : FOOD : COMPONENTS OF FOOD)

CONTENT	STATUS	DATE OF COMPLETION	SELF SIGNATURE
Theory			
In-Text Examples			
Solved Examples			
Exercise I			
Exercise II			
Short Note-1			
Revision - 1			
Revision - 2			
Revision - 3			
Remark			

NOTES :

1. In the status, put "completed" only when you have thoroughly worked through this particular section.
2. Always remember to put down the date of completion correctly. It will help you in future at the time of revision.

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