

Components of food

Nutrients

Food substances that provide nourishment to the body.

Carbohydrates

- These are energy-giving compounds.
- There may be simple carbohydrates or complex carbohydrates.
- Simple carbohydrates provide instant energy and are soluble in water like sugar.
- Complex carbohydrates are insoluble compounds like starch.

Fats

- These are very high energy-giving compounds.
- They produce greater amount of energy than carbohydrates.
- Fats are available in oil-rich foods.

Minerals

- These are elements required by the body in small amounts.
- Essential for growth and development of bones, teeth and red blood cells.
- Also help in proper functioning of the nervous system and circulatory system.

Proteins

- These are body-building foods.
- They help in the growth of the body.
- Requirement of proteins per day depends on the age, sex and body weight of the person.

Vitamins

- These are organic substances that protect the body from diseases.
- There are water-soluble vitamins (Vit B and C and fat-soluble. Vitamins (Vit A, D, E and K)

Roughage

- It is the dietary fibre present in the food.
- It facilitates regular movement of the bowels and prevents constipation.
- It does not provide any nutrition.

Balanced Diet

- It is diet which contains all the nutrients our body requires in proper amounts.
- For a balanced diet, four food groups are taken into consideration: Milk group, Vegetable – fruit group, Cereal group, Proteins group.

Deficiency Diseases

These are the diseases caused due to the lack or required nutrients for a long period in the diet.

Protein Energy malnutrition (PEM)

Vitamin Deficiency

Mineral Deficiency

Nutrient Deficient Disease Symptoms

- Protein : Kwashiorkar – Stunted growth, thinning of legs, protruding belly,
- Protein and Carbohydrate: Marasmus – Complete/ Partial arrest of growth, lack of energy.
- Vitamin D : Rickets – Bowed legs, bent spine, deformed bones and joints.
- Vitamin C : Scurvy – Bleeding and swelling of gums, weakness.
- Iron : Anaemia – Fatigue, loss of appetite, pale skin.

Know the Terms

- **Food:** The edible substances which we eat to obtain energy, materials required for growth and development of the body and to repair worn out tissues are called food.
- **Diet:** The amount of food taken by an individual at a time is called diet of that individual.
- **Nutrients:** The main components of food are carbohydrates, proteins, fats, vitamins and minerals. These are called nutrients.
- **Nutrition:** This is the process of taking in food containing the nutrients that provide energy and help in growth and development of the body and also repair worn out tissues.
- **Balanced Diet:** A diet which provides adequate amount of carbohydrates, fats, proteins, vitamins and minerals along with roughage and water to maintain a healthy body is known as balanced diet.
- **Carbohydrate:** The food which provides us energy to do work is called carbohydrate, e.g. sugar [energy-giving food].
- **Starch:** It is the major source of carbohydrate.
- **Energy:** It is the strength and vitality required to remain active and to do work.
- **Fats:** The energy-providing substances in the food are called fats. They are the richest source of energy. Fats produce more energy than carbohydrates, e.g. ghee, oil [energy-giving food].
- **Proteins:** The food items which are needed for the growth and repair of our body are called proteins, e.g. egg, milk, pea, meat etc. [body building food].
- **Vitamins:** The substances which are required in very small quantities to protect our body against diseases and to keep our eyes, bones, teeth and gums healthy are called vitamins. They do not provide energy [protective food].
- **Minerals:** The substances which are required in very small quantities to protect our body are called minerals. They do not provide energy [protective food].
- **Roughage:** The fibrous substances in our food are called roughage. They do not provide any nutrient to our body. They add bulk to our body and help our body get rid of undigested food.
- **Deficiency:** When a person eats a particular diet for a long time that does not contain a particular nutrient, the person may suffer from its deficiency.
- **Deficiency Diseases:** Diseases that occur due to lack of carbohydrates, proteins, vitamins and minerals in the diet over a long period are called deficiency diseases.

- **Night Blindness (Loss of Vision):** This is a type of disease caused due to lack of vitamin 'A'.
- **Beriberi:** Disease caused due to deficiency of vitamin B, weak muscles is the major symptom.
- **Scurvy:** It is a type of disease due to the deprivation of vitamin 'C' for a long Period from our diet. Mostly seen in Bleeding gums.
- **Goiter:** It is a type of disease seen in the person having deficiency of "Iodine" in the body.
- **Anaemia:** Disease due to lack of 'Fe' or Iron.
- **Obesity :** A condition in which a person has too much body fat.
- **Pigment :** Any coloured substance in the tissues or cells of animals or plants.
- **Haemoglobin :** A pigment that gives red colour to blood.
- **Dehydration :** A condition caused by the excessive loss of water from the body.

Know the Facts

- **Nutrient rich foods:**

Nutrient	Foods
Carbohydrate	Fruits, corn, rice, wheat, bread and potato
Fat	Butter, ghee, eat and eggs
Protein	Soyabean, pulses, peas, groundnuts, meat, eggs, fish and milk.
Vitamins	Papaya, mango, milk, green, vegetables, cereals etc.

- **Sources and function of Vitamins:**

Vitamin	Sources	Function
Vitamin A (Retinol)	Papaya, carrot, mango, milk	To maintain health of eyes and skin
Vitamin B ₁ (Thiamine)	Milk, green vegetables, peas, eggs, cereals, tomatoes	To maintain growth and development of our body
Vitamin B ₂ (Riboflavin)		To maintain function of nerves
Vitamin B ₁₂ (Cyanocobalamine)		To produce blood cells in bone marrow
Vitamin C (Ascorbic acid)	Amla, green chilli, citrus fruits	Helps our body to fight against many diseases

Vitamin D (Calciferol)	Milk, butter, cod liver oil, eggs	Helps our body to use calcium for strong bones and teeth
Vitamin E (Tocopherol)	Whole grains, green leafy vegetables, nuts	Essential for fitness and good skin
Vitamin K (Phylloquinone)	Green leafy vegetables	Helps in clotting of blood

➤ **Some diseases caused by deficiency of Proteins:**

Nutrient	Deficiency Disease	Symptoms
Protein	Kwashiorkor	In children, it leads to stunted growth, discolouration of hair, patchy skin, thinning of legs or swollen stomach, may affect functioning of brain.
Protein and carbohydrates	Marasmus	In children, it leads to thinning, weight loss and weakness, loose folds of skin.

➤ **Some diseases caused by deficiency of Vitamins:**

Vitamin	Deficiency Disease	Symptoms
Vitamin A	Night blindness	Poor vision in dim light
Vitamin B ₁	Beri-beri	Weakening of muscles, degeneration of nerves
Vitamin B ₃	Pellagra	Inflammation in skin, diarrhea and memory disorder
Vitamin C	Scurvy	Bleeding gums
Vitamin D	Rickets	Softening and weakening of bones, bones become brittle and easily breakable.

➤ **Some diseases caused by deficiency of minerals:**

Vitamin	Deficiency Disease	Symptoms
Calcium	Osteoporosis and hypocalcaemia	Weak bones and tooth decay

Iron	Anaemia	lack of haemoglobin in blood, paleness, reduced growth, weakness
Fluorine	Dental carries and osteoporosis	Weak teeth and bones
Sodium	Muscle cramps	Loss of appetite and weakness
Iodine	Goitre	Swelling of thyroid gland, poor growth in infancy and mental retardation

Objective Type Questions

(1 Mark each)

I. Multiple choice questions

- Body building foods that are necessary for growth and repair of the body are:
 - Fats
 - Proteins
 - Carbohydrates
 - Glucose
- Which one of the following food item does not provide dietary fibre? **[NCERT Exemplar]**
 - Whole grains
 - Whole pulses
 - Fruits and vegetables
 - Milk
- Which of the following sources of protein is different from others? **[NCERT Exemplar]**
 - Peas
 - Gram
 - Soyabeans
 - Cottage cheese (paneer)
- Read the food items given below.
 - Wheat
 - Ghee
 - Iodised salt
 - Spinach (Palak)
 Which of the above food items are energy giving foods? **[NCERT Exemplar]**
 - i and iv
 - ii and iv
 - i and ii
 - iii and iv
- Which vitamin deficiency causes rickets?
 - Vitamin A
 - Vitamin B
 - Vitamin C
 - Vitamin D
- Deficiency of vitamin A causes
 - Night blindness
 - Beri-Beri
 - Scurvy
 - Rickets
- Which of the following nutrients is not present in milk? **[NCERT Exemplar]**
 - Protein
 - Vitamin C
 - Calcium
 - Vitamin D
- Read the following statements about diseases:
 - They are caused by germs.

- ii. They are caused due to lack of nutrients in our diet.
- iii. They can be passed on to another person through contact.
- iv. They can be prevented by taking a balanced diet.

Which pair of statements best describes a deficiency disease?

- a. i and ii
- b. ii and iii
- c. ii and iv
- d. i and iii

9. Given below are the steps to test the presence of proteins in a food item: **(NCERT Exemplar)**

i. Take a small quantity of the food item in a test tube, add 10 drops of water to it and shake it.

- ii. Make a paste or powder of food to be tested.
- iii. Add 10 drops of caustic soda solution to the test tube and shake well.
- iv. Add 2 drops of copper sulphate solution to it.

Which of the following is the correct sequence of the steps?

- a. i, ii, iv, iii
- b. ii, i, iv, iii
- c. ii, i, iii, iv
- d. iv, ii, i, iii

10. The energy-providing nutrients are:

- a. Carbohydrates
- b. Fats
- c. both Carbohydrates and fats
- d. Proteins

11. Which of the following vitamins gets destroyed by heat during cooking?

- a. Vitamin A
- b. Vitamin B
- c. Vitamin C
- d. Vitamin D

12. Amla is the richest source of:

- a. Vitamin A
- b. Vitamin B
- c. Vitamin C
- d. Vitamin D

13. The colour of the starch when treated with iodine solution becomes:

- a. Blue-black
- b. Red
- c. Yellow
- d. No change

14. Which of the following minerals is present to haemoglobin?

- a. Calcium
- b. Iron
- c. Iodine
- d. Sodium

1. b	2. d	3. d	4. c	5. d	6. a	7. b
8. c	9. b	10. c	11. c	12. c	13. a	14. b

II. Multiple choice questions

15. The richest source of energy is:

- a. Fats
- b. Carbohydrates
- c. Proteins
- d. Vitamins

16. Beriberi is a deficiency disease caused by the deficiency of:

- a. Iron
- b. Vitamin B1
- c. Vitamin C
- d. Calcium

15. a	16. b
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I. Fill in the blanks

Complete the following with a suitable word / words:

1. The energy rich nutrient is _____.
2. The body-building food is _____.
3. Scurvy is the disease caused by the deficiency of Vitamin _____.
4. An oily patch on white paper shows the presence of _____.
5. Amla is the best sources of Vitamin _____.
6. The edible substances which we eat to get energy are called _____.
7. The amount of food taken by an organism at a time is called _____.
8. Deficiency of Vitamin B causes a disease known as _____.
9. The main carbohydrates found in our food are _____ and _____.
10. Components of food are called _____.
11. Groundnuts are rich in _____.
12. Iodine solution changes the colour of starch into _____.
13. Raw potato is a very good source of _____.
14. Proteins are needed for growth and _____ of our body tissues.

1. fat	2. protein	3. C	4. fat	5. C
6. food	7. diet	8. beriberi	9. starch, sugars	10. nutrients
11. fats	12. blue-black	13. starch	14. repair	

15. Our food must contain different types of _____ for the normal functioning of the body.
16. _____ is a disease caused by a severe protein and carbohydrate deficiency in the diet.
17. Deficiency of vitamin C can cause _____.
18. A diet containing all the different types of nutrients in the correct proportion is a _____ diet.
19. Night blindness is caused due to deficiency of _____.
20. _____ is required for healthy eyes.

21. Deficiency of _____ causes swelling of the thyroid gland.
22. Vitamin _____ is soluble in water.
23. _____ is a condition in which a person has too much body fat.
24. _____ is a pigment that gives red colour to blood.

15. Nutrients	16. Marasmus	17. Scurvy	18. balanced	19. Vitamin A
20. Vitamin A	21. Iodine	22. B & C	23. Obesity	24. Haemoglobin

II. Fill in the blanks

25. _____ is caused by deficiency of Vitamin D.
26. Deficiency of _____ causes a disease known as beri-beri.
27. Deficiency of Vitamin C causes a disease known as _____.
28. Night blindness is caused due to deficiency of _____ in our food.
29. Egg yolk is rich in _____ and egg albumin is rich in _____.
30. Deficiency diseases can be prevented by taking a _____.
31. The component of food that does not provide any nutrient to our body and yet is essential in our food is _____.

25. Rickets	26. Vitamin B	27. Scurvy	28. Vitamin A	29. Fat, Protein
30. Balanced Diet	31. Roughage			

I. True or false

1. Only some living things need food. ()
2. Our food is derived from plants or animals or both. ()
3. We require different foods to get different nutrients. ()
4. Starch is not a kind of carbohydrate. ()
5. Glucose is a kind of carbohydrate. ()
6. Copper sulphate is used to find out the presence of protein. ()
7. Carbohydrate mainly provides energy to our body. ()
8. Dietary fibres are also known as elementary fibres. ()
9. Balanced diet requires expensive food materials. ()
10. Proper cooking is not necessary for health foods. ()

1. False	2. True	3. True	4. False	5. True
6. True	7. True	8. False	9. False	10. False

II. True or false

11. The components that are needed by our body are called nutrients. ()
12. Roughage is a very good source of energy. ()
13. Carbohydrates are called body-building foods. ()
14. There is a group of vitamins called Vitamin D-complex. ()
15. A disease caused due to over-eating of nutrient is called deficiency disease. ()
16. Beriberi is caused by the deficiency of Vitamin D. ()
17. Scurvy is caused by the deficiency of Vitamin B₁. ()
18. The disease caused by the deficiency of Vitamin A is called night blindness. ()
19. The components of food are called nutrients. ()
20. The richest sources of energy are the fats. ()
21. Proteins are called energy giving food. ()
22. Proteins are called body building food. ()
23. Amla is the richest source of Vitamin A. ()
24. Vitamins and minerals protect our body from diseases. ()
25. A diet which contains all the components of food in right proportion is called balanced diet. ()

11. True	12. False	13. False	14. False	15. False
16. False	17. False	18. True	19. True	20. True
21. False	22. False	23. False	24. True	25. True

III. True or false

Tick (✓) the statements that are correct.

1. By eating rice alone, we can fulfil nutritional requirement of our body.
2. Deficiency diseases can be prevented by eating a balanced diet.
3. Balanced diet for the body should contain a variety of food items.
4. Meat alone is sufficient to provide all nutrients to the body.

5. Vitamins do not have any nutritive value.
6. Water forms 80 per cent of our body weight.
7. The presence of sugar in the diet can be tested with iodine solution.
8. Vitamins are the nutrients that protect us against diseases.
9. Vitamin D can be made in our skin in the presence of sunlight.
10. A labourer requires a diet rich in vitamins.

1. ✗	2. ✓	3. ✓	4. ✗	5. ✗
6. ✓	7. ✗	8. ✓	9. ✓	10. ✗

I. Match the following

Match the following items given in column A with those in column B.

Column A

1. Starch -
2. Fats -
3. Pulses -
4. Scurvy -
5. Night blindness -
6. Proportionate components in food -
7. Vitamin B1 -
8. Fibrous substances -
9. Deficiency of Iodine -
10. Anaemia -

Column B

- a. Oils
- b. Vitamin C
- c. Vitamin A
- d. Beriberi
- e. Iron
- f. Carbohydrates
- g. Proteins
- h. Balanced diet
- i. Roughage
- j. Goitre

1. f	2. a	3. g	4. b	5. c
6. h	7. d	8. i	9. j	10. e

II. Match the following

I. Vitamins	Found in
a. A	i. Amla, citrus fruits, tomato
b. B1	ii. Sunlight, milk, cod liver oil
c. B2	iii. Milk, butter, egg, leafy vegetables
d. C	iv. Liver, fish oil, leafy green vegetables, milk, vegetable
e. D	v. Yeast, egg, meat, peas

a. iv	b. iii	c. v	d. i	e. ii
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II. Minerals	Found in
a. Iron	i. Green and yellow vegetables
b. Calcium	ii. Sea food and iodized salt
c. Potassium	iii. Liver, egg, green vegetables and germinated wheat grains
d. Sodium	iv. Common salt
e. Iodine	v. Milk, milk products, leafy vegetables

a. iii	b. v	c. i	d. iv	e. ii
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III. Column A	Column B
a. Protein deficiency	i. Iodine
b. Citrus fruits	ii. Warmth and energy
c. Iodised salt	iii. Vitamin A
d. Fats	iv. Kwashiorkor
e. Papaya	v. Vitamin C

a. iv	b. v	c. i	d. ii	e. iii
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III. Match the following

I. Match the following.	
a. Wheat and rice	i. Fats
b. Oil and butter	ii. Vitamins
c. Egg and meat	iii. Roughage
d. Fruits and vegetables	iv. Proteins
e. Dietary fibre from fruits and vegetables	v. Carbohydrates

a. v	b. i	c. iv	d. ii	e. iii
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Quiz Time

1. What is the amount of food taken by an individual at a time called?
2. Name the disease caused due to the deficiency of Vitamin B1.
3. Write the two components of food which provide energy.
4. Name the component of food which is called body building food.
5. Write two sources of proteins in our food.
6. What is the main symptoms of the disease scurvy?
7. A food item gives blue-black colour with iodine. Which nutrient is present in food?
8. Which mineral is necessary for the formation of haemoglobin.
9. Which food item provides both proteins and iodine?
10. Stem of which plant provides us sugar?
11. Roughage does not provide energy yet it is very essential component of food. Why?

Answers		
1. Diet	2. Beriberi	3. i. Carbohydrates, ii. Fats
4. Proteins	5. i. Pulses, ii. Eggs/Milk	6. Bleeding gums and loose teeth
7. Starch	8. Iron	9. Fish
10. Sugarcane	11. Roughage is necessary for the removal of undigested food from the body.	

I. Intext Questions

1. Check for the presence of starch, protein and fat in the given food items and complete the table given below.

Food items	Starch (Present)	Proteins (Present)	Fats (Present)
Raw Potato	Yes	-	-
Milk	-	Yes	-
Groundnut	-	-	Yes
Uncooked powdered rice	-	-	-
Cooked rice	-	-	-
Dry coconut	-	-	-
Uncooked tuar dal (powdered)	-	-	-
Cooked dal	-	-	-
A slice of any vegetable	-	-	-
A slice of any fruit	-	-	-
Boiled egg (white portion)	-	-	-

Answer: - On the basis of tests performed, the presence of starch, protein and fat in the given food items is shown in following table.

Food items	Starch (Present)	Proteins (Present)	Fats (Present)
Raw Potato	Yes	No	No
Milk	No	Yes	Yes
Groundnut	No	Yes	Yes
Uncooked powdered rice	Yes	No	No
Cooked rice	Yes	No	No
Dry coconut	No	No	Yes
Uncooked tuar dal (powdered)	No	Yes	No
Cooked dal	No	Yes	Yes
A slice of any vegetable	No	No	No
A slice of any fruit	No	No	No

Boiled egg (white portion)	No	Yes	No
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2. What do various nutrients do for our body?

Our body needs different kinds of food for some special purposes.

For example.

Carbohydrates and fats	for energy
Proteins	for body-building
Vitamins and minerals	for protection against diseases

3. a. Are fats, proteins and starch present in all food items?

b. Does a food item contain more than one nutrient?

c. Is there any food item that does not contain any of the three nutrients?

a. No, fats, proteins and starch are not present in all food items. Some food items have fat, some have protein or starch or some have varying proportions of these nutrients.

b. Yes, food items such as cooked pulse, milk, groundnut etc contain more than one nutrient.

c. Yes, food items like a slice of vegetable or fruit do not contain any of these three nutrients.

4. Do the people of all ages need the same type of diet?

No, the people of all ages do not need the same type of diet. It depends on the physical work done and age of a person. A growing age person needs more protein diet as compared to an old age person.

5. Does animal food also consist of different components and do they also need a balanced diet?

Yes, animal food also consists of different components in the form of nutrients. They also need a balanced diet for their maintenance and growth.

6. Do you think fat-rich food are harmful for us if eaten too much?

Yes, I think that fat-rich foods are harmful for us if eaten too much, because too much fat cause obesity.

7. Name the major nutrients in our food.

Carbohydrates, fats, proteins, vitamins and minerals are the major nutrients in our food.

8. Name the following.

- a. The nutrients which mainly give energy to our body.
- b. The nutrients that are needed for the growth and maintenance of our body.
- c. A vitamin required for maintaining good eyesight.

- a. Carbohydrates and fats are the nutrients which mainly give energy to our body.
- b. Proteins and minerals are the nutrients that are needed for the growth and maintenance for our body.
- c. Vitamin A is required for maintaining good eye-sight.
- d. Calcium is required for keeping our bones healthy.

9. Name two foods each rich in:

- a. Fats
- b. Starch
- c. Dietary fibre
- d. Protein

Answer		
S.No	Nutrient	Food items
a.	Fats	Oil and ghee
b.	Starch	Rice and Corn
c.	Dietary fibre	Fresh fruits and whole grains
d.	Protein	Milk and pulses

I. Very Short Answer Type Questions

1. Unscramble the following words related to components of food and write them in the space provided. [NCERT Exemplar]

- a. reinpot _____
- b. menliars _____
- c. tivanmi _____
- d. bocatradhyer _____
- e. nitestrun _____
- f. tfa _____

a. Protein	b. Minerals	c. Vitamin
d. Carbohydrate	e. Nutrients	f. Fat

2. Which of the following food items does not provide any nutrient?

Milk, Water, orange juice, Tomato soup

[NCERT Exemplar]

Water does not provide any nutrient.

3. Why do labourers need more carbohydrates?

Labourers need more carbohydrates because their work involves physical labour.

4. Deficiency of which mineral result in anaemia?

Iron.

5. Which component of food is the major source of energy to our body?

Carbohydrate.

6. What are the symptoms of rickets?

Soft and bent bones.

7. How will you prevent the deficiency diseases?

By eating a balanced diet.

8. What is a balanced diet?

A diet that contains all the nutrients needed for the growth and maintenance of a good health is called a balanced diet. It should also contain a good amount of roughage and water.

9. Why is glucose called a source of instant energy?

Glucose directly enters the blood stream and produces energy through respiration immediately. Hence, it acts as a source of instant energy.

10. Which type of foods are known as body-building foods?

Protein-rich foods are known as body-building foods.

11. Name the major nutrients in our food.

Carbohydrates, proteins, fats, vitamins and minerals.

12. Define the term nutrient.

The components of food that are needed for proper working of body are called nutrients.

13. Name two complex carbohydrates.

Cellulose and starch.

14. List the water-soluble vitamins.

Vitamin B and C.

15. List the fat-soluble vitamins.

Vitamin A, D, E and K

16. What causes obesity?

Eating more food than required by the body causes obesity.

17. What does PEM stand for?

Protein Energy Malnutrition.

18. Which vitamin needs sunlight for its preparation?

Vitamin D

19. Raghav puts a food sample on a piece of paper and crushes it. The paper becomes translucent. In which nutrient / supplement is the food rich in?

The food is rich in fat.

20. Sunil took some egg white in a test tube. He added 2-3 drops of Benedict solution to it and heated it. It turned red-orange in colour. Which nutrient is it rich in?

Proteins.

21. Which is the simplest carbohydrate?

Glucose is the simplest carbohydrate.

22. Two drops of iodine solution are put on a slice of bread and some grape juice. Why does bread turn blue-black in colour. Bread contains starch but grapes contain sucrose.

23. Do all meals consist of the same food items?

No, all meals do not have the same food items.

24. Why should a meal have different food items?

A meal should have different food items because our body needs different kinds of nutrients for proper functioning.

25. Do all foods contain all the required nutrients?

No, all foods do not contain all the nutrients required by our body.

26. Name two main types of carbohydrates found in our food.

i. Starch

ii. Sugar

27. What are carbohydrates?

The compounds of carbon, hydrogen and oxygen which provide energy for our body are called carbohydrates.

28. What happens when two or more drops of iodine solution fall on starch substance?

The colour of the substance becomes blue-black.

29. If any food items gives blue-black colour with iodine then which nutrient is present in the food?

Starch

30. Name two substances which provide carbohydrates.

i. Potato

ii. Rice / wheat / maize / sugar

31. Name the food nutrient indicated by an oily patch on paper.

An oil patch on paper shows the presence of fat.

32. Name two energy-providing nutrients.

i. Carbohydrates

ii. Fats

33. Name a nutrient which helps in repairing the damaged body cells.

Proteins

34. Name two nutrients which protect the body from diseases.

i. Vitamins

ii. Minerals

35. Name two plant food items which provide proteins.

i. Dal (pulses)

ii. Soyabean

36. Name two sources of proteins provided by animals.

i. Milk

ii. Eggs

37. Which types of food is called body-building food?

The food containing proteins is called body-building food.

38. Name two food items which provide fats.

i. Oils

ii. Ghee

39. Name various types of vitamins.

Various types of vitamins are:

Vitamin A

Vitamin B - complex

Vitamin C

Vitamin D

Vitamin E

Vitamin K

40. Name a vitamin which represents a group of vitamins.

Vitamin B-complex.

41. Name two sources of Vitamin A.

i. Fish-oil

ii. Milk

42. Write two sources of Vitamin B.

i. Liver

ii. Beans

43. Write two sources of Vitamin C

- i. Orange / lime
- ii. Amla

44. Write two sources of Vitamin D.

- i. Fish
- ii. Butter

45. What is roughage?

The food containing plant fibres which are also known as dietary fibres is called roughage.

46. What is the main function of roughage?

The main function of roughage is to help our body get rid of undigested food.

47. Name some food items which provide roughage and prevent constipation.

Whole grains, fresh fruits and vegetables are the main sources of roughage.

48. Which vitamin can be prepared by our body in presence of sunlight?

Vitamin D

49. Which mineral help in building bones and teeth?

Calcium (Ca).

50. Name the mineral found in Blood.

Iron (Fe)

51. Which disease occur due to lack of Fe (Iron)?

Anaemia.

52. Which vitamin gets destroyed on heating?

Vitamin C or Ascorbic acid.

I. Short Answer Type Questions

1. What are nutrients? Name major nutrients.

The components of food which are needed by our body for growth and development are called nutrients. The major nutrients are:

- i. Carbohydrates
- ii. Fats
- iii. Proteins
- iv. Vitamins
- v. Minerals

2. What are the functions of carbohydrates?

They complete the energy requirements of the body so they are called energy providing food.

3. Write test for detecting the presence of starch.

Take a piece of the food item. Put 2 - 3 drops of dilute iodine solution on it. If the colour of the food item becomes blue-black, then it indicates the presence of starch in the food item.

- i. Food + Iodine - Blue - black colour (starch present)
- ii. Food + Iodine - No blue-black colour (no starch present)

4. What are the functions of proteins?

Proteins are the most important nutrients. They are called body-building food. They help in the growth and repair of damaged cells and tissues of the body. They also help our body to fight against infections. Proteins make our nails, hair and muscles.

5. How can you test presence of proteins in a given food item?

Take a small quantity of food item. If the sample is solid, grind it. Put some part of this in a clean test tube, add 10 drops of water to it and shake the test tube. Now, with the help of a dropper, add two drops of solution of copper sulphate and 10 drops of solution of caustic soda to the test tube. Shake well and place the test tube in test tube stand for a few minutes.

Observe colour of the contents of test tube. If colour of the contents turns violet, the food item contains protein.

Note : Copper sulphate and caustic soda solutions are harmful. Handle them with care.

Food + water + copper sulphate + caustic soda → violet colour → protein is present.

6. What are fats? Name some fat-containing substances.

The energy rich sources of food are called fats. They provide energy to the body. All types of nuts, mustard seeds, milk and butter are the major sources of fat. Like carbohydrates, fats also contain carbon, hydrogen and oxygen but fats contain less oxygen than carbohydrates.

7. Write test for detecting presence of fat.

Take small quantity of the food item (Ground Nut). Crush it and rub on a piece of white paper. Observe carefully, you will find that the piece of white paper shows an oily patch on it which indicates that the food item contains fat.

8. What are vitamins? Write various kinds of vitamins.

They are protective compounds with no energy value. They help in proper body functioning and are required by the body in very small quantities. Various kinds of vitamins are - Vitamin A, Vitamin B-complex, Vitamin C, Vitamin D, Vitamin E and Vitamin K.

9. People who eat sea-food do not suffer from Goitre. Explain.

It is so because sea-food is a rich source of Iodine and Goitre is deficiency disease caused due to lack of Iodine.

10. Excess intake of fats is harmful for the body because it causes obesity. Would it be harmful for the body to take too much of proteins or vitamins in the diet?

Yes, excess intake of proteins and vitamins in the diet is harmful and may lead to other diseases.

11. Name the vitamin that our body prepares in the presence of sunlight.

Vitamin D

12. Name a vitamin that is not present in milk.

Vitamin C

13. A patient had stunted growth, swelling on face, discolouration of hair and disease. Doctor advised him to eat a lot of pulses, grams, egg white, milk etc. What is wrong with the patient? Explain.

The intake of protein is not enough in his diet and all these symptoms are called due to deficiency of proteins.

14. A small child became very thin and lean and later he became so weak that he could not move.

Which nutrients should he eat so as to improve his health?

Both carbohydrates and proteins.

15. What are the functions of minerals?

Minerals are protective part of foods occurring naturally and are needed by our body in small amount. Minerals are essential for proper growth of the body and to maintain good health. They do not provide energy. Milk, salt, eggs and green leafy vegetables are the main sources of minerals.

16. Write the functions of water in our body.

Water helps our body to absorb nutrients from the food. It also help in removing the waste from the body in the form of urine and sweat. We get water from various types of liquids, fruits and vegetables.

17. What is obesity?

When a person eats to much fat-containing foods, then the fat gets deposited in his body and he may end up suffering from a condition called obesity.

18. What are deficiency diseases?

When a person eats such a food continuously for a long time which may not contain a particular nutrient, then this condition is called deficiency of that nutrient. Deficiency of one or more nutrients can cause disease or disorders in our body. Such type of diseases are known as deficiency diseases.

19. Write the name of disease caused by lack of following.

- i. Proteins
- ii. Carbohydrates

i. Kwashiorkar and Marasmas	ii. Skin dry and lack of energy
-----------------------------	---------------------------------

20. Why food should not be over cooked?

If we cook food at high temperature or we over cook it, the food containing essential nutrients gets destroyed. Taste deteriorates when food is overcooked. As a result it doesn't taste good.

II. Short Answer Type Questions

1. Read the items of food listed below. Classify them into carbohydrate rich, protein rich and fat rich food and fill them in the given table.

Moong dal, fish, mustard oil, sweet potato, milk, rice, egg, beans, butter, butter milk (chhachh), cottage cheese (paneer), peas, maize, white bread.

Carbohydrate rich food items (A)	Protein rich food items (B)	Fat rich food items (C)

The classification of food items is shown below.

Carbohydrate rich food items (A)	Protein rich food items (B)	Fat rich food items (C)
Sweet potato	Moong dal, Fish, Milk, Egg,	Mustard oil

Rice	Beans, Butter milk (chhachh),	Milk
Maize	cottage cheese (Paneer), Peas	Egg
white bread		Butter

2. Why is it important to cook food?

It is important to cook food due to following reasons.

- i. Cooking kills various germ present in food items.
- ii. It make food easily digestible.
- iii. It makes food tasty.

3. What is dehydration? Does body weight of person increase or decrease when suffering from dehydration?

Removal of water from the body in excess quantity is called dehydration. It reduces body weight of a person.

4. Describe the symptoms, cause and cure of 'Beri-Beri' disease.

In Beri-Beri, nervous system is affected which causes weak muscles and little energy to work. It is caused due to deficiency of vitamin B, found in seafood, milk, meat, peas, cereals and green vegetables.

5. Why do living organisms need food?

Living organisms need food for their survival, growth and to keep themselves healthy.

6. Tasty food is not always nutritious and nutritious food may not always be tasty to eat.

There are following examples in favour of this statement.

- i. Fast foods like burger, pizza etc are tasty but these are not nutritious as they have large amount of fat and cause obesity.
- ii. Potato chips are tasty to eat but not nutritious.
- iii. Green leafy vegetables are very nutritious but are not so tasty to eat.

7. While using iodine in the laboratory, some drops of iodine fell on Paheli's socks and some fell on her teacher's saree. The drops of iodine on the saree turned blue black while their colour did not change on the socks. What can be the possible reason?

The possible reason can be the presence of starch on teacher's saree and not on Paheli's socks. Iodine reacted with starch to given blue-black colour on the saree.

8. Paheli and Boojho peeled some potatoes and cut them into small pieces. They washed and boiled them in water. They threw away the excess water and fried them in oil adding salt and spices. Although the potato dish tasted very good, its nutrient value was less. Suggest a method of cooking potatoes that will not lower the nutrients in them. [NCERT Exemplar]

The correct method of cooking potatoes that will not lower the nutrients in them is given below.

Overheating, overboiling and deep frying of potatoes should be avoided as they destroy the nutrients present in potatoes. So, potatoes should be boiled and fried in proper manner.

9. Paheli avoids eating vegetables but likes to eat biscuits, noodles and white bread. She frequently complains of stomach ache and constipation. What are the food items that she should include in her diet to get rid of the problem? (NCERT Exemplar)

Paheli should include roughage in her diet to get rid of the problem. Roughage is dietary fibre in food which can not be digested. However it maintains the normal functioning of digestive system. It helps in preventing constipation. Whole grains, pulses, fresh fruits and vegetables contain roughage so Paheli should include such food items in her diet.

**10. a. List all those components of food that provide nutrients.
b. Mention two components of food that do not provide nutrients.(NCERT Exemplar)**

Answer:- a. The components of food that provide nutrients are given below.

- i. Carbohydrates
- ii. Fats
- iii. Proteins
- iv. Vitamins
- v. Minerals

b. The two components of food that do not provide nutrients are

- i. Water
- ii. Roughage

11. 'Minerals and vitamins are needed in very small quantities by our body as compared to other components, yet, they are an important part of a balanced diet.' Explain the statement. [NCERT Exemplar]

'Minerals and vitamins are needed in very small quantities by our body as compared to other components, yet, they are an important part of a balanced diet, because if our body does

not get sufficient amount of a certain minerals or vitamin for a prolonged duration of time, then we might suffer from certain diseases called deficiency diseases.

A small quantity of minerals and vitamins is required for maintaining good health and they protect us from various diseases. For example, vitamin-A is necessary to keep eyes healthy and calcium is essential for the development of healthy bones and teeth.

12. 'Water does not provide nutrients, yet it is an important component of food'. Explain.

[NCERT Exemplar]

Water does not provide nutrients, yet it is an important component of food due to following reasons.

- i. It helps our body in absorbing nutrients.
- ii. It helps in transporting substances inside our body.
- iii. It helps in removal of wastes from our body in form of urine.
- iv. It helps in regulating our body temperature.

13. What are vitamins? State the function of vitamin A and C in our body.

Vitamins are complex organic compounds that are essential for maintaining good health of our body and they also protect us from various diseases. Vitamin-A keeps our skin and eyes healthy. Vitamin-C helps the body to fight against diseases.

14. Why should we eat a balanced diet? Name the vitamin that gets destroyed on heating.

Our body needs all the nutrients in the right amount, hence we should eat a balanced diet. Vitamin-C gets destroyed on heating.

III. Short Answer Type Questions

1. Name two foods each rich in:

- i. Fats
- ii. Starch
- iii. Dietary fibre
- iv. Protein

i. Groundnuts and butter	ii. Potato and bread
iii. Vegetables and fruits	iv. Egg and milk

2. Is a balanced diet an expensive diet? Give reasons to support your answer.

No, Pulses, groundnut, soyabean, sprouted seeds (moong), spinach, banana, sattu, jaggery, a combination of flours (missi roti, thepla made from cereals and pulses), available vegetables

and other such foods provide many nutrients. Therefore, one can eat a balanced diet without expensive food materials.

3. Give two methods of cooking that destroy nutrients in food.

Boiling in excess water and frying destroy nutrients in food.

4. Why are you advised to eat a variety of foods?

Different nutrients are present in different foods. To get a balanced diet, a variety of food is required.

I. Long Answer Type Questions

1. List various types of nutrients and write the functions of each.

The various types of nutrients are:

- i. Carbohydrates : They are mainly energy-providing nutrients.
- ii. Fats : They provide energy for the body. They give much more energy than carbohydrates if consumed in same amount.
- iii. Proteins: They are called body-building foods. Proteins help in the formation and repairing of body parts. Skin, hair, muscles, enzymes are made up of proteins.
- iv. Vitamins: Vitamins help in protecting our body against disease. They also protect eyes, bones, teeth and gums.
- v. Minerals: Minerals are essential for proper growth of body and to maintain good health.

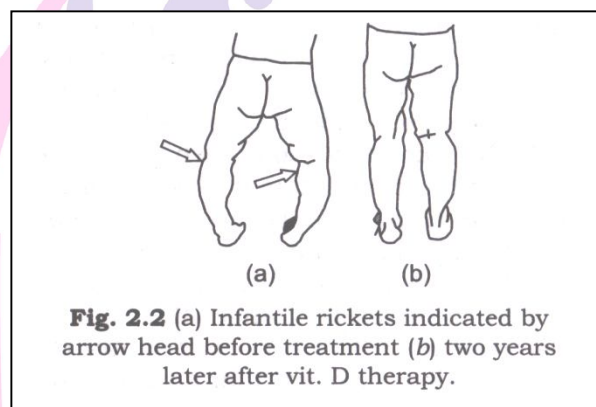
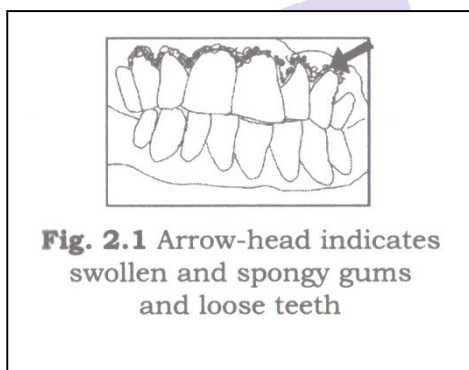
2. What is a balanced diet? Write the components of balanced diet.

A diet which provides the right proportion of all the nutrients that our body needs along with roughage and water is called balanced diet. The various components of balanced diet are carbohydrates, fats, proteins, vitamins, minerals, roughage and water.

3. Prepare a chart to show various vitamins and minerals and the disorders caused by their deficiency.

Vitamin / mineral	Deficiency disease / disorder	Symptoms
Vitamin A	Loss of vision	Poor vision, loss of vision in darkness (night), sometimes complete loss of vision.

Vitamin B1	Beriberi	Weak muscles and very little to work.
Vitamin C	Scurvy (See Fig. 2.1)	Bleeding gums, wounds take longer time to heal.
Vitamin D	Rickets (See Fig. 2.2)	Bones become soft and bend easily.
Calcium	Bone and tooth decay	Weak bones, tooth decay.
Iodine	Goitre	Glands in the neck appear swollen, mental disability in children.
Iron	Anaemia	Weakness



4. What are the different functions of following vitamin.

- i. Vitamin A
- ii. Vitamin C
- iii. Vitamin D
- iv. Vitamin E
- v. Vitamin K

i. Vitamin A	It keeps our eyes and skin healthy
ii. Vitamin C	Help body to fight against diseases
iii. Vitamin D	Help our body to use calcium for bones and teeth
iv. Vitamin E	Help muscles to work and give protection to lives
v. Vitamin K	Help blood clotting.

5. Name the vitamin found in these food items.

- i. Papaya, Carrot, Fish oil, Milk
- ii. Orange, Guava, Lemon, Tomato, Chilli
- iii. Fishes, Butter, Egg, Milk, Liver
- iv. Liver, Cumin seed

i.	Vitamin 'A'
ii	Vitamin 'C'
iii	Vitamin 'D'
iv	Vitamin 'B'

6. Write the name of minerals found in following items.

- i. ginger, Spinach, Fish, Salt
- ii. Milk, Banana, chilli, Cumin Seed
- iii. Apple, Spinach, Liver
- iv. Milk, Egg

i.	Iodine
ii	Phosphorous
iii	Iron
iv	Calcium

II. Long Answer Type Questions

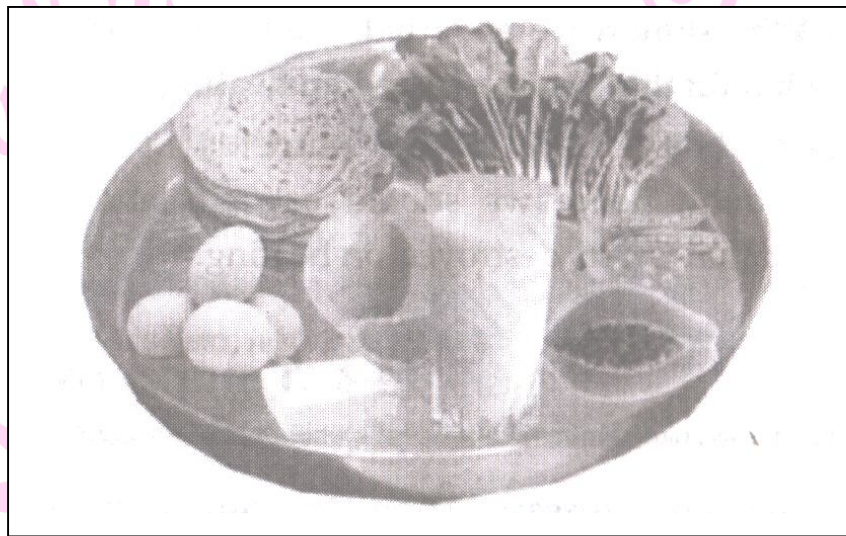
1. Boojho was having difficulty in seeing things in dim light. The doctor tested his eyesight and prescribed a particular vitamin supplement. He also advised him to include a few food items in his diet.

- a. Which deficiency disease is he suffering from?
- b. Which food component may be lacking in his diet?
- c. Suggest some food items that he should include in his diet. (Any four)

(NCERT Exemplar)

- a. He is suffering from night blindness.
- b. Vitamin-A may be lacking in his diet.
- c. Some food items that he should include in his diet are carrot, papaya, milk and fish oil which are rich in Vitamin A

2. Observe the items given in fig. carefully and answer the questions that follows.



- a. Food rich in carbohydrates is _____.
- b. Egg is a rich source of protein, the mineral _____ and vitamin _____.
- c. _____ is a rich source of fat.
- d. Milk provides _____, vitamin D and _____ (Mineral)
- e. _____ (fruit) is rich source of vitamin A.
- f. Spinach is a good source of the mineral _____.
- g. Both eggs and _____ are rich in _____.

(NCERT Exemplar)

a. Chapati	b. Calcium, D	c. Butter	d. Protein, Calcium	e. Papaya
f. Iron	g. Peas, Proteins			

- 6. a. Which components of food are known as protective food?
- b. Which food provides water to our body?
- c. why should vegetables not be washed after cutting? Why should food not be overcooked?

- a. Vitamins and minerals
- b. Tea, coffee, fruits, vegetables etc.

c. Vegetable contain vitamins and minerals which get washed away if vegetables are washed after cutting them.

d Food should not be overcooked to prevent the loss of nutrients from it.

III. Long Answer Type Questions

1. Write a short note on the importance of water for human body.

Water is important for human body in the following ways.

- i. It helps in transporting food materials, gases, waste materials, enzymes and hormones from one part of the body to the other.
- ii. It assist in keeping the body temperature constant.
- iii. It is a medium in which a number of chemical reactions take place in the body.
- iv. It helps in the removal of wastes from the body in the form of sweat and urine.

2. 'More expensive the food, more nutritious it is.' Comment upon this statement. Give examples to support your answer.

No, it is not necessary that only expensive food is more nutritious. For example sugarcane, egg, potatoes, soyabeans, green leafy vegetables are not to expensive and are good source of carbohydrates, fats, proteins, vitamin and minerals. If cheap food is taken in appropriate amount, it will act as a proper diet.

3. How can you detect the presence of proteins in a given food item?

The presence of proteins can be detected by the Biuret test.

- i. Crush the food sample and put some of it into a clean test tube. Add some sodium hydroxide solution.
- ii. cork the test tube and shake it to mix the food with the sodium hydroxide solution. Then add a little copper sulphate solution. Cork and shake it again.

If the solution turns blue, there is no protein in the food. But if it turns violet, there is protein in the food.

4. What is anaemia? Explain.

If the quantity of iron is too less in a diet, one can suffer from anaemia. Iron is essential for the formation of haemoglobin which is present in red blood corpuscles (RBCs) of the blood that is oxygen carrier. Haemoglobin combines with oxygen and carries it to all parts of the body with blood circulation. One haemoglobin synthesis is hampered, the oxygen carrying capacity of

blood reduces, causing a condition called anaemia Symptoms of iron deficiency are anamia, fatigue, loss of appetite, pale skin, white nails, swelling of hands and feet.

5. Distinguish between the following.

- a. Malnutrition and Under nutrition
- b. Proteins (Function, Source) and Carbohydrates (Function, source)

a.	Malnutritions	Undernutrition
	If a person eats sufficient amount of same types of food having one component only, he suffers from malnutrition.	If a person does not get sufficient amount of food as per his requirements, he suffers from malnutrition.
b.	Proteins	Carbohydrates
Function	These are body-building food which help in growth and repair of body.	These are energy-giving foods and act as fuels for body.
Source	Milk, fish, meat, eggs, etc.	Rice, wheat, sugarcane, sugarbeet, etc.

I. High Order Thinking Skills (Hots) Questions

1. 'Modernisation has led to the development of life style disorder'. Find our what life style diseases are. How can they be prevented?

'Modernisation' has led to the development of life style disorders. the lifestyle disorders are obesity, fatigue, loss of vision, mental weakness etc. These disorders occur due to junk foods like pizza, burger etc. They can be prevented by taking balanced diet including carbohydrates, fats, proteins, vitamins and minerals.

2. Sarthak advises his mother not to sieve wheat flour before making dough. Can you state why?

The wheat flour contains husk, which is rich in carbohydrates, so Sarthak advises his mother not to sieve what flour before making dough.

3. It is said that milk is a wholesome food as it contains most of the nutrients. Do you think that you can remain healthy by consuming only milk as your regular diet?

No, I do not think that we can remain healthy by consuming only milk as our regular diet, because, certain nutrients like vitamin-C are not found in milk.

Value Based Type Question

1. Why are parents advised to discourage their children from eating chips and junk foods?

Parents are advised to discourage their children from eating chips and junk foods due to following reasons.

- i. Junk foods cause obesity.
- ii. They may cause loss of appetite.
- iii. They cause mental problems.
- iv. These food items lead to wastage of money.

Associated value:

We should understand the benefits of healthy food habits.

II. High Order Thinking Skills (Hots) Questions

1. Rohit was very tired when he came back home after school. His mother gave him a glass of water with glucose dissolved in it. Rohit felt refreshed. Does drinking only glucose water sufficient all the nutrition demands?

Glucose is the simplest form of carbohydrate and is a source of instant energy. But drinking only glucose water will not provide a balanced diet because it is only energy-giving. We also need to intake body-building and protective foods, along with roughage.

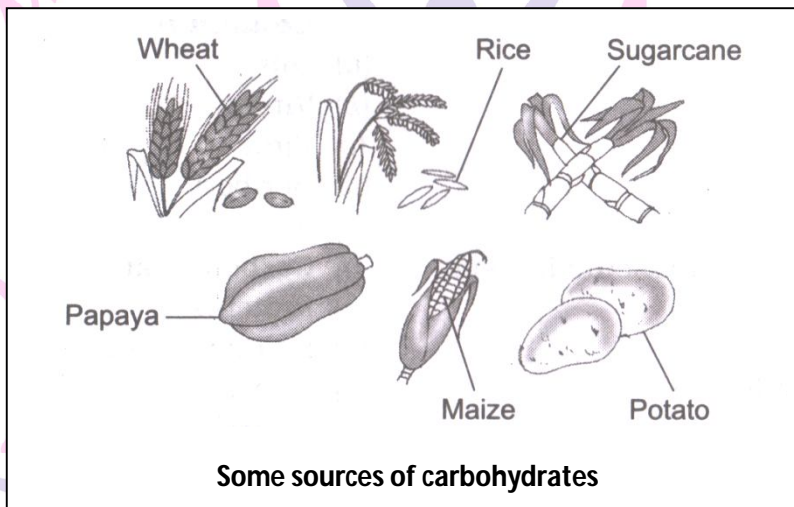
2. A family eat boiled eggs, bread toast and orange juice for breakfast. Is it a nutritious and healthy breakfast? Which nutrients are they taking in?

Yes, the family is taking a healthy breakfast because it includes all the nutrients. the nutrients they are taking in are:

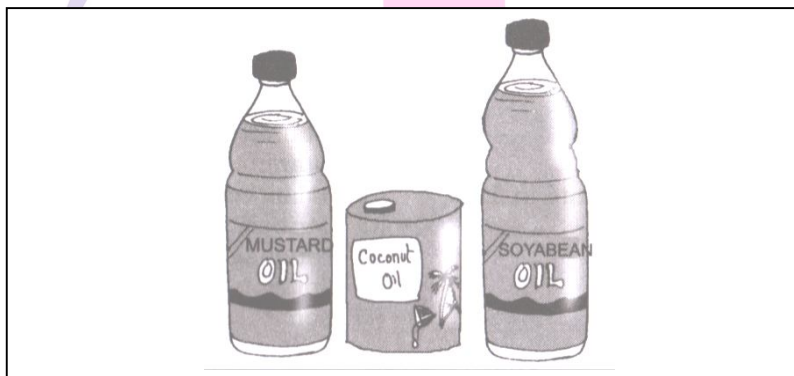
- Eggs - Protein and fat.
- Bread - Starch and roughage
- Orange juice - Vitamin and roughage

Skill Based Questions

1. Draw a diagram to show some sources of carbohydrates.



2. Observe the following figures and answer the following questions.

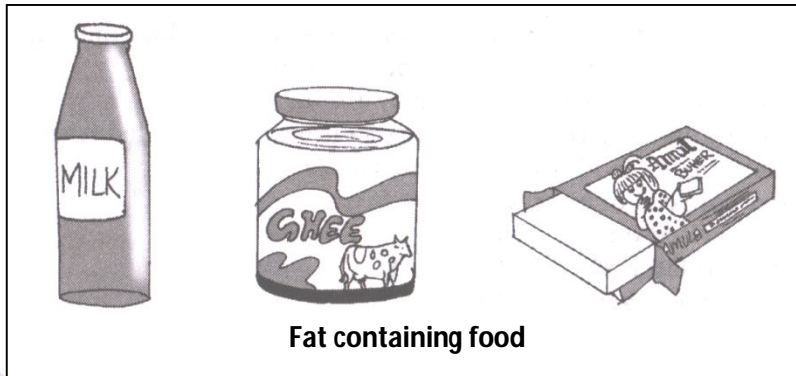


- i. Which nutrient is mainly provided by these items?
- ii. Name the sources of these food items.

i. They provide mainly fats.

ii. the sources of these food items are plants.

3. Observe the following figure and answer the following questions.

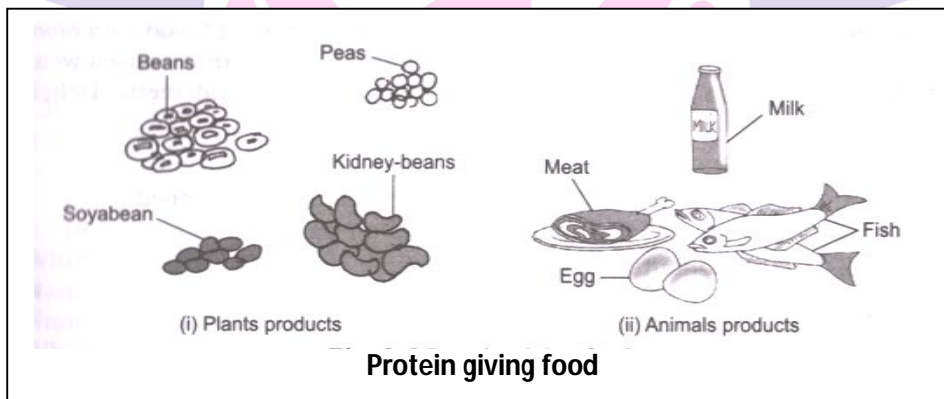


- i. Which nutrient is mainly provided by these items?
- ii. Name the sources of these food items.

i. They provide mainly fats.

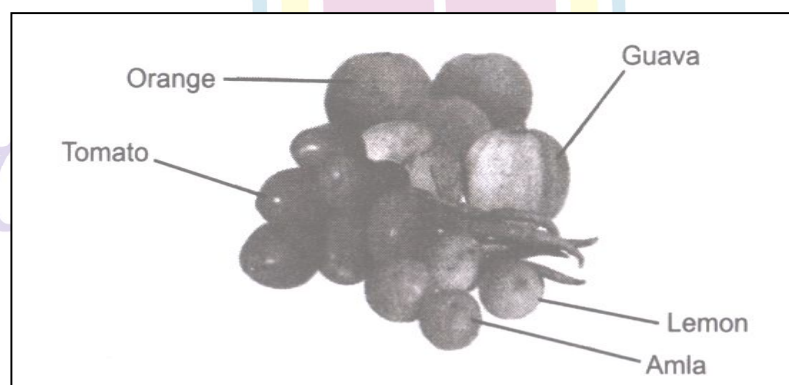
ii. The sources of these food items are animals.

4. Draw diagrams for three food items of plants and animals which are rich sources of proteins.



Note: You may draw any three items from (i) and (ii).

5. Observe the following diagram of food items and answer the following questions.



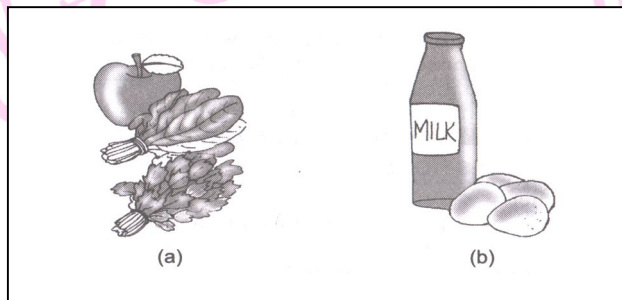
i. What should be the caption of the diagram?

ii. They are rich source of which vitamin?

i. Caption should be "Some Sources of Vitamin C".

ii. They are rich source of Vitamin C.

6. Observe the diagrams (a) and (b), and answer the following questions.



i. Provide appropriate caption for (a) and (b).

ii. Write role of the mineral they provide to us.

i. Caption for these diagram may be:

a. Some plant sources of Iron, and

b. Some Animal Sources of Calcium.

ii. Iron : Deficiency causes hindrance in the formation of blood (red blood cells).

This leads to iron deficiency disease called Anaemia that causes weakness.

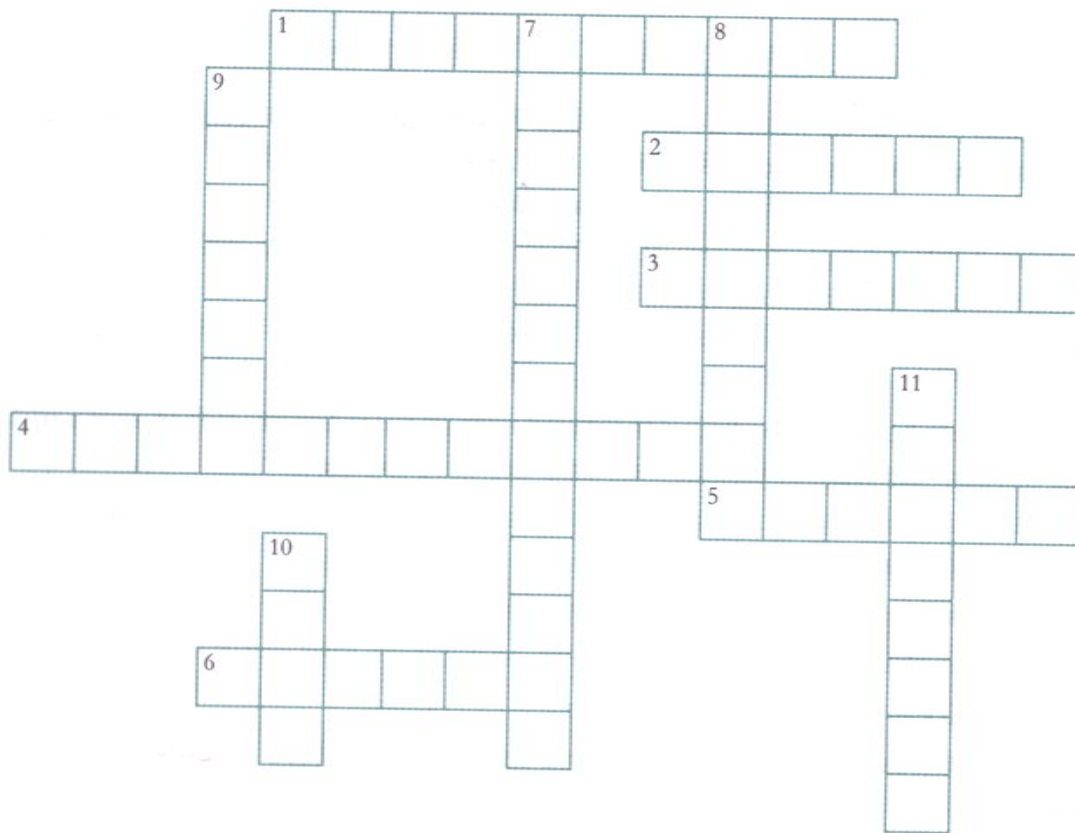
Calcium : Calcium is an essential component of bone and teeth. Deficiency of calcium causes weak bones and teeth.



Next Generation School

Cross Word Puzzle

1. Solve the crossword puzzle with the help of the clues provided. (NCERT Exemplar)



Across

1. Lack of nutrients in our diet over a long period causes these diseases.
2. Rice and potato are rich in this type of carbohydrate.
3. Deficiency disease in bones making them soft and bent.
4. The diet that provides all the nutrients that our body needs, in right quantities, along with adequate amount of roughage and water.
5. Deficiency disease with bleeding gums.
6. Disease caused due to deficiency of iodine.

Down

7. Starch and sugar in our food are rich in this type of energy giving nutrient.
8. The term given to the useful components of food.
9. The disease caused by deficiency of iron in diet.
10. Green leafy vegetables, liver and apples are rich in this mineral.
11. Deficiency disease caused due to lack of vitamin B₁ in the diet.

Across

- | | |
|---------------|------------------|
| 1. deficiency | 2. starch |
| 3. rickets | 4. balanced diet |
| 5. scurvy | 6. goitre |

Down

- | | |
|------------------|--------------|
| 7. carbohydrates | 8. nutrients |
| 9. anaemia | 10. iron |
| 11. beri-beri | |

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