

18. Food and its constituents

Exercises

1 A. Question

The major metal present in bones is

- A. sodium
- B. iron
- C. calcium
- D. phosphorus

Answer

Bones are a living, growing tissue which is made up of collagen, calcium, sodium, iron, phosphorous. But the major element that makes the bone is Calcium. Calcium is what makes the bone hard. Calcium and collagen both make the bones strong and flexible.

1 B. Question

Children like to eat bakery items and chocolates. Elders advise them to eat vegetables also, and not to keep aside curry leaves while eating food items. This shows the importance of

- A. carbohydrates
- B. fats
- C. proteins
- D. lipids

Answer

Bakery items and chocolates have a very high content of fats also known as lipids and carbohydrates. The elders are advising the children to eat vegetables because protein is needed for growth to build and repair tissues.

1 C. Question

A green leaf that has fallen down from a plant is taken and is kept in water for sometime and then taken out; It is then dipped in spirit and iodine solution. The leaf turns bluish indicating the presence of

- A. starch

- B. oil
- C. protein
- D. fibre.

Answer

Plants go through a process called photosynthesis. A part of this process, plants have to store extra food in its tissue as starch. When you dip it in iodine solution, which is an indicator that turns the leaf's colour bluish in the presence of starch. This shows that the leaf has been performing photosynthesis and producing starch.

2 A. Question

Fill in the blanks with suitable words :

Emulsion test is conducted to detect ____.

Answer

Fat and Oil

Emulsion test is a food test which is conducted to determine the presence of fats and oils. The procedure involves crushing the food and placing it in a tube. Add ethanol (alcohol) and shake it. Let the solid settle and the lipid will be extracted from it.

2 B. Question

Fill in the blanks with suitable words :

Fat soluble vitamins are A, D, E and ____.

Answer

K

The human body requires many vitamins to work. Fat soluble vitamins are vitamins that do not dissolve in water. They are stored for a long period of time. Vitamin A, D, E, K all serve a different function. Vitamin A is for health vision. Vitamin D is for bone development. Vitamin E is an antioxidant that helps destroy abnormal cells. Vitamin K helps the body to form clots.

2 C. Question

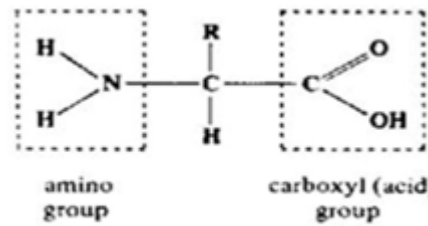
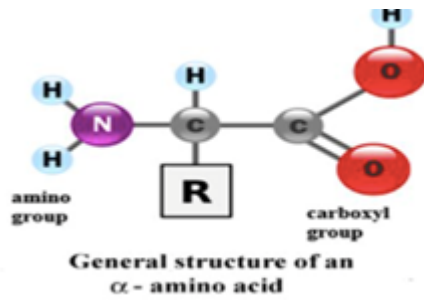
Fill in the blanks with suitable words :

Amino acids contain the elements carbon, hydrogen, oxygen and ____.

Answer

Nitrogen

Amino acids are organic compounds which means it is made up of carbon and hydrogen elements that are joined together. Amino acids are made up of protein in one of more long chain. There are 20 different kinds of amino acids. Here is a picture showing the structure of amino acids.



2 D. Question

Fill in the blanks with suitable words :

The Haemoglobin responsible for transport of oxygen to the different parts of the body contains the metal ____.

Answer

Iron Each heme (contains an iron atom) group binds with one oxygen molecule. Hemoglobin is a protein that is inside the red blood cells. It carries the oxygen to the cells which means it binds with oxygen molecule.

2 E. Question

Fill in the blanks with suitable words :

Biuret solution contains sodium hydroxide and ____.

Answer

Copper Sulphate

Biuret solution contains sodium hydroxide and copper sulphate. This test is used to determine the presence of peptide bonds in a protein. The test shows the reaction between copper ions and peptide bonds. The expected results show a colour change (blue to violet), which means protein is present.

3. Question

Match the following:

A	B
1. Haemoglobin	a. Prevents night blindness
2. Vitamin C	b. clotting of blood
3. Vitamin A	c. heals wounds
4. Vitamin K	d. oxygen carrier
	e. helps in digestion
	f. improves immunity system
	g. develops muscles

Answer

1) Haemoglobin – D. Oxygen carrier

Hemoglobin is an oxygen-transporting protein found in red blood cells. It attaches with 4 oxygen molecules that contain iron.

2) Vitamin C – F. Improves immunity system

Vitamin C protects your immune system, deficiency in it means a reduction in resistance against pathogens. It is also needed for iron absorption, stops internal bleeding, maintains bones and teeth, heals wounds and burns.

3) Vitamin A – A. Prevents night blindness

Vitamin A protects the surface of the eye (cornea), which is essential for healthy vision. It also promotes skeletal growth, tooth structure, and healthy skin.

4) Vitamin K – B. Clotting of blood

Vitamin K helps with blood clotting. It thickens the blood and stops the bleeding. It also assists in the making of proteins.

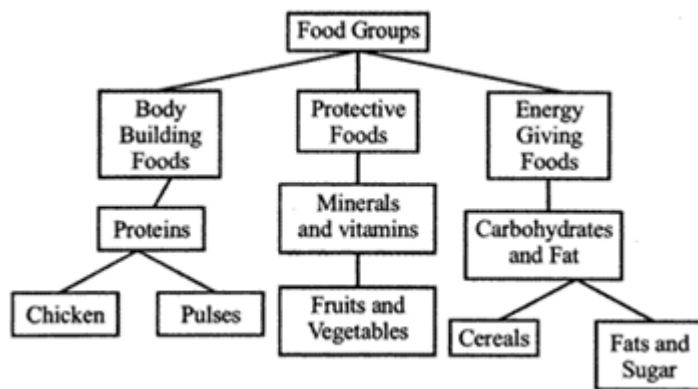
4 A. Question

Answer the following :

Why should we have variety in our diet?

Answer

Eating different types of food helps our body to be healthy and gives us a variety of nutrients. Our body has to carry out numerous functions to survive that is why we need different nutrients to fulfill the functions. Since you cannot get all the nutrients from one type of food. That is why we need variety in our diet. The figure below shows that we need different kinds of food that have different nutrients.



4 B. Question

Answer the following :

List four major sources of carbohydrates for the people in your region.

Answer

In order to perform the activities we need energy. And that energy comes from carbohydrates. Carbohydrates are made of carbon, hydrogen, and oxygen. It is found in rice, wheat, cereal, jaggery, potatoes, and fruits. When they are digested they are converted into glucose, which gives us energy.

4 C. Question

Answer the following :

What food items containing lipids do people in your region consume?

Answer

Lipids are made up of carbon, hydrogen, and oxygen. They do not dissolve in water. Lipids help with brain function, smooth joint movement, decrease inflammation, blood clotting, and for energy. Lipids also maintain health skin and hair. Food items that contain lipids are butter, cheese, whole milk, ghee, ice creams, coconut oil, and meats that are fatty.

4 D. Question

Answer the following :

List the nutritional importance of proteins.

Answer

Proteins are needed for cell function. There are 20 types of them which are called amino acids. Made up of carbon, hydrogen, a carboxyl group, and an amino group. Proteins help with body movement, fight against germs, build up cells and tissues, biochemical reactions, as enzymes help with digestion, support for tendons and ligaments, transport oxygen by hemoglobin.

4 E. Question

Answer the following :

Why do some people suffer from nutritional deficiencies despite having enough food?

Answer

Having a full stomach does not mean you are healthy and have all the nutrients. For example, eating one kind of food doesn't mean you will have all the nutrients. Sometimes your body does not make enough of them and you have to take them orally. Sometimes it is due to digestive issues. Not enough enzymes are being produced and food does not get digested and absorbed.

4 F. Question

Answer the following :

Explain the importance of water in our diet.

Answer

Water is important for the human body it makes up to 55-75% of body mass. We might survive without food for a few days but without water is not possible. It makes up blood, digestive juices, urine, and perspiration. We have to keep hydrating ourselves because water is not stored in our body. Water keeps the blood thin, helps eliminate waste, regulate body temperature, keeps lungs and mouth moist, helps with digestion, prevents constipation, for healthy skin, transportation of nutrients, and as a shock absorber. If water intake is not enough it can cause health concerns like constipation, headache, dehydration, and dark coloured urine.

4 G. Question

Answer the following :

A beaker contains a thick liquid. How do you test whether it is a lipid?

Answer

One can conduct an emulsion test. It is a mixture of 2 liquids which do not mix together. You can crush groundnut seeds in a test tube. Add ethyl alcohol to it. Shake it. Heat the test tube, but not directly because alcohol is flammable. When the substance dissolves, filter it dilute until you see a clear liquid. Take another test tube and pour the solution, the white suspension would mean the present of lipid.

4 H. Question

Answer the following :

What is the function of calcium in our body?

Answer

Calcium helps with the development of bones and teeth. Calcium is what makes the bone hard. It also helps with circulation of blood, cell signaling,

blood clotting, nerve function, move muscles, helps with pain and cramps, and release hormones.





4 I. Question

Answer the following :

List all the major classes of ingredients that should be present in the balanced diet.

Answer

A balanced diet should contain all the essential nutrients for the body to work. It should have appropriate proportion of carbohydrates, lipids, proteins, vitamins, minerals, water and roughages. The figure below shows the importance of a balanced diet.

Balanced Diet			
Name of the Nutrient	Sources	Function	
Carbohydrates (energy giving food)	Rice, potato, wheat, sugar	Provides energy	
Fats (energy giving food)	Butter, ghee, milk, cheese	Gives more energy compared to carbohydrates	
Vitamins and minerals (protective food)	Fruits and vegetables	Required for normal growth and development	
Proteins (body building food)	Milk, eggs, meat, fish, soybean	Helps in building and repair of body	

4 J. Question

Answer the following :

Make a list of food items that are rich in dietary fibers.

Answer

Roughage food have a high fiber content. They are found in fruits, vegetables, and greens. Dietary fiber is important because it adds to the volume of food. If there is less fiber in your diet, there is less bowel movement. This food is undigested and makes it harder to pass, causing constipation.

5 A. Question

Think :

Why do children both in rich and poor families suffer from nutritional deficiencies? What are your suggestions to improve the situation?

Answer

Children in rich families choose to eat unhealthy food such as junk food and high-fat content food which does not provide good nutrients to the body and can cause obesity. Despite having the money to buy greens, they choose to eat unhealthily. Whereas, poor children do not have the money to eat healthy food and do not get good nutrients. They do not have many facilities and are not well educated about the importance of such nutrients that are needed by their body. I believe both the families need awareness, which will educate them about the benefits of eating healthy and what are the consequences when their body suffers from nutritional deficiencies.

5 B. Question

Think :

How does lack of nutrition affect your activities, studies, and personality?
How can you prevent it?

Answer

Lack of nutrients can cause us to become weak, lethargic, and decrease in active brain. We are what we eat. If you eat unhealthily then your brain also becomes unhealthy, which means your brain is not as active as it should be for your studies because you lose your concentration power. You become obese as well and become inactive, which can cause a decrease in self-worth due to our appearance and affect our personality. When you do not have enough nutrients, you cannot sit in one place for a long time, that can also cause a learning disability. In order to prevent such issues, one should have a well-balanced diet and regularly check for their blood work in order to know about their deficiencies.

5 C. Question

Think :

What dietary changes at your home will improve the nutritional status of your family members?

Answer

There are many ways to improve your family's nutritional status. Such dietary changes are:

- a) Buy healthy and eat healthily
- b) Do meal planning
- c) Low-fat dairy products
- d) Do not fry, but bake or grill
- e) Become a role model for your children

- f) Eat on a dining table
- g) Eat fruits and vegetables
- h) Buy lean cut meats
- i) Eat healthy snacks throughout the day
- j) Use less salt
- k) Stay hydrated
- l) Whole grain breads and cereals
- m) Eat high fibre foods
- n) Reduce fatty food
- o) Read labels before buying food
- p) Avoid sugary food and drinks
- q) Do not eat in large portions
- r) Avoid caffeine
- s) Annual bloodwork to check for deficiencies
- t) Consult a doctor or a dietician when necessary