Section A (Objective Questions)

A. Multiple Choice Questions:

1. Which nutrient helps in maintaining healthy skin and hair, and also helps in absorbing fat-soluble vitamins?

A) Proteins B) Carbohydrates C) Fats D) Minerals

Explanation: The correct answer is C) Fats. Fats play several important roles in the body, including maintaining healthy skin and hair, insulating and protecting organs, and aiding in the absorption of fat-soluble vitamins like A, D, E, and K.

2. Which nutrient is essential for strong bones and teeth, muscle function, and nerve transmission?

A) Proteins B) Vitamins C) Minerals D) Fiber

Explanation: The correct answer is C) Minerals. Minerals such as calcium, phosphorus, magnesium, and potassium are crucial for building and maintaining strong bones and teeth, supporting muscle function, and ensuring proper nerve transmission.

3. Which nutrient is the body's primary source of structural material for cells and tissues?

A) Proteins B) Carbohydrates C) Fats D) Vitamins

Explanation: The correct answer is A) Proteins. Proteins are essential for the growth, repair, and maintenance of cells and tissues in the body. They provide structural material for muscles, organs, skin, hair, and nails.

4. Which nutrient helps in the formation of red blood cells, carrying oxygen throughout the body?

A) Vitamins B) Proteins C) Fats D) Minerals

Explanation: The correct answer is A) Vitamins. Specifically, vitamin B12 and folic acid (a type of vitamin B) are essential for the formation of red blood cells. Red blood cells carry oxygen from the lungs to other parts of the body, supporting overall energy levels and cellular function.

5. Which nutrient is important for producing energy from food, supporting nerve function, and maintaining healthy skin and vision?

A) Vitamins B) Proteins C) Fats D) Minerals

Explanation: The correct answer is A) Vitamins. Vitamins play essential roles in various bodily functions, including converting food into energy (such as B vitamins), supporting nerve function (such as vitamin B12), and maintaining healthy skin and vision (such as vitamins A and E).

6. Which nutrient helps in maintaining healthy digestion, preventing constipation, and regulating blood sugar levels?

A) Fats B) Proteins C) Carbohydrates D) Fiber

Explanation: The correct answer is D) Fiber. Dietary fiber, found in plant foods like fruits, vegetables, whole grains, and legumes, promotes healthy digestion, prevents constipation, and helps regulate blood sugar levels.

7. Which nutrient is important for maintaining healthy eyesight, especially in low light conditions, and for immune function?

A) Fats B) Vitamins C) Proteins D) Minerals

Explanation: The correct answer is B) Vitamins. Specifically, vitamin A is essential for maintaining healthy eyesight, especially in low light conditions (night vision), and for supporting immune function.

8. **Read the following statements and identify which nutrient they describe:**

Statement 1: This nutrient provides a quick source of energy for the body.

Statement 2: It is found in foods like bread, rice, and potatoes.

Statement 3: Excessive intake of this nutrient can lead to weight gain and health problems like diabetes.

A) Proteins B) Fats C) Carbohydrates D) Vitamins

Explanation: The correct answer is C) Carbohydrates. Carbohydrates are the nutrient that provides a quick source of energy (Statement 1). They are found in foods like bread, rice, and potatoes (Statement 2). Excessive intake of carbohydrates can lead to weight gain and health problems like diabetes (Statement 3).

9. Consider the following functions and identify the nutrient they describe:

Function 1: This nutrient helps in maintaining healthy skin, hair, and vision.

Function 2: It is important for the immune system and acts as an antioxidant to protect cells from damage.

Function 3: This nutrient is essential for blood clotting and for the formation of strong bones and teeth.

A) Fats B) Vitamins C) Proteins D) Minerals

Explanation:

- Function 1 describes B) Vitamins (specifically, vitamin A is important for skin, hair, and vision).
- Function 2 describes B) Vitamins (vitamins like vitamin C act as antioxidants).
- Function 3 describes D) Minerals (specifically, calcium is important for blood clotting and for strong bones and teeth).

10. Analyze the following scenarios and identify the nutrient that best fits:

Scenario 1: An athlete needs a nutrient that provides sustained energy during long training sessions.

Scenario 2: A person wants to maintain healthy digestion and prevent constipation.

Scenario 3: A child is growing and needs a nutrient that supports bone development and muscle function.

A) Fats B) Carbohydrates C) Proteins D) Fiber

Explanation:

- Scenario 1: B) Carbohydrates provide sustained energy during physical activity.

- Scenario 2: D) Fiber supports healthy digestion and prevents constipation.

- Scenario 3: D) Fiber also supports bone development and muscle function indirectly by promoting overall health, but C) Proteins are more directly involved in these functions.

11. Match the nutrient to its role in the body:

Role 1: Supports muscle contraction and nerve function.

Role 2: Essential for the formation and maintenance of strong bones and teeth.

Role 3: Important for the production of haemoglobin, which carries oxygen in the blood.

A) Proteins B) Fats C) Minerals D) Carbohydrates

Explanation:

Role 1: C) Minerals, such as potassium and magnesium, support muscle contraction and nerve function.

Role 2: C) Minerals, particularly calcium and phosphorus, are essential for the formation and maintenance of strong bones and teeth.

Role 3: C) Minerals, especially iron, are crucial for the production of hemoglobin, which carries oxygen in the blood.

12. Analyze the following scenarios and identify the nutrient that best fits:

Scenario 1: A person needs a nutrient that provides a source of long-term energy storage and helps in insulating the body.

Scenario 2: An individual wants to maintain regular bowel movements and prevent constipation.

Scenario 3: A child is growing and needs a nutrient that supports brain development and function.

A) Fats B) Carbohydrates C) Fiber D) Proteins

Explanation:

Scenario 1: A) Fats provide a source of long-term energy storage and help in insulating the body.

Scenario 2: C) Fiber helps maintain regular bowel movements and prevents constipation.

Scenario 3: B) Carbohydrates indirectly support brain development and function by providing energy to the brain and nervous system.

13. Match the nutrient to its role in the body:

Role 1: Supports the formation of enzymes and hormones that regulate various body functions.

Role 2: Provides a source of long-term energy storage and insulation for the body.

Role 3: Essential for the production of red blood cells and the transportation of oxygen throughout the body.

A) Fats B) Proteins C) Vitamins D) Iron (a mineral)

Explanation:

Role 1: B) Proteins support the formation of enzymes and hormones that regulate various body functions.

Role 2: A) Fats provide a source of long-term energy storage and insulation for the body.

Role 3: D) Iron (a mineral) is essential for the production of red blood cells (hemoglobin) and the transportation of oxygen throughout the body.

14. Which deficiency disease is caused by insufficient intake of vitamin C?

A) Scurvy B) Rickets C) Beriberi D) Goiter

Answer: A) Scurvy

Explanation: Scurvy is caused by a deficiency of vitamin C. Symptoms include bleeding gums, weakness, and fatigue.

15. Which deficiency disease is caused by a lack of iron in the diet?

A) Anemia B) Night blindness C) Kwashiorkor D) Pellagra

Answer: A) Anemia

Explanation: Anemia is a deficiency disease caused by insufficient iron intake. It results in reduced red blood cell production and symptoms such as fatigue and pallor.

16. Which deficiency disease is caused by a lack of vitamin D, leading to softening and weakening of bones?

A) Rickets B) Goiter C) Beriberi D) Scurvy

Answer: A) Rickets

Explanation: Rickets is caused by a deficiency of vitamin D, calcium, or phosphate. It results in softening and weakening of bones, leading to bone deformities in children.

17. Which deficiency disease is caused by insufficient intake of iodine, leading to enlargement of the thyroid gland?

A) Goiter B) Pellagra C) Beriberi D) Night blindness

Answer: A) Goiter

Explanation: Goiter is caused by a deficiency of iodine, which is needed for the production of thyroid hormones. It leads to the enlargement of the thyroid gland in the neck.

18. Which deficiency disease is caused by lack of vitamin A, resulting in difficulty seeing in low light conditions?

A) Rickets B) Scurvy C) Beriberi D) Night blindness

Answer: D) Night blindness

Explanation: Night blindness is caused by a deficiency of vitamin A. It impairs the ability to see in low light conditions and can progress to more severe vision problems if left untreated.

19. Which deficiency disease is caused by a lack of vitamin K, resulting in impaired blood clotting and excessive bleeding?

A) Anemia B) Rickets C) Scurvy D) Hemorrhagic disease

Answer: D) Hemorrhagic disease

Explanation: Hemorrhagic disease is caused by a deficiency of vitamin K. It leads to impaired blood clotting and excessive bleeding, both internally and externally.

20. Which nutrient deficiency can result in symptoms like reduced immunity, delayed wound healing, and poor growth in children?

A) Fats B) Proteins C) Vitamins D) Minerals

Answer: B) Proteins

Explanation: Protein deficiency can lead to reduced immunity, delayed wound healing, and poor growth in children. Proteins are essential for the immune system, tissue repair, and growth.

21. Which nutrient deficiency can result in symptoms such as poor night vision, dry eyes, and increased susceptibility to infections?

A) Vitamin A B) Vitamin K C) Vitamin B12 D) Vitamin E

Answer: A) Vitamin A

Explanation: Vitamin A deficiency can lead to symptoms such as poor night vision (night blindness), dry eyes, and increased susceptibility to infections. Vitamin A is crucial for vision and immune function.

22. Which nutrient deficiency is linked to symptoms such as bone pain, muscle weakness, and increased risk of fractures?

A) Calcium B) Vitamin D C) Phosphorus D) Vitamin K

Answer: B) Vitamin D

Explanation: Vitamin D deficiency can lead to symptoms such as bone pain, muscle weakness, and increased risk of fractures. Vitamin D is crucial for calcium absorption and bone health

23. Which nutrient is important for blood clotting and bone health, and is synthesized by the body with adequate exposure to sunlight?

A) Vitamin D B) Vitamin C C) Vitamin B12 D) Vitamin A

Answer: A) Vitamin D

Explanation: Vitamin D is important for blood clotting, bone health, and immune function. It is synthesized by the body with adequate exposure to sunlight and is found in fortified foods like milk and cereals.

24. Which nutrient is important for bone health, and blood clotting, and is found in foods like leafy greens, dairy products, and fortified cereals?

A) Vitamin D B) Calcium C) Vitamin K D) Vitamin C

Answer: C) Vitamin K

Explanation: Vitamin K is important for bone health, blood clotting, and heart health. It is found in leafy greens (spinach, kale), dairy products, and fortified cereals.

B. Match the following:

Column A	Column B
(a) Energy giving food	(i) Vitamins and minerals
(b) Body building food	(ii) Iodine
(c) Protective food	(iii) Fats, carbohydrates
(d) Test for fat	(iv) Copper sulfate and caustic soda
(e) Test for starch	(v) Oily patch on paper sheet
(f) Test for protein	(vi) Proteins

Answer:

Column A	Column B
(a) Energy giving food	(iii) Fats, carbohydrates
(b) Body building food	(vi) Proteins
(c) Protective food	(i) Vitamins and minerals
(d) Test for fat	(v) Oily patch on paper sheet
(e) Test for starch	(ii) Iodine
(f) Test for protein	(iv) Copper sulfate and caustic soda

Section B (Very Short Answer Question)

Q1. Define deficiency diseases.

Answer: A disease caused by the lack of an element in the diet like vitamins or minerals is known as a deficiency disease. For example- scurvy, rickets etc.

Q2. Name two diseases caused due to deficiency of vitamins in diet.

Answer: The two diseases caused by to deficiency of vitamins in the diet are scurvy and rickets.

Q3. Name two diseases caused by to deficiency of minerals.

Answer: The two diseases caused by to deficiency of minerals are Osteomalacia and Beriberi.

Q4. Name the main constituent of roughage.

Answer: Cellulose is the main constituent of roughage.

Q5. Name the minerals that make our teeth and bones.

Answer: Calcium and Phosphorus.

Q6. Name the disease that can be prevented by giving protein-rich food

Answer: Kwashiorkor and Marasmus

Q7. Which type of carbohydrate is white, tasteless, and insoluble in water?

Answer: Cellulose

Q8. Which disease causes swelling and redness of the gums and tongue?

Answer: Pellagra

Section C (Short Answer Question)

Q1. (a) List all those components of food that provide nutrients.

(b) Mention two components of food that do not provide nutrients.

Answer:

(a) Components of food that provide nutrients are carbohydrates, fats, proteins, vitamins, and minerals.

(b) Components of food that do not provide nutrients are water and roughage.

Q2. How are vitamins classified?

Answer: Vitamins are classified into two categories:

1. Water-soluble vitamins, e.g., vitamins B and C.
2. Fat-soluble vitamins, e.g., vitamins A, D, E and K

Q3.
(i)Which nutrient is required the most by a growing child and why?

(ii)Name the organ of the body that will not be able to function properly if we do not consume fat at all.

(iii)What is the role of hemoglobin?

Answer:

(i)The nutrient is protein. Proteins are required for building new cells & repairing worn-out cells.

Proteins help us to fight diseases and infections.

(ii)Brain.

(iii)It helps to transport gases like oxygen and carbon dioxide through blood.

Q4. Why do growing children need a more protein-rich diet?

Answer: Proteins are required to make new cells and to replace old and damaged cells. Proteins are very essential for the growth, development and repair of the body. Children have growing bodies, hence they require more proteins than adults.

Section D (Long Answer Question)

Q1. 'Water does not provide nutrients, yet it is an important component of food'. Explain.
Answer:

Water is an important component of our food because

(i) Water helps carry nutrients from food to all cells in our body and oxygen to the brain.

(ii) Water helps in flushing out toxins and wastes in the form of urine and sweat.

(iii) Water allows the body to absorb and assimilate vitamins, minerals, etc.

(iv) Water helps to regulate body temperature.

Q2. What are the various functions of proteins?

Answer: The functions of proteins are:

- Proteins are the building materials of our body.
- Proteins are the constituents of enzymes.
- Proteins make our muscles, skin, hair and nails.
- Proteins form a red pigment in blood which acts as an oxygen carrier.
- Proteins like fibrin help in the clotting of blood.

- Proteins help in repairing damaged cells, and replacing worn-out or dead cells and tissues.
- Proteins help to develop resistance of the body against various infections.

Q3. Explain the different types of nutrients found in food and their importance for the human body.

Answer: Nutrients are essential substances that the body needs to function properly and stay healthy. The main types of nutrients found in food include carbohydrates, proteins, fats, vitamins, minerals, and water.

Carbohydrates: They are the primary source of energy for the body. They can be found in foods like rice, bread, and potatoes.

Proteins: They are essential for the growth, repair, and maintenance of body tissues. Sources include meat, fish, eggs, and legumes.

Fats: Fats provide energy, help in the absorption of vitamins, and protect organs. They can be found in butter, oils, nuts, and seeds.

Vitamins: Vitamins are crucial for various biochemical processes in the body. Different vitamins have different roles. For example, Vitamin A is good for vision, Vitamin C boosts the immune system, and Vitamin D helps in bone health.

Minerals: Minerals like calcium, potassium, and iron are important for the proper functioning of the body. Calcium is necessary for strong bones and teeth, potassium helps in muscle function, and iron is crucial for the production of red blood cells.

Water: Water is vital for life. It helps in digestion, absorption of food, and elimination of waste products. It also regulates body temperature.

Q4. Explain the importance of vitamins and minerals in our diet. Provide examples of different vitamins and minerals along with their food sources and functions in the body.

Answer: Vitamins and minerals are essential nutrients that the body needs in small amounts to work properly. They play critical roles in various bodily functions, including growth, immune function, and cell repair.

Vitamins:

Vitamin A: Important for vision, immune function, and skin health. Sources include carrots, sweet potatoes, and spinach.

Vitamin C: Essential for the growth and repair of tissues, antioxidant function, and immune support. Found in citrus fruits, strawberries, and bell peppers.

Vitamin D: is crucial for bone health as it helps in the absorption of calcium. Sources include sunlight exposure, fortified dairy products, and fish.

Vitamin K: Necessary for blood clotting and bone health. Found in green leafy vegetables, broccoli, and Brussels sprouts.

B Vitamins (B1, B2, B3, B6, B12, folate) Important for energy production, brain function, and cell metabolism. Sources include whole grains, meat, eggs, and legumes.

Minerals:

Calcium: Vital for strong bones and teeth, muscle function, and nerve signaling. Sources include dairy products, leafy greens, and fortified foods.

Iron: Essential for the production of hemoglobin, which carries oxygen in the blood. Found in red meat, beans, lentils, and fortified cereals.

Potassium: Helps maintain normal fluid balance, muscle contractions, and nerve signals. Sources include bananas, potatoes, and oranges.

Magnesium: Important for muscle and nerve function, blood sugar control, and bone health. Found in nuts, seeds, and whole grains.

Zinc: Supports immune function, wound healing, and DNA synthesis. Sources include meat, shellfish, legumes, and nuts.

A diet rich in a variety of fruits, vegetables, whole grains, and lean proteins ensures that the body receives adequate amounts of these essential vitamins and minerals.