

Board – ICSE

Class – 9

Topic – Nutrition

Q1. Why do we need food? Explain briefly.

Ans. We need food for following reasons:

- (i) To produce energy that is used to perform various metabolic activities in the body
- (ii) To bring about growth, and
- (iii) To replace tissues that are being constantly damaged or broken down.

Q2. What is a balanced diet? Name the components of food.

Ans. Balanced diet is a complete diet that provides required quantities of all the necessary nutrients for normal healthy living.

Components of food: Carbohydrates, fats, proteins, mineral salts, vitamins, water and roughage.

Q3. What is the importance of proteins, fats and carbohydrates in our diet?

Ans. Importance of Proteins - These are body-building foods and help the body in its growth, repair of worn-out and damaged tissues and provide protection from infections. In addition, they provide energy.

Importance of fats - Fats is energy-providing foods. They

- (i) form constituent of cell membrane
- (ii) provide energy
- (iii) In animals, form storage fatty tissue under the skin.

Importance of carbohydrates

- (i) They are the main sources of energy in all organisms.
- (ii) In mammals, excess carbohydrates are stored as glycogen in the liver.

Q4. Complete the following table:

Vitamins	Source	Deficiency disease caused
1. Vit. A
2. Vit. C
3. Vit. D
4. Vit. B1

Ans:

	Source	Deficiency disease caused
Vitamin A	Cod liver oil, milk, butter, carrot, papaya.	Night blindness
Vitamin C	Citrus fruits (lemon, orange), green vegetables	Scurvy
Vitamin D	Cod liver oil, eggs, Synthesized by skin in sunlight.	Rickets
Vitamin B1	Yeast, pulses, cereals, Sprouted beans.	Beri-beri

Q5. What is BMR?

Ans. BMR stands for Basal Metabolic Rate. It refers to the minimum energy required for sustaining life at rest.

Q6. State the difference between undernutrition and malnutrition.

Ans. Undernutrition refers to less consumption of food and deficiency of one or more nutrients in the diet for a long period of time. Malnutrition, on the contrary, may be undernutrition as well as overnutrition. As in undernutrition, diet is not balanced in malnutrition.

Q7. What is roughage? What is its importance in the food?

Ans. Roughage is an important additional component of food consisting of undigestible material such as cellulose from plants. It makes bulk of the food and stimulates peristalsis. Absence of roughage leads to constipation.

Q8. Name two diseases caused due to the deficiency of proteins. What are their symptoms?

Ans. Diseases of Protein Deficiency

(a) Kwashiorkor: It is a serious protein deficiency disease, showing the following symptoms:

- (i) The child shows retarded growth of body and brain and is emotionally depressed.
- (ii) The child has a distended belly, slow movement and thin limbs.
- (iii) It results in wasting of muscles though some fat may still be left under the skin.

- (iv) It leads to edema and swelling of hands and legs.
- (b) Marasmus: It is due to undernourishment of both proteins and carbohydrates. Children below one year of age may show it due to inadequate diet and replacement of mother's milk and calorie-deficient foods. Following symptoms are observed:
 - (i) The child gives a shriveled appearance as the body is thin.
 - (ii) A child suffering from marasmus has sunken eyes, thin, dry and wrinkled skin.
 - (iii) The ribs are prominent as muscles do not develop and fat layer seems to be absent.
 - (iv) It leads to retarded growth, physical as well as mental.
 - (v) There is repeated diarrhoea, digestive disorders due to atrophy of digestive glands but there is no edema or swelling of parts as in Kwashiorkor.

Q9. What do you mean by the term nutrition? Explain briefly.

Ans. The process of consuming food is termed nutrition. It involves ingestion (taking in of food), digestion (breakdown of food into simpler substances), absorption (simplified substances are absorbed into living membranes), assimilation (incorporation of absorbed food into cell components) and egestion (elimination of waste residual food).

Q10. What is heterotrophic nutrition? Describe the different types of heterotrophs.

Ans. Heterotrophic Nutrition: All animals including man and non-green plants (fungi and some bacteria) show heterotrophic mode of nutrition. The heterotrophic organisms or heterotrophs cannot prepare their own food. They derive their food from other organisms – directly or indirectly from plants. Heterotrophs may follow any of the following three types of nutrition:

(a) Holozoic Nutrition (b) Saprophytic Nutrition (c) Parasitic Nutrition

(a) **Holozoic Nutrition:** Holozoic nutrition is typical of most animals – all vertebrates and most invertebrates. The organisms consume the whole food (animal or plant or their parts) into their body, and then digest it into simple substances.

(b) **Saprophytic Nutrition:** The organisms feed on dead and decaying plants or animals (organic matter) Examples – Mushrooms, yeast, bread mould, many bacteria.

(c) **Parasitic Nutrition:** The organisms live on other organisms called the host and derive nourishment from the host. The organism deriving nourishment from the host is called the parasite. Examples—Malarial parasite, tapeworm.

Q11. How does heterotrophic nutrition differ from autotrophic nutrition?

Ans. Differences between Autotrophic and Heterotrophic Nutrition

Autotrophic nutrition	Heterotrophic nutrition
Organism can prepare its own food.	Organism cannot prepare food; obtains prepared food.
Simple inorganic substances are converted into complex food substances using sun's energy. Examples - Green plants.	Already prepared food is used. Examples - Animals, fungi and most bacteria.

Q12. Name the vitamins present in the following:

- (i) **Citrus fruits**
- (ii) **Carrot**
- (iii) **Milk**
- (iv) **Germinated wheat grains**
- (v) **Yeast**
- (vi) **Egg yolk**
- (vii) **Meat**
- (viii) **Whole grains.**

Ans. Citrus fruits — Vitamin C

Carrot — Vitamin A

Milk — Vitamin B2, B12

Germinated wheat grains — Vitamin E

Yeast — Vitamin B1, B2

Egg yolk — Vitamin B1

Meat — Vitamin B1, B3, B12

Whole grains — Vitamin B1

Q13. Mention the differences between carbohydrates and proteins as nutrients in our diet.

Ans. Differences between Carbohydrates and Proteins

Carbohydrates	Proteins
Energy-providing foods.	Body-building foods.
These are compounds of carbon, hydrogen and oxygen	These contain carbon, hydrogen, oxygen, nitrogen, and also sulphur in some cases.
No such activity.	Some act as enzymes.

Q14. Explain why it is not advisable to consume food, consisting of only one type of nutrient.

Ans. It will lead to deficiency of the nutrients lacking in the food. As a result, deficiency symptoms and diseases will develop. Our body requires all types of food — energy-providing (carbohydrates and fats), body-building (proteins) and protective foods (vitamins, minerals).

Q15. Complete the following table:

Mineral	Source	Function
Iodine		
Sodium		
Calcium		
Fluorine		

Ans.

Mineral	Source	Function
Iodine	Common salt, sea food	Needed for thyroid gland functioning
Sodium	Salt, cheese, bread, butter	1. For osmocontrol-blood and tissue fluids. 2. For nerve impulse conduction.
Calcium	Bread, flour, cheese, milk, vegetables	1. Bone and teeth formation. 2. Blood clotting 3. Muscle activity.
Fluorine	Sea fish, water fluoride toothpaste	Bone and teeth formation