

## Question Bank

### Nutrition : Classes of Food

1. 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.

2. 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.

3. 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 are 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 is stored as glycogen in the liver.

4. Complete the following table :

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

<b>Ans.</b>	<b>Source</b>	<b>Deficiency disease caused</b>
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, synthesised by skin in sunlight.	Rickets
Vitamin B1	Yeast, pulses, cereals, sprouted beans.	Beri-beri

5. What is BMR ?

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

6. 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.

7. 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.

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

**Ans. Diseases of Protein Deficiency**

**(a) Kwashiorkar :** 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 oedema 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 shrivelled 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 oedema or swelling of parts as in Kwashiorkar.

9. 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).

10. 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

**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.

**Saprophytic Nutrition :** The organisms feed on dead and decaying plants or animals (organic matter)

**Examples** – Mushrooms, yeast, bread mould, many bacteria.

**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.

**11.** How does heterotrophic nutrition differ from autotrophic nutrition?

**Ans. Differences between Autotrophic and Heterotrophic Nutrition**

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

**12.** Name the vitamins present in the following :

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

<b>Ans.</b> Citrus fruits	— Vitamin C
Carrot	— Vitamin A
Milk	— Vitamin B <sub>2</sub> , B <sub>12</sub>
Germinated wheat grains	— Vitamin E
Yeast	— Vitamin B <sub>1</sub> , B <sub>2</sub>
Egg yolk	— Vitamin B <sub>1</sub>
Meat	— Vitamin B <sub>1</sub> , B <sub>3</sub> , B <sub>12</sub>
Whole grains	— Vitamin B <sub>1</sub>

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

**Ans. Differences between Carbohydrates and Proteins**

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

**14.** 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).

**15.** Complete the following table :

<b>Mineral</b>	<b>Source</b>	<b>Function</b>
Iodine Sodium Calcium Fluorine		

**Ans.**

<b>Mineral</b>	<b>Source</b>	<b>Function</b>
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
Fluorine	Sea fish, water fluoride toothpaste	3. Muscle activity. Bone and teeth formation

**16.** How can you test the presence of starch, glucose, proteins and fats in the given sample ?

**Ans. Experiment : To show the presence of starch in the given sample.**

Take the given sample containing starch (starch solution can be prepared by boiling starch powder in water) in a test tube and add a few drops of iodine solution (1 gm iodine and 1 gm potassium iodide dissolved in 100 cc of distilled water).

Development of blue-black colour in the sample indicates the presence of starch.

**Experiment : To show the presence of glucose in the given sample.**

**Method A (Benedict's Test)**

Take the given sample containing glucose in a test tube and add Benedict's solution to it. Heat the mixture to boiling, then cool it.

The mixture undergoes a colour change from green to yellow and then brick-red precipitate forms. Formation of brick-red precipitate indicates the presence of glucose.

**Method B (Fehling's Test)**

Take the given sample containing glucose in a test tube and add Fehling's solution (Fehling solution comes as Fehling solution A and Fehling solution B; both have to be mixed in equal quantity before use) to it. Boil the mixture.

Development of brick-red precipitate indicates the presence of glucose (or fructose) in the sample.

**Experiment : To show the presence of proteins in the sample.**

**Method A (Millon's Test)**

Take a little egg white solution (made by adding warm water to egg white) in a test tube and add Millon's reagent to it. Boil the mixture.

Development of pink colour indicates the presence of proteins.

### **Method B (Biuret Test)**

Take the given protein sample in a test tube and add 40 per cent NaOH solution to make the sample alkaline. Then add a few drops of 1 per cent copper sulphate solution.

Violet or pink colour indicates the presence of proteins.

### **Experiment : To show the presence of fats.**

#### **Method A**

Rub a small amount of the given sample on a piece of white paper. Let the paper dry and hold it in front of a source of light.

A translucent spot on the paper through which light passes indicates the presence of fats.

#### **Method B**

Take the sample containing fats in a test tube and add a few drops of Sudan III (a dye) to it.

Small oily droplets coloured with the dye indicate the presence of fats.