



CAVALRY DEFENCE ACADEMY, DEHRADUN

FOOD AND NUTRITION

👉 **Food:** It is the group of edible substances which provide energy to the living beings and repair the old tissues and build the new tissues.



👉 **Nutrition:** The process of consuming nutrients required for the growth and development of our body and to obtain energy is known as nutrition. Our food contains three main substances called nutrients. These are fats, proteins and carbohydrates. In addition, our body requires water, salts (minerals), vitamins and fibres.



👉 **Diet:** It is the amount of food eaten by a person at a time.



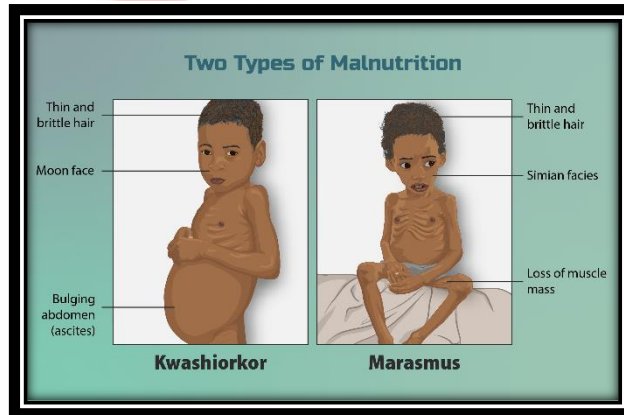
👉 Various food components are grouped in three classes:

- ✓ Energy giving food: Carbohydrates and fats.
- ✓ Bodybuilding food: Proteins.
- ✓ Protective food: Vitamins and minerals.

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👉 **Malnutrition:** If a person does not get adequate food, or if his/her diet does not contain all the nutrients, he or she becomes weak. When the body does not get adequate nutrition, it is said to be suffering from malnutrition.

- ✓ **Kwashiorkor** is acute malnutrition that occurs mostly in children. This condition results from severe protein deficiencies. The patients suffering from Kwashiorkor have an emaciated appearance all over the body. The ankles, feet and belly swell with liquid.



- ✓ **Marasmus** is a type of protein-energy malnutrition that can affect anyone but is mainly seen in children. You can get marasmus if you have a severe deficiency of nutrients like calories, proteins, carbohydrates, vitamins, and minerals. It is more common in developing countries, like in some areas of Asia and Africa.

👉 Carbohydrates

- ✓ Grains such as rice, wheat, sorghum, peas, beans, sago (sabudana), sugarcane, sugar beet, many fruits like banana, mango and melons and vegetables are good sources of carbohydrates.
- ✓ Cellulose, starch, sucrose, glucose and fructose are the important carbohydrates found in our food.
- ✓ Starch turns iodine solution to dark blue or black.





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👉 Fats

- ✓ Fats are obtained either from plants or from animals. Groundnut oil, soybean oil and mustard oil are examples of fats derived from plants. Fats like butter and ghee are obtained from animals.
- ✓ Fats act as fuel in our body but they provide more energy than carbohydrates. (in) Our body has some advantages of fat deposits in small quantity. It helps body organs to grow and protects them from injury and prevents loss of heat from the body surface.
- ✓ Too much fat deposition is harmful for the body. This leads to the condition called obesity.
- ✓ Fatty substances leave greasy and transparent spot on paper.

👉 Proteins

- ✓ Milk, fish, meat, cheese and eggs are the main sources of animal proteins. Vegetable proteins can be obtained from legumes including pulses and beans.
- ✓ Proteins are required for growth and repairing of our body. They help in building new tissues. They also account for tough, fibrous nature of hair and nails and for the structure of muscles. They are a part of our blood and help in proper functioning of our body.
- ✓ Large amount of protein is needed for building new tissues in short period, such as during infancy, pregnancy or when mother is nourishing a child.

👉 **Vitamins:** Vitamins are required by our body in very small quantities. Vitamins help in keeping our eyes, bones, teeth and gums healthy. The food items rich in vitamins are called protective food as they protect our body from diseases and keep us healthy.

👉 Water

- ✓ Our body requires a large quantity (5-7 litre) of water daily.
- ✓ Water helps our body to perform many functions like digestion, throwing out dissolved waste as urine and impure blood.
- ✓ Water also keeps our body cool through sweating.
- ✓ Water helps in blood circulation.
- ✓ It helps to transport substances inside our body.
- ✓ It helps our body to absorb nutrients from food.
- ✓ It helps to regulate our body temperature.
- ✓ It is needed for various chemical reactions that take place inside our body during digestion, excretion, etc.

👉 Roughage

- ✓ Roughage is a fibre that is basically edible. It has the ability to withstand the human digestive system's enzymes. This facilitates in the proper disposal of waste materials.

Examples: Whole grains – oats

Vegetables – Carrots and cucumbers



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👉 Importance of Roughage food in our diet

- ✓ A healthy diet is considered a diet containing the proper amount of foods, roughage, and water. Roughage is derived from plants such as vegetables, whole grains etc, also known as dietary fibres. They do not contain nutrients but add bulk to our diet and, as they help in digestion, are beneficial to our body.
- ✓ Roughage are of two types soluble and insoluble. Soluble roughage are soluble in water whereas insoluble roughage are not. Apple, strawberry, peach, and rice are examples of food items rich in soluble roughage that help in blood circulation. Whole grain, carrot, cabbage, turnip, and cauliflower are examples of food items rich in insoluble roughage. Lack of insoluble roughage in the diet causes the stool to become hard and difficult to pass. This condition is called constipation.

👉 **Balanced diet:** A diet containing all the nutrients and other components in proper proportions is called a balanced diet.

👉 **Energy:** Energy is the capacity to do work. We need energy for our various activities.

👉 **Nutrients:** The components of food that are necessary for growth and development of our body are called nutrients.

👉 **Components Of Food:** The food that we eat consists of different components or nutrients. Nutrients are substances that are needed by our body for proper growth and healthy body function. There are six main components present in food: carbohydrates, fats, proteins, vitamins, minerals, and roughage or dietary fibres. These nutrients fulfill different needs of the body.

👉 **Carbohydrates:** Carbohydrates provide energy to your body, which keeps it going throughout the day. There are two major types of carbohydrates in food: sugar and starch.

👉 **Sugars:** Sugar is also called simple carbohydrate. Fruits, honey, and table sugar are some sources of sugar.

👉 **Starch:** Starch is also called complex carbohydrate. Plants store energy in the form of starch. Rice, wheat, corn, potato, and bread are some sources of starch. When we eat plant products, containing sugar and starch, our digestive system breaks them down into glucose. This glucose, which is the simplest form of sugar is then absorbed into the blood and provides Us energy.

👉 **Proteins:** Proteins are needed by our body for muscle-building and repairing worn-out tissues. Our muscles, organs, and even blood are made up of mostly proteins. If we do not eat proteins, our body will not be able to repair damaged cells, or build new ones. Proteins in our diet come from both animal and plant sources. Meat, fish, egg, and milk are some animal sources of protein. Pulses, soyabeans, grams, and nuts are some plant sources of proteins.

👉 **Minerals:** Minerals are needed by our body in small amounts. Each one is essential for proper growth of body and to maintain good health. These are obtained from table salt, green vegetables and fruits. Some important minerals are:



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- ✓ Calcium Required for strengthening bones and teeth, blood clotting and muscle contraction. *Rich sources:* Milk, meat, eggs, fish, pulses, vegetables, etc. Calcium Required for strengthening bones and teeth, blood clotting and muscle contraction. *Rich sources:* Milk, meat, eggs, fish, pulses, vegetables, etc.
- ✓ Phosphorus Required for strengthening bones and teeth, for production of ATP during cellular respiration, and conduction of nerve impulses. *Rich sources:* Milk, meat, eggs, fish, pulses, vegetables, etc.
- ✓ Iron Required for forming haemoglobin. *Rich sources:* Green leafy vegetables, liver, etc.
- ✓ Iodine Required for proper working of thyroid. *Rich sources:* Vegetables, mineral water and iodised salt.
- ✓ Macro minerals {macro: large} are needed by the body in larger amounts as compared to trace minerals. Calcium, magnesium, sodium, and potassium are examples of macro minerals. Trace minerals are needed by the body in very small amounts. Iron, zinc, copper, and iodine are examples of trace minerals.

👉 **Balanced Diet:** Our diet must contain adequate amount of different nutrients for our body to function properly.

A diet that contains adequate amount of different nutrients required for the healthy functioning of our body is called a balanced diet.

A balanced diet must include food items from the following four food groups.

- ✓ Milk group: includes milk and milk products
- ✓ Meat group: includes meat (chicken, fish, lamb, etc.) and meat substitutes (beans, peas, nuts, and seeds)
- ✓ Fruit and vegetable group: includes fruits and vegetables
- ✓ Grain group: includes breads and cereals.

👉 **Deficiency Diseases:** Lack of carbohydrates, proteins, vitamins, or minerals in the diet can cause diseases. Diseases that are caused due to the lack of nutrients in the diet are called deficiency diseases. Deficiency diseases cannot be transmitted from one person to another.

👉 **Deficiency of Carbohydrates:** Carbohydrates are the main energy sources. Lack of carbohydrates in the diet results in lack of energy and stamina. A labourer who does hard manual work needs more carbohydrates in his diet than a person who does his work sitting in his office.

👉 **Deficiency of Proteins:** Growing children need more proteins in their diet. Lack of proteins in the diet weakens muscles. Deficiency of proteins leads to a disease called kwashiorkor. Deficiency of proteins along with carbohydrate deficiency is called Protein Energy Malnutrition (PEM). It leads to marasmus. These diseases are more common in children of rural areas.



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- ✓ A child suffering from kwashiorkor has some or all of the following symptoms: large pot-like belly, stunted growth, swelling of face and limbs (especially the feet), skin diseases, mental retardation, and diarrhoea. If the treatment is started in time, improving protein intake may correct this disease.
- ✓ Marasmus is more common among infants and children under 5 years of age. A child suffering from marasmus becomes very thin, shows slow body growth, lack of energy, loss of appetite, weak legs, mental retardation, poor muscle development, etc.
- ✓ To prevent these diseases, the Government of India has started programmes like the Integrated Child Development Scheme (ICDS) and the Mid-day Meal scheme in schools.

👉 **Deficiency of Minerals:** lists some important minerals and their sources, functions, deficiency diseases, and symptoms. Minerals also assist in certain chemical reactions in the body. Cooking does not destroy them. Minerals-Functions, deficiency diseases, symptoms, and sources.

👉 **Deficiency of Vitamins:**

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 energy to work
Vitamin C	Scurvy	Bleeding gums, wounds take longer time to heal
Vitamin D	Rickets	Bones become soft and bent
Calcium	Bone and tooth decay	Weak bones, tooth decay
Iodine	Goiter	Glands in the neck appear swollen, mental disability in children
Iron	Anaemia	Weakness



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👉 **Deficiency of Water in the Body:** Water is very essential for proper functioning of our body. Excess loss of water from the body leads to a condition called dehydration. Dehydration causes loss of salts and leads to weakness in the body. Oral Rehydrating Solution (ORS) can be given to the patient to recover from dehydration. It is available free of cost at primary health centres. It can also be made at home by mixing 8 teaspoons of sugar and 1 teaspoon of salt in 1 litre of clean, drinking water.

👉 **Fat-soluble vitamins :** Vitamins that are stored in the fat tissue and used only when the body needs them are called fat-soluble vitamins.

👉 **Water-soluble vitamins :-** Vitamins that are not stored in the body and need to be regularly supplied through food are called water-soluble vitamins.

👉 **Macro minerals:-** Minerals that are needed by the body in larger amounts are called macro minerals.

👉 **Trace minerals:-** Minerals that are needed by the body in very small amounts are called trace minerals.

Table: 10 Classification of essential minerals	
Macro minerals (> 100 mg/day)*	Micro minerals (<100 mg/day)*
Calcium	Iron
Phosphorus	Zinc
Magnesium	Copper
Sulfur	Iodine
Sodium*	Fluoride
Potassium*	Manganese
Chloride*	Selenium
	Chromium
	Molybdenum

👉 Few facts :

- ✓ Carbohydrates and fats provide energy to the body.
- ✓ Proteins are needed for muscle-building and for repairing worn-out tissues.
- ✓ Vitamins and minerals are needed for the normal functioning of our body.
- ✓ A balanced diet should include food items from four basic food groups.
- ✓ Deficiency of carbohydrates causes lack of energy and stamina.
- ✓ Deficiency of proteins causes kwashiorkor whereas combined deficiency of proteins and carbohydrates causes marasmus.
- ✓ Deficiency of vitamins can cause night blindness, beriberi, anaemia, scurvy, and rickets.
- ✓ Deficiency of water can cause dehydration. Deficiency of minerals can cause osteoporosis, rickets, anaemia, and goitre.



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QUESTION FROM CDA

Q1. Which of the following is a protective food?

- (a) milk
- (b) oils and fats
- (c) fruits
- (d) cereals

Q2. Goitre: swelling of thyroid glands occurs due to the deficiency of

- (a) iron
- (b) potassium
- (c) phosphorus
- (d) iodine

Q3. Calcium is not required for?

- (a) Strengthening of bones and teeth.
- (b) Blood clotting.
- (c) Muscle contraction.
- (d) Conduction of nerve impulses

Q4. Which of the following is considered as 'body building foods'?

- (a) Proteins
- (b) Vitamins
- (c) Fats
- (d) Carbohydrates

Q5. Our body prepares which type of Vitamin in the presence of sunlight?

- (a) Vitamin D
- (b) Vitamin A
- (c) Vitamin B
- (d) Vitamin K

Q6. Which of these is not true of Vitamin C?

- (a) It helps in fighting against diseases like common cold, scurvy throat infections
- (b) It is present in oranges, tomatoes, lemon and guava.
- (c) Deficiency of it causes the wound to heal longer
- (d) It promotes growth, vision

Q7. Our hair and nails contain

- (a) Protein
- (b) Calcium
- (c) Chlorine
- (d) Phosphorus

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Q8. Deficiency of Iron

- ☐ (a) Beriberi
- ☐ (b) Anaemia
- ☐ (c) Loss of vision
- ☐ (d) Riketas

Q9. Rickets is caused by the deficiency of

- ☐ (a) vitamin A
- ☐ (b) vitamin D
- ☐ (c) vitamin C
- ☐ (d) vitamin B

Q10. Which is these being not true of Proteins

- ☐ (a) Protein helps in the formation of hair, nails
- ☐ (b) Food rich in proteins include lean meat, fish, eggs, milk, cheese, nuts, beans, peas
- ☐ (c) They are oxidized in the cells to release energy.
- ☐ (d) None of these

Q11. Which is these being not true of Fats

- ☐ (a) Fats produce more energy than carbohydrates
- ☐ (b) They are also known as roughage
- ☐ (c) Common food rich in fats include milk, cheese, butter, cream, ghee
- ☐ (d) None of these

Q12. Which is these being not true statement

- ☐ (a) Iodine Solution is required for testing the presence of Iodine
- ☐ (b) Copper sulphate and caustic soda is required to test the presence of Proteins
- ☐ (c) Sodium Solution is required for testing the presence of fats
- ☐ (d) None of these

Q13. Which vitamin keeps our skin healthy?

- ☐ (a) vitamin A
- ☐ (b) vitamin D
- ☐ (c) vitamin C
- ☐ (d) vitamin B

Q14. Diseases caused due to lack of Proteins?

- ☐ (a) Kwashiorkor
- ☐ (b) Anaemia
- ☐ (c) Beriberi
- ☐ (d) Scurvy



CAVALRY DEFENCE ACADEMY, DEHRADUN

Q15. Starch is a kind of

- (a) fat
- (b) carbohydrates
- (c) protein
- (d) vitamin

Q16. Night blindness is caused due to the deficiency of

- (a) vitamin B
- (b) vitamin D
- (c) vitamin C
- (d) vitamin A

Q17. Spongy and bleeding gums are symptoms of

- (a) scurvy
- (b) rickets
- (c) night blindness
- (d) beriberi

Q18. One of the following items will show a positive starch test

- (a) egg
- (b) rice
- (c) wheat
- (d) potato

Q19. The water-soluble vitamin in the following is

- (a) vitamin E
- (b) vitamin C
- (c) vitamin K
- (d) vitamin E

Q20. Which one of the following disease occurs in babies due to the deficiency of proteins as well as carbohydrates in diet?

- (a) Goitre
- (b) Night blindness
- (c) Kwashiorkor
- (d) Marasmus

Q21. Excess eating of fatty food makes a person.

- (a) obese
- (b) goitre
- (c) fatty
- (d) marasmic

Q22. Fish is a rich source of

- (a) iodine
- (b) phosphorus
- (c) potassium
- (d) iron



CAVALRY DEFENCE ACADEMY, DEHRADUN

- Q23. The undigestible material present in food is known as
- (a) vitamins
 - (b) water
 - (c) roughage
 - (d) proteins
- Q24. Which of the following is not a vitamin
- (a) D
 - (b) K
 - (c) A
 - (d) M
- Q25. Potato and ginger are examples of
- (a) roots
 - (b) leaves
 - (c) stems
 - (d) flowers
- Q 26: Which of the following is not a food?
- (a) Pulses
 - (b) Bread
 - (c) Petrol
 - (d) Ghee
- Q 27. Food is necessary because
- (a) it provides growth
 - (b) it provides energy
 - (c) it keeps us healthy
 - (d) all of these
- Q 28. Which of the following can be prepared from wheat?
- (a) Idli
 - (b) Biryani
 - (c) Pun
 - (d) None of these
- Q 29. Which of the following can be prepared from rice?
- (a) Bread
 - (b) idli
 - (c) Sambhar
 - (d) Pun
- Q 30. The raw materials used to prepare a dish are called
- (a) pods
 - (b) apiculture
 - (c) ingredients
 - (d) all of these



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- Q 31. -To prepare boiled rice, we must take
- (a) wheat flour and water
 - (b) raw rice and water
 - (c) egg and water
 - (d) all of these
- Q 32. Sugar comes from which of the following plants?
- (a) Sugar cane
 - (b) Banana
 - (c) Groundnut
 - (d) Paddy
- Q 33. Composition of milk is
- (a) fat, lactose, protein and mineral
 - (b) fat, mineral, protein and vitamin
 - (c) fat, protein and carbohydrate
 - (d) fat, cellulose and carbohydrate
- Q 34. We get cereals (wheat, rice, maize, etc.) from:
- (a) animals
 - (b) plants
 - (c) (a) & (b) both
 - (d) none of these
- Q 35. Animal products are rich in
- (a) proteins
 - (b) calcium
 - (c) minerals
 - (d) carbohydrates
- Q 36. Nectars are found in
- (a) flowers
 - (b) fruits
 - (c) roots
 - (d) stems
- Q 37. Honey contains
- (a) carbohydrates and minerals
 - (b) minerals and proteins
 - (c) sugar, minerals and enzymes
 - (d) lactose, fat and minerals
- Q 38. Which of the following helps in conversion of nectar to honey?
- (a) Human
 - (b) Butterfly
 - (c) Bees
 - (d) None of these



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Q 39. Which of the following plants store food in their roots?

- (a) Sweet potato
- (b) Brinjal
- (c) Guava
- (d) None of these

Q 40. Which of the following is not used for making sprouts?

- (a) Moong
- (b) Moth
- (c) Chana
- (d) Makka

Q 41. Which of the following is herbivore?

- (a) Camel
- (b) Cat
- (c) Dog
- (d) Lion

Q 42. Plant eating animal is termed as

- (a) herbivores
- (b) carnivores
- (c) omnivores
- (d) all of these

Q 43. Which part of the sweet potato plant is eaten as food?

- (a) Flower
- (b) Root
- (c) Stem
- (d) Leaves

Q 44. How many types of bees are present in a beehive?

- (a) 2
- (b) 3
- (c) 4
- (d) 5

Q 45. The part of sugar cane used to make sugar is

- (a) root
- (b) leaf
- (c) stem
- (d) flower

Q 46. Which part of a mustard plant is edible?

- (a) Stems and roots
- (b) Seeds and flowers
- (c) Leaves and flowers
- (d) Seeds and leaves



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- Q 47. Which part of potato plant is eaten as food?
- (a) Stem
 - (b) Seed
 - (c) Root
 - (d) Flower
- Q 48. Which of the following is a root of the plant?
- (a) Brinjal
 - (b) Carrot
 - (c) Cabbage
 - (d) Potato
- Q 49. Which of the following is an omnivore?
- (a) Human beings
 - (b) Lion
 - (c) Cow
 - (d) Buffalo
- Q 50. Which of the following food is not obtained from animals?
- (a) Milk
 - (b) Maize
 - (c) Mutton
 - (d) Honey
- Q 51. The ingredients required to prepare a dish of kheer are
- (a) rice, salt, sugar, milk
 - (b) sugar, rice, water, fruits
 - (c) salt, rice, sugar, water
 - (d) rice, sugar, water and dry fruits
- Q 52. Human beings are
- (a) carnivores
 - (b) herbivores
 - (c) omnivores
 - (d) none of these
- Q 53. Bees use the nectar of flowers to make
- (a) juices
 - (b) water
 - (c) sugar
 - (d) honey
- Q 54. We get milk mainly from
- (a) cow
 - (b) elephant
 - (c) giraffe
 - (d) lion



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- Q 55. The number of edible parts in a plants can be
(a) one only
(b) two only
(c) two or more
(d) none of these
- Q 56. Sprouted seeds give energy
(a) more than dry seeds
(b) less than dry seeds
(c) equal to dry seeds
(d) none of these
- Q 57. Which of the following food is not obtained from animals?
(a) Honey
(b) Milk
(c) Apple
(d) Mutton
- Q 58. Which of the following food is not a root of its parent plant?
(a) Carrot
(b) Radish
(c) Onion
(d) Turnip
- Q 59. Which of the following is a cereal?
(a) Rice
(b) Tea
(c) Onion
(d) Beans

Answers

- 1: (c) fruits
2: (d) iodine
3: (d)
4: (a) Proteins
5: (a)
6: (d)
7: (a)
8: (b)
9: (b)
10: (c)
11: (b)
12: (c)
13: (a)
14: (a)
15: (b)
16: (d)



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17. (a)
18. (d)
19. (b)
20. (d)
21. (a)
22. (a)
23. (c)
24. (d)
- 25 (c) stems
- 26 (c) Petrol,
- 27 (d) all of these
- 28 (c) Pun
- 29 (b) idli
- 30 (c) ingredients
- 31 (b) raw rice and water
- 32 (a) Sugar cane
- 33 (a) fat, lactose, protein and mineral
- 34 (b) plants
- 35 (a) proteins
- 36 (a) flowers
- 37 (c) sugar, minerals and enzymes
- 38 (c) Bees
- 39 (a) Sweet potato
- 40 (b) Moth
- 41 (a) Camel
- 42 (a) herbivores
- 43 (b) Root
- 44 (b) 3
- 45 (c) stem
- 46 (d) Seeds and leaves
- 47 (a) Stem
- 48 (b) Carrot
- 49 (a) Human beings
- 50 (b) Maize
- 51 (d) rice, sugar, water and dry fruits
- 52 (c) omnivores
- 53 (d) honey
- 54 (a) cow
- 55 (c) two or more
- 56 (a) more than dry seeds
- 57 (c) Apple
- 58 (c) Onion
- 59 (a) Rice

Dream it, Believe it &

Achieve it

Dehradun