Unit 2 Sports and Nutrition

Contents

Introduction

Food : Any liquid or solid item which, a person eats and digest them through digestive process to get energy for various physical purposes is called food.

Like air and water, food is an essential need. Not for only living, but for growth and development and to achieve life we need food.

Food is not important only for digestion but also to make sure that it is productive for the body.

Diet : It is the daily intake of food to the human body. Based on merits and performance diet has been divided in three parts.

1. Diet providing heat energy – Carbohydrate and fats
2. Diet providing growth – Protein, minerals
3. Diet providing immunity – Vitamins, minerals.

Did You Know?

- Diet is a combination of very useful components but there are some which are very harmful for human body, if these components are taken in excessive quantity, it is very harmful for human body.
- A human body needs 13 different types of vitamins.
- A human body require 9 different small and large macro nutrients.
- W.H.O has given a table of B.M.I; categories of human body.
- In the some of the cases few food contents are not accepted by human body.

2.1 Balanced Diet and Nutrition–Macro and Micro Nutrients

Meaning of Balanced Diet

A diet which consists of all essential nutrients in proper quantity and in proper ratio to fullfil requirements of daily physical needs is called balanced diet.

It relates to food items which after digestion helps in growth and development and maintaining healthy body.

A diet is called balanced only when

– It has all essential nutrients in proper ratio

– Hygenic food and easy to digest

Few other definitions for balanced diet.

(*i*) The food which contains essential nutrients like carbohydrats, fats, proteins, vitamins and water in proper ratio.

(*ii*) The food which involves all nutrients in required amounts for the physical requirements of an individual.

A balanced diet depends upon numerous factors like–age, sex, profession and environmental conditions.

Balanced Diet

Meaning of Nutrition

To utilize the different essential nutrients and to fullfill the requirement of physical needs and neccesities of an individual is called nutrition.

When we have food, it provides the nutritions and helps to maintain the human body stay in healthy way. Chewing breaks food into pieces while saliva mixes with the food to begin process of absorbtion and assimilation and undigested parts gets away in form of dispering through stool.

In easy words, the digested part of food provides nutrition.

Scientifically saying : Nutrition is a process of absorbing diet and nutrients through food metabolism and providing the energy to various parts of our body.

Macro and Micro Nutrients

Nutrients which consist of major part of diet are called macro nutrients. The main work of these nutrients is to provide energy, growth and repairing of wear tear of tissues. Carbohydrates, proteins and fats are to be known as macro nutrients.

For that we need to know element. Element is a substance which cannot be diluted chemically. In real, we need 25 elements. Each individual's 98% of mass consists of carbon, oxygen, hydrogen, nitrogen, phosphorus and sulphur. Remaining 2% consists of potassium, sodium, iron and zinc.

Difference between Macro and Micro Nutrient

Basis	Macro Nutrients	Micro Nutrients
Example	(*i*) Carbohydrates, proteins and fats are the example of macro nutrients.	(*i*) This category of nutrients includes essential vitamins and minerals.
Role	(*ii*) Carbohydrates contribute the maximum to the energy requirement of the body.	(*ii*) Such nutrients are required for proper mechanism and functioning of the cells in the body. These nutrients protect our body from various diseases and disorders.
Proportion Required	(*iii*) The proportion of carbohydrates in diet is normally 60-75 percent and proportion of protein and fat is 10-15 and 20-25 percent respectively. Hence, these nutrients are required in large quantities.	(*iii*) These nutrients are required in very small amounts - milligram and microgram.

1. Carbohydrates

It is most essential nutritive component of food. It is a compound formed by chemical composition of carbon, hydrogen and oxygen in ration of 1 : 2 : 1. Carbohydrate acts like a fuel in our body. It provides instant energy. Sugar is a main unit of carbohydrate which is chemically composed of C, H and O_2. If excess amount of carbohydrate is taken in food by an individual it always changes into fats and is accumulated into fatty tissues. Lack of carbohydrate in body causes weight loss of body. The skin becomes loose and the process tends to lean and thin.

Two Types of Carbohydrates

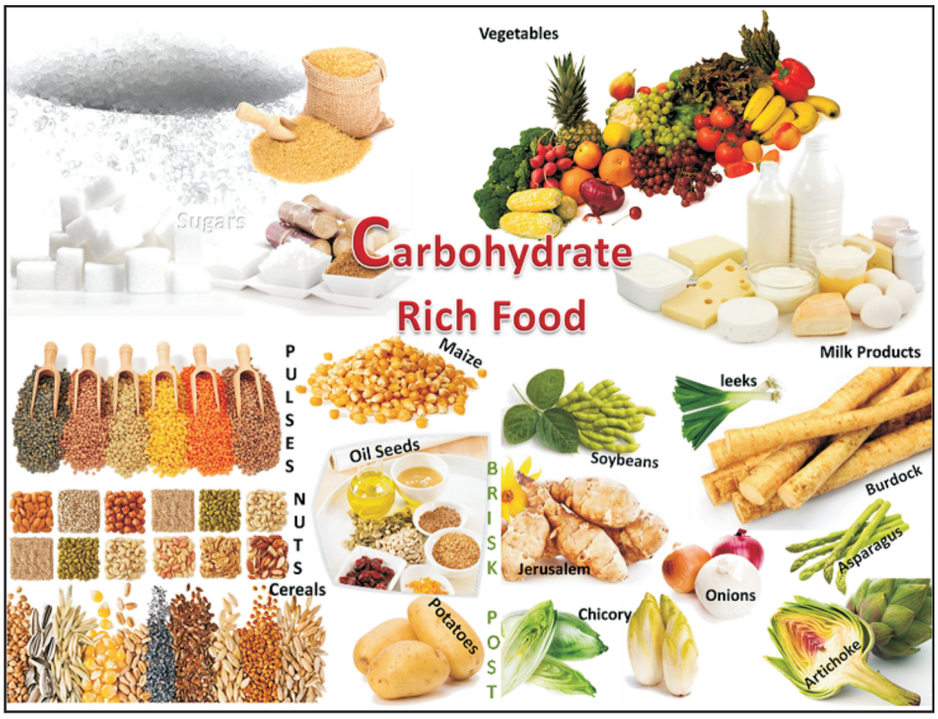
1. **Simple Carbohydrates:** There is only a single unit of sugar in simple carbohydrate. Glucose, sucrose, fructose, mallose and lactose are examples of simple carbohydrates. They are sweet in taste and easily soluble in water.

   They directly get digested and diluted in blood rapidly. That's why they are an instant source of energy. They are found in cereal, fruits and carrot.

2. **Complex Carbohydrate:** These are not sweet in taste and are insoluble in water. They are not cystalline. The main differences between simple and complex are their chemical composition. Simple carbohydrates have smaller chain than to complex ones. Strach and fibre are called complex carbohydrates.

KEY POINTS

- ★ Balance Diet
- ★ Macro Nutrient
- ★ Micro Nutrient
- ★ Protein
- ★ Carbohydrate
- ★ Fats
- ★ Water
- ★ Minerals
- ★ Calcium
- ★ Sulfur
- ★ Thiamine
- ★ Riboflovin
- ★ Niacin
- ★ Pantothenic acid
- ★ Pyridoxine
- ★ Cobalamine
- ★ Biotin
- ★ Folic acid
- ★ Vitamin A
- ★ Vitamin D
- ★ Vitamin E
- ★ Vitamin K
- ★ Fiber
- ★ BMI
- ★ Food Intolerance
- ★ Food Myths
- ★ Pitfall of dieting



Sources of Carbohydrates

2. Proteins

It is the most essential nutrient. It contain carbon hydrogen, oxygen, nitrogen and sometimes sulpur. They are large molecules as they cannot get direct energy into blood.They are turned into amino acids by digestion. The amino acids are 23 in total in which 8 are not produced in body and has to be supplemented through diet.

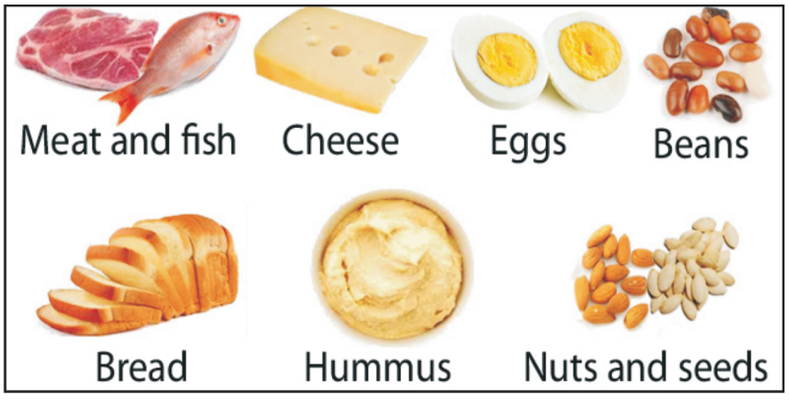
Functions of Proteins

The amino acids are used by the body to create blood, muscles, nails, skin, hair and internal organs. Protein form new tissues, repair broken tissues, regulate balance of water and acids, transport oxygen and nutrients. It makes antibodies which create high immunity.

Excess and Lack of Protein : Excessive use of protein specially animal protein can result in heart disease, ostoporosis, stroke and kidney stones. Body require only 36% of protein per pound of the ideal body weight.

Lack of protein intake causes deficiency diseases named as marasmus and kwashiorkar in children.

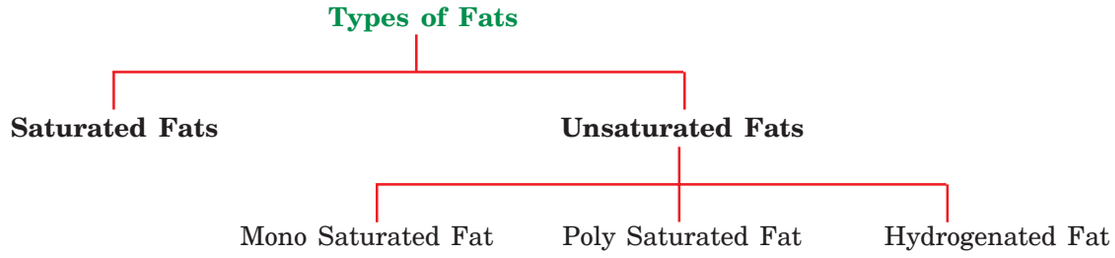
Source of Protein : Milk, pulses, cereals, paneer, almond, meat, apricot, curd.



Sources of Proteins

3. Fats

Fat is a compound made up of carbon, hydrogen and oxygen in ratio of 76 : 12 : 12. Fat provides heat, energy and protect vital organs. One gram of fat contains a calorie. It helps in production of hormones.



(*a*) **Saturated Fat :** Saturated fats do not have double bonds and are solid at room temperature. They are mainly sourced from animal products. They cause rise in blood cholestrol and fatty plague build up in corronary arteries which leads to high blood pressure and cononary heart disease (CHD). This fat is found in fast foods, bakery products, ice cream, paneer, butter and ghee.

(*b*) **Unsaturatead Fat :** Unsaturated fat have two or more double bonds which have more absorbtion of hydrogen. They are liquid at room temperature. It is also called essential fat classified into three categories :

1. **Mono saturated Fats :** These are least harmful of fatty acids. It lowers the low density lipo proteins (LDL) or bad cholestrol. It also helps to digest vit. A, D, E and K. Almonds, cashew and peanuts, cooking oils and seeds like canola, olive, peanut, soyabean, rice brand and sun flower are sources of non-saturated fats.
2. **Poly unsaturated Fat :** In this fat, there are two or more bonds between carbon and hydrogen. It reduces cholestrol. In a way poly unsaturated fat is better than mono saturated fats. Walnuts, sunflower seeds, flax seeds or flax oil, fish such as salmon, mackerel, tuna and trout, corn oil, soyabean oil are sources of polyunsaturated fats.
3. **Hydrogenated Fats :** These are liquid vegetable oils made creamy when manufactures convert some of unsaturated fats into saturated fats through a process called hydrogenation.

For example : In groundnut oil through hydrogenation fats decrease from 25% to 2%. Its sources are dalda, rath, refined etc.

Sources of Fats

Animals sources : Fat derived from animals like, ghee, butter, curd, milk, paneer, meat, egg.

Vegetable sources : Fat derived from plants and vegetation like coconut, soyabean, mustard oil, dry fruits.

Function of Fats

1. It helps in production of hormones.
2. It helps in beautification of body.
3. It controls and regulates body temperature and protects soft organs of body.
4. It moistures skin and protect from excess heat and cold.
5. It helps in growth and development.

4. Water

It is a compound comprising of hydrogen and oxygen in ratio of 2 : 1. Water consist of 70% of our body. In blood, it is present in 90%, which helps to keep tissue soft and flexible. An intake of 2 litres water per day is advised by nutritionist to keep body well hydrated and to perform body functions properly.

Functions of Water

- Water regulates body temperature.
- It carries nutrients to the tissues.
- It eliminates body wastes.
- It lubricates and cushions body parts.
- It is involved in the absorption and digestion of food.

II. Micro Nutrients

This group comprises of minerals and vitamins. They are also called micro nutrients because they are required in small amount which may vary. Micro nutrients are involved in synthesis of hormones, enzymes and other substances.

1. Mineral Elements

Minerals are essential in our food. Minerals consist of 4% of our total body part. Minerals not only provide energy but also keep teeth healthy and play an important role in making of bones and muscles. Minerals help to regulate growth, develop organ systems. The main minerals, like– iron, calcium, phosphorus, sodium, cholrine, magnesium, potassium and sulphur are essential for our body. There are around total of 24 minerals found in our body, in which 19 are very important.

Minerals in more quantity (Macro-Minerals)

(*i*) **Calcium :** It is the most quantitied mineral in our body. It consists of 10% of rest of all other minerals requirement. 95% calcium is found in teeth and bones. Rest remains in liquid form and soft fibres. Storage of calcium in cartilage provides solidarity of bones. It helps in blood clotting.

It controls heart rate. Milk and milk products, green leafy vegetables, eggs and cereals are main sources of calcium.

(*ii*) **Magnesium :** It helps in repairing of worn and torn of tissues. It is found in brown rice, meat.

(*iii*) **Phosphorus :** It helps in making of bones and teeth. Other than that it helps to maintain muscular and nervous system. It is found in fish, milk, rice and eggs.

(*iv*) **Sodium :** It maintains the balance of acid and bone. Salt, pickle and butter are main sources of sodium.

(*v*) **Potassium :** It maintains the balance of liquids in tissues, besides this, it helps to keep active and maintain of respiratory system. It is found in banana, grean leafy vegetables, citrus fruits.

(*vi*) **Sulpur :** It is required for growth of brain, nails and hairs. It is found in egg, radish, carrot, peas, spinach.

Minerals in Less Quantity (Micro-Minerals)

(*i*) **Iron :** It is one of least found minerals in body. It consists of .004% of body weight. 70% of total iron in our body is found in hemoglobin. Remaining part is found in bone marrow, liver, kidneys and blood plasma. It is essential in formation of hemoglobin. It is found in yeast, meat, eggs, dry fruits, banana and green leafy vegetables.

(*ii*) **Iodine :** Iodine is a chemical element which our body needs but can not make it. The thyroid gland needs iodine to make hormones. It is important for growth and development of body. Its absence in body may cause goiter. Iodized salt is main source of iodine.

(*iii*) **Chromium :** It activates the process of insulin. Deficiency of chromium causes diabetes. It is found in soyabean, carrot, tomato, nuts, egg yolk.

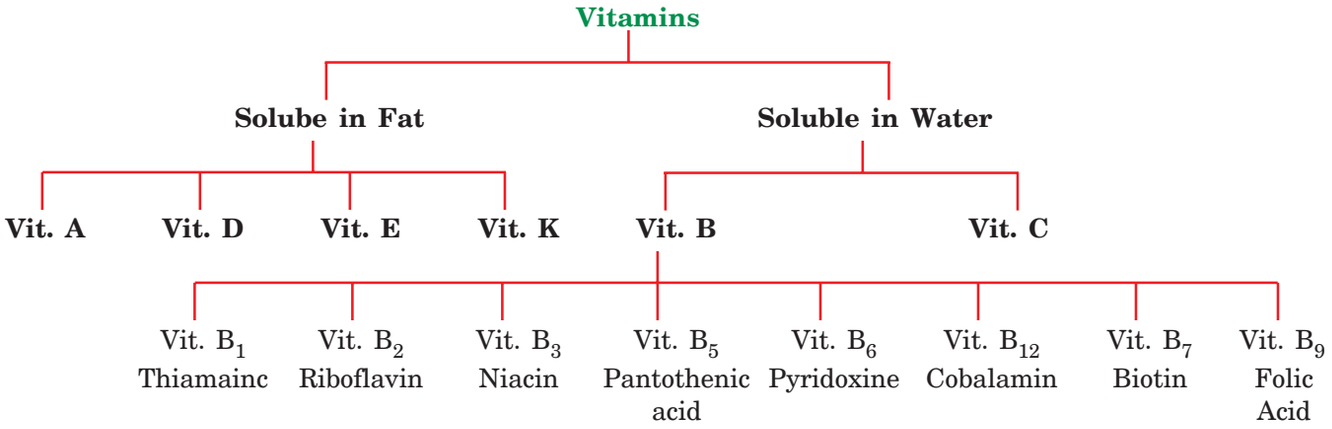
(*iv*) **Copper :** It helps in making of haemoglobin. It is found in green leafy vegetables, eggs, pulses. It is essential for physical and mental activities. As it is not stored in body, so intake of copper is done daily through consuming food. It also activates many other enzymes helpful in digestion. Lack of copper cause decrease in immunity and cancer.

(*v*) **Cobalt :** It prevents from amnesia. Sources of cobalt are green leafy vegetables, milk and meat.

(*vi*) **Zinc :** It increases immunity of body. It acts as transformer for nerve impulse. It is found in water lemon seeds, chocolates, nuts.

2. Vitamin

Vitamin is an element which is required for physical development and prevents from diseases. It is present in very less quantity in body and lack of it can cause various diseases, like–lack of vitamin A causes night blindness, lack of vitamin B causes beri–beri and vitamin C – scurvy. Vitamins are not produced in body. So they are taken through diet. Vitamins are either water or fat soluble. They are divided in two categories.



Practice Questions 2.1

I. Short–I Question Answers (3 Marks, 100 Words)

Q.1. What do you mean by Vitamins?

Q.2. Explain in brief the importance of water for human body.

Q.3. Enlist types of vitamin 'B' and explain any two of them.

Q.4. Explain fat soluble vitamins.

Q.5. Discuss function of various minerals.

Q.6. Discuss water soluble vitamins.

Q.7. What do you mean by micro nutrients?

II. Short–II Question Answers (5 Marks, 200 Words)

Q.1. Explain nutrients of balanced diet.

Q.2. What are vitamins. Explain their types.

Q.3. Explain micro nutrients.

Q.4. Explain macro nutrients.

2.2 Nutritive and Non-Nutritive Components of Diet

1. Nutritive Components of Diet

Components of diet which provide energy and calories to the body are called nutritive components of diet.

1. Protein

It is base of life. It produces amino acids and create base of formation of new tissues. After water protein is present in most quantity in body. It consist of 1/6 part of body part. On basis of sources it is divided into two catagories.

(*i*) Animal Protein : Protein derived from animals are like egg. milk products, meat, fish.

(*ii*) Vegetable Protein : Protein derived from vegetable are like pulses, soyabean, cereals, nuts, seeds.

Soyabean consists abundant protein. It is also found in fruits and vegetables. Any player taking 500 caloric required 125 to 185 gram intake of protein daily. Diet shall consists of half share divided into vegetable and animal protein.

Functions of Proteins

(*a*) It makes new tissues.

(*b*) It helps in growth of the body.

(*c*) It helps in repairing of tissues of body.

(*d*) Many hormones likes insulin, adernaline, thyroxine are made up of protein.

(*e*) Protein present in blood provides oxygen and haemoglobin to muscles.

(*f*) It produces antibodies to fight the diseases.

(*g*) In absence of fat, protein provides energy to the body.

(*h*) It maintains body temperature.

(*i*) It is very essential for growing children. It helps in repairing in wear and tear of tissue. That's is why it is essential for adults also.

Seeing the utility of protein, it is considered supreme of all nutreints. Lack of protein can cause physical and mental tiredness. Lake of protein can cause Marasmus and Kwashiorkor diseases in children.

2. Carbohydrates

It is most important and essential nutrient. It is a compound made up of carbon, hydrogen and oxygen. It's main function is to provide energy at instant rate. It helps in excretory system. If there is excess of carbohydrates in diet, then it accumulates as fat in our body tissues, which causes lethargy and tiredness in body. The skin gets dry and loose. Constipation problem arises. Lack of carbohydrate causes weight loss and the person affected becomes weak.

Source of Carbohydrates : Starch, rice, wheat, pulses, soyabean, patato, honey.

3. Fats

It is an improtant essential nutrient of body. It consist of carbon, hydrogen and oxygen. Linolenic, EFA (Essential Fatty Acids), Arachidonic are three important fatty acids. It is best source of energy in diet. It provides heat and energy in body. It also regulates the body temperture and rescue from excess heat and cold. It accumulates easily in body. It makes an layer beneath adipose tissues. The fat not utilized get stored in body which affect functioning of internal organs.

It protect vital organs from any external injury sources of fats.

(*i*) Animal Sources : Ghee, butter, curd, fish oil, paneer, meat, egg.

(*ii*) Vegetable Soures : Coconut, soyabean, cereals.

4. Vitamins

Vitamins are important for growth and healthy body. It does not belong to any structural composition of our body. It is required less but it is essential. It provides immunity from many diseases, like–lack of vitamin A causes night blindness, vitamin B causes beri beri and vitamin C causes scurvy.

Types of Vitamins

(a) Fat Soluble Vitamin : Vitamins which get dissolved in fat are called fat soluble vitamins. Those are :

(*i*) Vitamin A (*ii*) Vitamin D (*iii*) Vitamin E (*iv*) Vitamin K

(b) Water Soluble Vitamin : Vitamins which dissolved in water are called water soluble vitamins. Those are :

(*i*) Vitamin B complex (*ii*) Vitamin C

(A) Fat Soluble Vitamins

(i) Vitamin A : It was discovered by McCollum in 1913. It is yellow in colour. It does not get affected at room temperatue but gets destroyed during oxidation. It is also destroyed by ultra violet radiations. Lack of vitamin causes night blindness and xerosis cornea. It dries up skin and make it clumsy. Lack of it causes yellowness in teeth.

Daily requirement is 2 mg.

Sources : Yeast, milk, milk products, tomato, papaya, orange.

(ii) Vitamin D : It is formed by carbon, hydrogen and oxygen. It is white in colour. It helps in digetion of calcium and phosphorous. It is essential for teeth and bones.

It provides good growth of body. Lack of vitamin D causes rickets, oesto malacia, and oestoporosis disease.

Sources : Sun light, green leafy vegetables, tomato, milk, yellow carrot.

(iii) Vitamin E : It is important for reproduction system. Lack of vitamin E causes infertility in men and women. It hampers growth of muscles. It affects heart functioning. It is essential for pitutary glands.

Sources : Cercal, yeast, cauliflower, spinach, sprout seed.

(iv) Vitamin K : It is derived from the Danish word 'Coagulation' which means clot of blood. It helps in freezing blood. Lack of vitamin K can cause haemorage. It is essential for pregnant women. Lack of it will cause anemia.

Sources : Cauliflower, spinach, cabbiage, tomato, patato, wheat, egg, meat.

Fat Soluble Vitamins and its Functions

Vitamins	Sources	Functions
A	Milk, butter, cheese, egg, cod liver oil, carrots	Prevents night-blindness, effective for eye sight.
D	Butter, meat, bread, sunlight, fish liver oil	Makes bones and teeth strong and prevents rickets.
E	Butter, meat, bread etc.	Prevents destruction of red blood cells, protects cell membranes.
K	Green vegetables, cereals, fruits and meat	Promotes blood clotting deficiency, excessive bleeding from wounds.

(B) Water Soluble Vitamins

(i) Vitamin B Complex : It consist of eight vitamins. It is good for digestion and healthy body.

1. **Vitamin B_1 or Thiamine :** It is salty in taste. It is colorless. It was discovered in 1897 and was the first vitamin to be isolated in 1926. Thiomin deficiency is seen mainly is chronic alconoalism. It smells like yeast.

   Lack of vitamin B_1 cause indigestions, irritability, lack of concentration and faint.

   Sources : Wheat, sprout seeds, rice, orange, green peas, liver, eggs, green leafly vegetables.

2. **Vitamin B_2 or Riboflavin :** It is yellow in colour. It gets destroyed in excessive cooking and in sunlight. Deficiency of vitamin B_2 causes loosening of skin and damage to lips and tongue. It helps

to keep healthy eyes, nose, mouth, lips and tongue. It's deficiency decreases immunity power of white blood corpuscles.

Sources : Wheat, yeast, green vegetables, fish, pulses.

3. **Vitamin B_3 or niacin acid :** It helps in growth of body. The deficiency of vitamin B_3 causes grey hair.

   Sources : Dry fruit, egg yolk, milk.

4. **Vitamin B_5 or Pantothenic acid :** Deficiency of vitamin B_5 causes pellagra disease. It helps to maintain body weight.

   Sources : Milk, polished rice, nuts.

5. **Vitamin B_6 or Pyridoxine :** It helps in formation of hemoglobin. It keeps skin moisturized and healthy.

   Sources : Meat, fish, egg yolk, rice, wheat, pulses.

6. **Vitamin B_7 or Biotin :** It's chemical name is biotin. Deficiency of Vitamin B_7 causes fungal infection and red rash.

7. **Vitamin B_9 or Folate or Folic :** It is colourless and odourless. It helps in making of blood.

   It's deficiency causes weakness and egg formation.

8. **Vitamin B12 or Riboflavin :** It is red in colour. It gets destroyed in over cooking. It causes anemia.

   Sources : Meat, fish, eggs.

(ii) **Vitamin C :** It is also called as absorbic acid. It is white and odourless. It helps in healing of wound. It increases metabolism. It's deficiency causes scurvy. It this case gums start bleeding.

Sources : Fresh fruits, lemon, pineapple, guava, orange, salad, tomato.

Water Soluble Vitamins, Sources and its Functions

Vitamins	Sources	Functions
B, B1, B3	Peanuts, Fish, Eggs	Prevents nervousness and Beri-Beri.
B2, B6, B12	Milk, Cheese, Meat	
C	Amla, Citrus Fruits, Tomatoes, Green Leafy, Vegetable, Potatoes	Keep Bones, ligaments and other supportive tissue teeth.

5. Minerals

It helps in maintaining body healthy and in teeth formation.

(a) **Calcium :** It helps in formation of teeth and bones. It helps in balancing acid. It's sources are milk, milk products, egg yolk.

(b) **Phosphorus :** It is required for teeth and bones. Its sources are egg, fish, meat, milk products, yeast, unpolished rice.

(c) **Iron :** It is required in formation of hemoglobin. Lack of it causes anemia. Best sources of iron are yeast, red meat, egg, nuts, green leafy vegetables.

(d) **Sulphur :** It helps in formation of hair and nails. It's sources are pulses, carrot, peanuts, tomato, egg.

(e) **Potassium :** Deficiency of potassium causes weakness of muscles. It affects agility of body. It's sources are orange, carrot, bananas, apple, mango.

(f) **Sodium :** It helps in contraction of muscles. It balances water level in body. It's sources are milk, milk products, meat, egg.

(g) Iodine : It is essential for activation of thyroid gland. Deficiency of iodine causes hypothyroidism which cause over weight. It affects physical and mental growth, Deficiency of it causes goiter. Skin gets filtly and rough. It hamper hair growth. It's source is iodised salt.

Non–Nutritive Components of Diets

Non nutritive component of diet does not provide any caloric or energy but have their own importance. Fibre, water, colour, flavours etc. are these products which we have to intake through food. There are thousand of phylo–chemicals which can help us or harm us. Contribution of some of them are explained below :

1. **Water :** It is an essential nutrient. Our body consists of 60–70% of water. It is impossible to think of life without water. Water consists 90% of blood. Each person shall drink 8–10 glass of water daily. The essential elements are sent through water to all cells ol body. It is significant in excertion of waste products. It helps in digestion. It keeps tissues soft and flexible. It provides minerals to the body. It acts as lubricant, keeps skin moist and protects body from shock.
2. **Fibre :** It's scientific name is non-starch polysaccharides (NSP). It is like one of complex carbohydrate. It is undigested part of food. It cannot be digested by human intestinal part. It increases appetite and smoothers function of intestines. It removes constipation.

   Two type of Fibre :

   Soluble Fibre : It decreases cholestrol and helps to control blood sugar.

   Insoluble Fibre : It soften stool which avoid constipitation.
3. **Flavour Compounds :** It addresses the taste of food, but does not contribute any nutritive value. Like tea in milk or coffee powder in milk taste its colour and taste. In same way, diabetic patient uses sugar free in tea. It does provide neither caloric nor energy. Sometimes colour compounds can be harmful. It varies taste in salty, sweet, etc.
4. **Colour Compounds :** It makes attractive to see by the wide reflection of colours made possible through pigments. Natural pigments are found in fruits and vegetables such as red, orange, yellow, blue, green. Sometimes due to commercial benefits, these fruits and vegetables are dipped through various chemicals which are harmful for body.
5. **Plant Compounds :** There are some plants which contain non nutritive element. Ingestion can beneficial or harmful. There are many compounds that inhibit cancer.
6. **Pesticides and Fertilizers :** Now a days, fruits and vegetables have a lot of mixture of pesticides and fertilizers.

   This case cause serious consequences disease like cancer. That's why we shall wash vegetables and fruits properly before eating. It is a big challange in recent times.

Practice Questions 2.2

I. Short–I Question Answers (3 Marks, 100 Words)

Q.1. Write down in brief about nutritive and non-nutritive components of diet.

Q.2. List nutritive components of diet and explain any two.

Q.3. Explain three non-nutritive components of diet.

II. Short–II Question Answers (5 Marks, 200 Words)

Q.1. What do you understand by non-nutritive components of diet? Explain in detail.

Q.2. Explain nutritive components of diet.

2.3 Eating for weight control—A healthy weight, the pitfalls of dieting, food intolerance & food myths

At any age, over weight gets prone to many diseases. To keep physical mind in control helps an individual a lot. It is achieved through controling diet.

Healthy Weight

Healthy weight is consideried to be when one can live life in a healthy way without any fear of disease.

According to National Institue of health, 19 to 25 B.M.I is considered to be healthy body weight. If a person's B.M.I is between 25 to 29 then that person comes in over weight category. If the B.M.I. is 30 or greater, the person is considered to be obese.

To asses body weight, normally two methods are used. First method is the table shown in next page marking ratio height and weight chart which assess healthy body weight. Other method is B.M.I.

First Method : Method to know ideal weight through height and weight chart.

Method to Know Ideal Weight Through Height and Weight Chart

Male				Female			
Height (cm)	Short (kg)	Medium (kg)	Long (kg)	Height (cm)	Short (kg)	Medium (kg)	Long (kg)
157.5	50.7–54.4	53.5–57.1	57.1–63.9	147.5	41.7–44.4	43.5–48.5	47.1–53.9
160	52.1–55.8	54.8–60.3	58.5–65.3	150	42.6–45.8	44.4–49.9	48.0–55.3
162.5	53.5–57.1	56.2–61.6	59.8–67.1	152.5	43.5–47.1	45.8–51.2	49.4–56.7
165	54.8–58.5	57.8–63.0	61.2–68.9	155	44.9–48.5	47.1–52.6	50.8–58.0
167.5	56.2–60.3	59.0–64.8	62.6–70.0	157.5	46.2–49.9	48.5–53.9	52.1–59.4
170	58.0–62.1	60.7–66.6	64.4–73.0	160	47.6–51.2	49.9–55.3	53.5–60.7
172.5	59.8–63.9	62.6–68.9	66.6–75.2	162.5	49.0–52.6	51.2–57.1	54.9–62.6
175	61.6–65.7	64.4–70.7	68.4–77.1	165	50.3–53.9	52.6–58.9	56.7–64.4
178	63.4–68.0	66.6–70.7	70.3–78.9	167.5	51.6–55.8	54.4–61.2	58.5–66.2
180	65.3–68.8	68.0–74.8	72.1–81.1	170	53.5–57.6	56.2–63.0	60.3–68.0
183	67.1–71.6	69.8–77.1	75.3–83.4	172.5	54.8–59.4	58.0–64.8	62.1–69.8
185.5	68.9–73.4	71.6–79.3	76.1–85.7	175	57.1–61.2	59.8–66.6	63.9–71.6
188	70.7–75.7	73.4–81.6	78.4–87.9	178	58.9–63.5	63.6–68.4	65.7–73.9
190.5	72.5–77.5	75.7–83.9	80.7–90.2	180	60.7–65.3	63.7–70.3	67.5–76.2
193	74.3–79.3	78.0–86.1	82.5–92.5	183	62.6–67.1	65.3–72.1	69.4–78.4

Second Method : Body Mass Index

$$\text{B.M.I.} = \left(\frac{\text{Body weight in (kgs)}}{\text{Height} \times \text{Height in (mts)}} \right) \text{ kg/m}^2$$

For example : If a person weights 80 kg. and his height is 1.75 m, his B.M.I. would be as below

$$\text{B.M.I.} = \frac{80}{1.75 \times 1.75} = \frac{80}{3.0625} = 26.122$$

W.H.O. criteria for under weight.

Category	B.M.I.
Under Weight	< 18.5
Normal Weight	< 18.5 – 24.9
Over Weight	< 25 – 29.9
Obesity Class I	< 30 – 34.9
Class II	< 35 – 39.9
Class III	> 40

If B.M.I. is less than 18.5, then it is not normal and one shall seek medical assistance.

If B.M.I. is between 18.5 to 24.9 then it is ideal healthy weight.

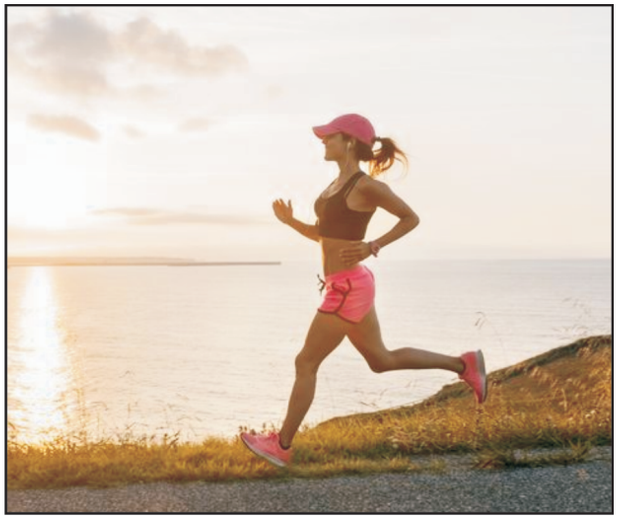
If B.M.I. is 25 to 29.9, you come in overweight category. You need to cut the flab in form of fat.

Today's jogging will improve your future health

If B.M.I is 30 to 34.9, then it is category for obesity I. B.M.I. is 35 to 39.9, then it is obesity category II. If B.M.I. is more than 40, then you are supposed to be a obese category–III. That a really cause of concern.

Methods to Control Healthy Body Weight

1. **Regular Physical Activity :** Exercise helps us to burn out extra calories to keep the weight in control. Opposite to that, if we do not work out, then what ever we eat, it accumulates in form of fats. In reality, our body weight depends upon the intake of calories and work out we do daily. Regular physical exercise like aerobic, cardio/vigrous exercise, brisk walking, skipping, power yoga needs to be done on daily basis for 30–40 minutes. Regular physical activities like playing badminton, swimming, yogic exercise, cycling keep us healthy.
2. **Balanacing the Calories :** To keep us healthy weight and we need to balance out the daily intake of calories. We should not have excess of calories than required at daily basis. During holiday or function we shall stick to planning of our diet chart. Excess of calories result in extra flab in body. It stores beneath the adipose tissues and makes it difficult to have healthy weight. So we need to make a balance on the calories we have and calories we burn out.



Running keep us fit and fine

3. **Eat Meals in Intervals :** We should take food at regular intervals like, morning breakfast, lunch and dinner. In any case we do not have food, then we tend to eat more in next interval which causes obesity. In reality, when we do not have food, we have more hunger because the stomach remains empty. Then when we have food, we get an urge that it is still empty which ends up in over eating.
4. **Change in Life Style :** Now a days, all age group tends to live a luxurious life. Digital appliances like laptop, cell phone have made kids obese. Active life style can prevent obesity. School students shall prefer walk on foot rather than taking any other conveyance. We should use stairs rather than elevator or lift. The children should not watch T.V. for more than one hour. More stress should be on playing outdoors rather than kids be at home. One should adopt a active life style which helps to counter obesity.
5. **Set the Appropriate Goal :** There shall be a reasonable and logical target to reduce body weight. While fixing the target, we shall keep daily necessary intake for body. The target should be achievable. The target shall be fixed according to time frame. Healthy body weight depends on the will power, continuing and absolute hard work. One thing to keep in mind when we tend to loose weight, we have to keep healthy body so that we do not get any eating disorder.

Eat with smile for good health

6. **Cut Your Calories :** One should keep the intake and output of calories in mind. One shall fix intake of calories according to life style, age, sex, etc. If in any case, the body weight exceed crosses the limit, then we shall make a blue print to cross check the excess body weight. One should cut 100 calories per day and keep physical exercises to burn out calories.
7. **Try to be Healthy :** We shall make an healthier effort to be healthy. It is not a correct fact that people being healthier can not be physically fit or their health is not up to mark. More focus shall be being healthy rather than body weight.
8. **Adopting Yoga :** Practising yoga has been a norm in our Indian culture. It is very useful for maintaing healthy body weight. Pranayam, Halasana, Chakrasan etc. are useful to get healthy body weight. It is been proven scientifically that obesity is caused by stress and tension. Yoga helps to deal with stress and tension. Now a days power yoga is getting popular.
9. **Avoid Junk and Fatty Food :** One shall not eat such things which have more calories because it tends to get obesity. Burger, Pizza, Pastries, Cookies, Chips, Chocolate and Cold drinks contains heavy calorries. We should not eat any such things.
10. **Avoid Overeating :** We should eat as per requirement of our body. To control body weight, we shall restrain from over eating. If our body require 2000 calories/day, then we shall have food which contains 2000 calories only. If we had 2200 calories/day, then 200 calories will be accumulated as fat in our body. That's why we shall avoid over eating.
11. **Avoid Rich Carbohydrated Fatty Food :** To control body weight we should avoid food enriched with carbohydrate. But that does not mean that we should not have intake of carbohydrate. Carbohydrate is very essential in providing instant energy. We should keep an check of a diet containing sugar, rice, potato, sweets.
12. **Make Distance from Alcoholic Products :** Alcohol, smoking and drugs make our body prone to obesity. Alcohol get stored indirectly as fat in body and its hazardous chemicals damages internal oranges. Smoking and drugs causes harmonal inbalance in body. So to keep healthy weight, we should retrain from smoking, drinking alcohals and drugs.

Dieting

Now a days each person have a desire to look impressive in society. For an effective personality, a strong body is required. In these cases, a person on heavier side tend to adopt various methods to loose weight. There may be some positive development of dieting intially but lately it can result in more over weight. In many such cases dieting cause increase in weight. Without proper guidance there may be many pit falls of dieting.

Pit falls of Dieting

1. **Marasmus :** During dieting, lack of water may not decrease but weakness and dehydration causes skin dry and itched.
2. **Dental and Blood Related Disorder :** Lack of calcium and phosphorous due to dieting cause caries of teeth. Anaemia causes weakness, lethargy, restlessness. Lack of Vitamin-A can cause haemorrage in case of even a small injury.
3. **Eye Related disorder :** A person on dieting can be affected by night blindness or not able to see in dim light, itching in eyes, the pupil of eyes get shorter and led to blindness.
4. **Deficiencies of Minerals :** Due to dieting, there may be deficiency of minerals which disorder in thyroid gland cause goiter. Goiter is swelling of neck which hampers imbalance in respiratory system.
5. **Memory Loss :** Deficiency of minerals like potassium can cause memory loss. It also cause disturbance in sleep, and lack consentration.
6. **Other Disorders :** Other disorders like pellagara in which tongue, mouth and lips get ulcers, constipitation, hair fall, scurvy, eating orders are the few of them which can occur in the body.
7. **Deficiencies of Calories :** Due to dieting, there is a deficiency of calories in body.

8. **Loss in Body Weight :** Dieting causes immediate loss of body weight and affects efficiency of body. The body appeares to be imbalanced. It causes loss of blood and tiredness and affects sleep.
9. **Feeling Fatigue :** Dieting causes physical and mental tiredness frequently.
10. **Deficiencies of Vitamin :** Dieting causes deficiency of essential vitamins in body.
11. **Lack of Confidence :** Due to dieting, a person tends to lethargic which causes lack of confidence.
12. **Reduce Interest to Perform for Exercise :** A person of dieting could not exercise properly. It may cause weakness in bones and cause fatigue.

Concludully, we can say that dieting is not a very good idea. It does not carry any advantage, more over it may cause disadvantages for body. People who wish to loose weight should cut intake calories but it should be a balanced diet. Exercise, yoga, good eating habits and active life style may be adopted to reduce your weight.

Food Intolerance

In simple words, that food or its particles those can not be digested by our body is called food intolerance. There are certain things in food which our body can not digest. This type of food may arise various problems like–vomiting, acid, losse motion, pain in abdonen etc.

Sometimes these symtoms do not shown up after having food because sometimes our body can digest that food in small quantity but not in large quantity. It depends upon how much our body produce enzymes or bile juice. If it does not make emzymes, then body won't be able to digest that food even in small quantity.

Normally, non-vegetarion food, packed food, processed food & stored for longer time are a few of food intorlance.

Causes of Food Intolerance

1. Lack of enzyme responsible for breaking down particles of food and activitation of metabolism.
2. These deficiency are hereditary also.
3. Sometimes to store food for longer duration, we tend to mix up some chemicals which are not easy to digest.
4. Unhealthy.
5. Lack of fiber in diet.
6. Excess in take of fried food.
7. Activities starts in metablisom when we have food in mouth. It is crushed by teeth and gets diluted. In abdomen various bile juice mix up in food. Lack of these juices affect digestion that causes food intolerance.
8. There may be many other reasons also like–fungus in food, extra spicy, body not used to particular food.

Symptoms : Food intolerance causes abdomen pain, vommiting, loose motions, acidity, heart burn, headace, anxiety & lack of vitamins.

Management of Food Intolerance

To avoid food intolerance, a person need to change his/her diet, or leave that particular food, then he/she shall consult a doctor for proper guidance and manegment.

Food Myths

Each country & society have various myths regarding food. Some of myths have been traditional following many years back. Those are not either natural or scientifically proved. Some myths are decribed below :

1. **Don't Take Heavy Breakfast :** Normally, it is advised to take light breakfast and heavy dinner. But truth is completely opposite.We shall take heavy breakfast so that energy is utilized in whole day, while dinner shall be light beause we tend to sleep in night and requires less energy.
2. **Do Not Eat Frequently :** People think that eating frequently results excess intake of calories and tends to get fat but it is not right. We can eat frequently with subject to condition that food shall be of essential nutrients.

3. **Sweets Are Not Good For Health :** People assume that sweets are not good for health but sweets are good source of carbohydrate which provides instant energy to body. If one has an active life style, then he can have sweets.
4. **Do Not Drink Water During Meals :** This statements is not true. We shall drink water whenever we have an urge.
5. **Don't Take Milk Just After Eating Fish :** It is normally assumed that having milk after fish can cause white spot on body while many researches have declined that fact.
6. **Strave Yourself To Lose Weight :** It is assumed that dieting causes loss in weight but in reality it causes lethargy and tiredness. To loose weight we shall have food that is easy to digest.
7. **Exercise Make You Feel Hungry :** Normally it is assumeed that excess burn of calories during exercise increase appetite. That's why people do not exercise. But doing exercise, appetite remain the same as per body need.
8. **Rice and Patato Increase Obesity :** Some people assume that due to abundance of carbohydrate in rice and potato causes increase in body weight but these two are good source of energy.
9. **Egg Increase Cholestrol Level :** Many people assume that eggs have cholestrol which causes heart related problems. But this is untrue. Egg have protein which is neessary for players.
10. **Do Not Take in Greasy Meals :** People who think that they should not have greasy foods. But one thing to understand is that unsuturated fat like coconut, soyabean, mustard, almond oil are not bad for health. We shall avoid deep fried junk foods.

Practice Questions 2.3

I. Short–I Question Answers (3 Marks, 100 Words)

Q.1. Write the causes and managment of food intolerance.

Q.2. Write the basis of Body Mass Index on Ideal Weight.

Q.3. What do you understand by dieting? Write its effects on health.

Q.4. What is food intolerance? Discuss any three causes.

Q.5. Write in detail about the food myths.

Q.6. Write the difference between food myths and food intolerance.

II. Short–II Question Answers (5 Marks, 200 Words)

Q.1. Write in detail about Healthy/Ideal weight maintenance.

Q.2. What do you understand by Ideal weight? Write down the pit falls/ill effects of dieting.

Q.3. What are the famous food myths practiced in present era in our society. Elaborate.

Questions Asked in Examination in Previous Years

Short Answer Questions

1. Define balance diet and mention the elements of diet. (*CBSE 2011*)
2. Write briefly about minerals as an important nutritive component. (*CBSE 2016*)
3. Explain two sources each of vitamin and iron. (*CBSE 2015, 16*)
4. Explain any three myths about dieting. (*CBSE SQP 2017*)
5. Describe the various types of fats? What are the different sources of fats? (*CBSE SQP 2019*)

Long Answer Questions

1. What is balance diet? Elucidate its any four constituents. (*CBSE 2013*)
2. Vitamins are essential for our metabolic process. What happens if our diet is devoid of vitamins? (*CBSE 2012*)
3. Explain any five essential elements of diet. (*CBSE 2014, 15*)
4. What is the role of various elements of diet on performance of an athlete? (*CBSE 2014*)
5. Diet for sports persons is very important. What should be the aims of prepative diet for sports persons. (*CBSE 2015*)
6. What are the filfalls of dieting? Explain any three. (*CBSE SQP 2019*)

Multiple Choice Type Questions

Q.1. The percentage of water in normal human body is :

(*a*) 40–50 (*b*) 60–70
(*c*) 70–80 (*d*) 80–90

Q.2. Which nutrient provides more than double energy provided by carbohydrate in human body?

(*a*) Vitamin (*b*) Minerals
(*c*) Fats (*d*) Starch

Q.3. Which nutrient helps our body to fight against infections?

(*a*) Carbohydrate (*b*) Protein
(*c*) Starch (*d*) Fats

Q.4. ..... is essential for the formation of haemoglobin in blood.

(*a*) Sodium (*b*) Calcium
(*c*) Iron (*d*) Phosphorous

Q.5. Disease caused by the deficiency of iodine is ..... .

(*a*) Swineflu (*b*) Anemia
(*c*) Goiter (*d*) Chicken pox

Q.6. ..... helps to maintain a constant body temperature

(*a*) Water (*b*) Fat
(*c*) Protein (*d*) Vitamin

Q.7. A young body needs ..... litres of water every day.

(*a*) 2–3 lts. (*b*) 1–2 lts.
(*c*) 7–8 lts. (*d*) 10–15 lts.

Q.8. Deficiency of protein in infants leads to:

(*a*) Goiter (*b*) Marasmus
(*c*) Obesity (*d*) Anemia

Q.9. Ricket is caused by deficiency of:

(*a*) Vitamin A (*b*) Vitamin E
(*c*) Vitamin B (*d*) Vitamin D

Q.10. Paneer is good souce of

(*a*) Fat (*b*) Protein
(*c*) Carbohydrate (*d*) Vitamin

Q.11. Which is a protein source of plant origin?

(*a*) Egg (*b*) Milk
(*c*) Spinache (*d*) Soyabean

Q.12. Night blindness is caused by deficiency of .....

(*a*) Vitamin A (*b*) Vitamin C
(*c*) Vitamin D (*d*) Vitamin B

Q.13. A substance needed by body for growth, energy, repairs and maintaineness is called .....

(*a*) nutrient (*b*) calories
(*c*) fatty acid (*d*) nutrient

Q.14. All of following are nutrient found in food except

(*a*) Vitamin (*b*) Protein
(*c*) Plasma (*d*) None of these

Q.15. A diet high in saturated fat can be linked to .....?

(*a*) Kidney Failure (*b*) Cardiovascular disease
(*c*) Anneroxia (*d*) Bullimia

Q.16. Food passes through starch directly by–

(*a*) Small Intestive (*b*) Large Intestine
(*c*) Pancreas (*d*) Heart

Q.17. A ..... is a unit of energy that indicate amount of energy?

(*a*) Label (*b*) Basket
(*c*) Calorie (*d*) Food Pyramid

Q.18. A gram of Fat provides ..... calories.

(*a*) 3 (*b*) 6
(*c*) 9 (*d*) 12

Q.19. Citrus Fruits are source of:

(*a*) Calcium (*b*) Vitamin B
(*c*) Vitamin C (*d*) Calorie

Q.20. Which of following is best source of omega 3 fatty acids?

(*a*) Corn oil (*b*) Wheat produces
(*c*) Pork (*d*) Sardines

Q.21. Fatty acids are stored in ..... .

(*a*) Connective tissue (*b*) Adipose tissue
(*c*) Upper most layer of skin (*d*) None of these

Q.22. Deficiency of Vitamin D causes ..... .

(*a*) Beri Beri (*b*) Night Blindness
(*c*) Scurvy (*d*) Rickets

Q.23. Total number of Vitamins required by human body are

(*a*) 10 (*b*) 11
(*c*) 12 (*d*) 13

Q.24. Chief source of Vitamin A is

(*a*) Carrot (*b*) Egg
(*c*) Guava (*d*) Banana

Q.25. Which Vitamin is easily destroyed by heat and air?

(*a*) Vitamin K (*b*) Vitamin C
(*c*) Vitamin D (*d*) Vitamin A

Q. 26. "Thiamin" comes under which category?

(*a*) Fat soluble (*b*) Water soluble
(*c*) Animal Protein (*d*) Minerals

Q.27. Which components of Nutrient is having role of repair of tissues.

(*a*) Vitamin K (*b*) Protein
(*c*) Iron (*d*) Calcium

Q.28. Protein Contains –

(*a*) Carbon & hydrogen (*b*) Oxygen & nitrogen
(*c*) A & B Both (*d*) None of these

Q.29. Which are the fat soluble vitamins?

(*a*) A. B, D E (*b*) A, D, E, K,
(*c*) E, K, B, C. (*d*) A, B, C, D,

Q.30. Pantothenic acid is also called–

(*a*) B_3 (*b*) B_{12}
(*c*) B_5 (*d*) B_9

Q.31. Identify the sources of fat-

(*a*) Rice, Maize, Jowar (*b*) Unprocessed starched vegetable
(*c*) Cheese, Curd, milk, Meat (*d*) Both (*b*) and (*c*)

Q.32. ..... causes muscle weakness and vision problem

(*a*) Vitamin C (*b*) Vitamin K
(*c*) Vitamin E (*d*) Vitamin B_5

Q.33. _____ ratio of H_2 and O_2 in water

(*a*) 2:1 (*b*) 3:2
(*c*) 4:1 (*d*) 1:1

Q.34. _____ helps in blood clotting.

(*a*) Calcium (*b*) Sodium
(*c*) Phosphorus (*d*) Vitamin B_{12}

Q.35. _____ is the main source of energy for human body.

(*a*) Water (*b*) Carbohydrate
(*c*) Protein (*d*) Calcium

Q.36. Which of the following is not a mineral?

(*a*) Calcium (*b*) Iodine
(*c*) Sulphur (*d*) Biotin

Q.37. How much % of water dose our blood posses?

(*a*) 19 (*b*) 90
(*b*) 80 (*d*) 75