Unit - 5

Physical Education

Unit - 5

Sports & Nutrition..!!

Unit Contents

5.1 Concept of Balance Diet and nutrition

5.2 Macro and Micro Nutrients: Food sources & functions

5.3 Nutritive & Non-Nutritive Components of Diet

5.4 Eating for Weight control – A Healthy Weight, The Pitfalls of Dieting, Food Intolerance, and food Myths

5.5 Importance of Diet in Sports -Pre, During and Post competition Requirements

Sample Question Papers..!!

10. Given below are two statements, one of which is labelled as Assertion (A) and the other is labeled as Reason (R).

Assertion: Scurvy is caused due to the deficiency of Vitamin C.

Reason: The disease sets in when the diet does not include fresh vegetables and fruits for a long time.

Which one of the following statements is correct?

(a) Both (A) and (R) are true and (R) is the correct explanation of (A)

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

Ans. (b) Both (A) and (R) are true but (R) is not the correct explanation of (A)

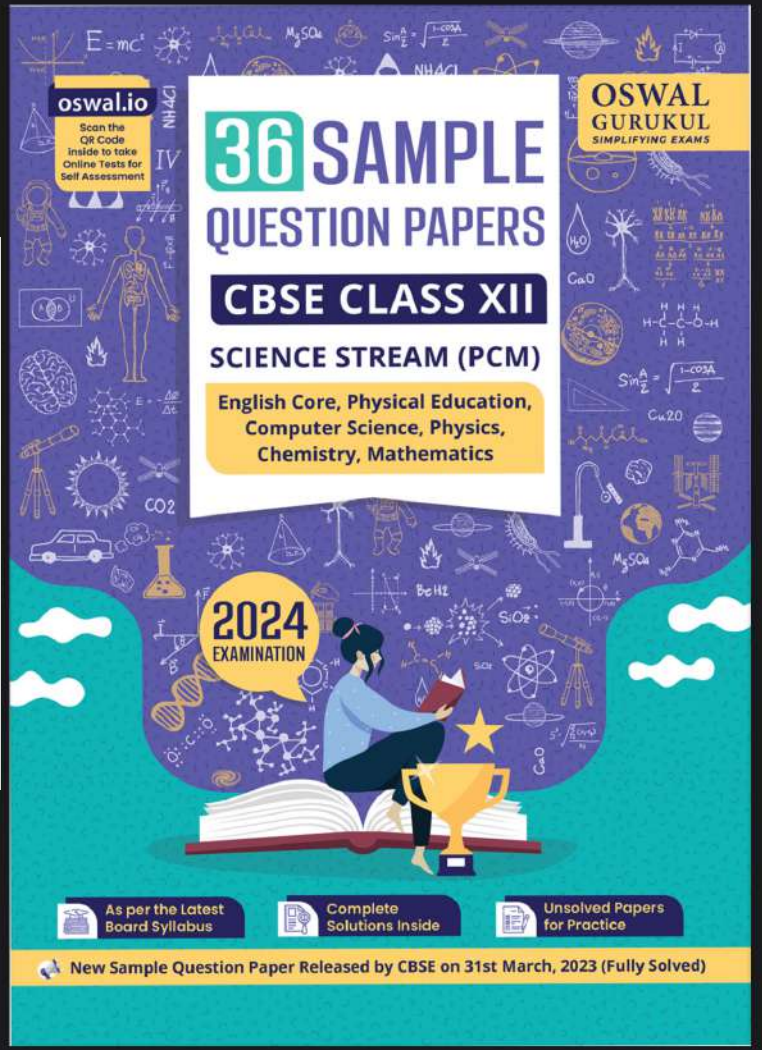
Explanation: Scurvy is a deficiency disease caused by deficiency of vitamin C. Source of vitamin C includes citrus fruits like orange, lemon and vegetables like cabbage, green peppers, spinach etc.

11. One gram of carbohydrate contains _____ Calories

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

Ans. (c) 4

Explanation: Carbohydrates provide energy needed by the body (1g of Carbohydrates provides 4 Kcal of energy).



25. What are the benefits of Non-Nutritive foods? **[1+1+1=3]**

Ans. A good diet is divided into nutritive and non-nutritive parts, where the nutritional part of food includes carbohydrates, fats, proteins, vitamins, and minerals. At the same time, the non-nutritive components either natural or artificial which include water, fibers, flavours, aromas, and the colour substances that are there in the food.

(a) Phytochemicals are chemical compounds potentially helpful compounds found in plant foods such as fruits, vegetables, grains, beans, and other plants. Some of these phytochemicals are believed to act as antioxidants and protect cells from damage that could lead to cancer.

(b) Anthocyanins are a group of antioxidants found in red, purple, and blue fruits and vegetables. Anthocyanin gives grapes, blueberries, cranberries, and raspberries their dark colour. They have been shown in the laboratory to have anti-inflammatory and anti-tumour properties.

(c) Flavonoid compounds are products extracted from plants and they are found in several parts of the plant. Flavonoids are found in vegetables, fruits and grains like soybeans, chickpeas and may act a little bit like oestrogen.

Complete Chapter’s Summary

5.1 Balanced diet and Nutrition :

A diet which contains the proper amount of each nutrient, i.e. like carbohydrate, fat, protein etc. according to the needs of individual is called **Balanced Diet.**

A diet which consists of all the essential food constituents i.e **protein, carbohydrates, fats, vitamins, minerals and water** in correct proportion is called balanced diet.

A. Balanced Diet : - A complete food, a diet contains adequate amounts of all the necessary nutrients required for proper growth & maintenance of body.

B. Nutrition : - It is the process of obtaining & consuming food or breaking down food & substances taken in by the mouth to use for energy in the body.

3. Nutrients: - The **energic food** in our diet consists of various types of **essential chemicals** for our body termed as nutrients: - e.g. Protein, fat, carbohydrates, vitamins &minerals.

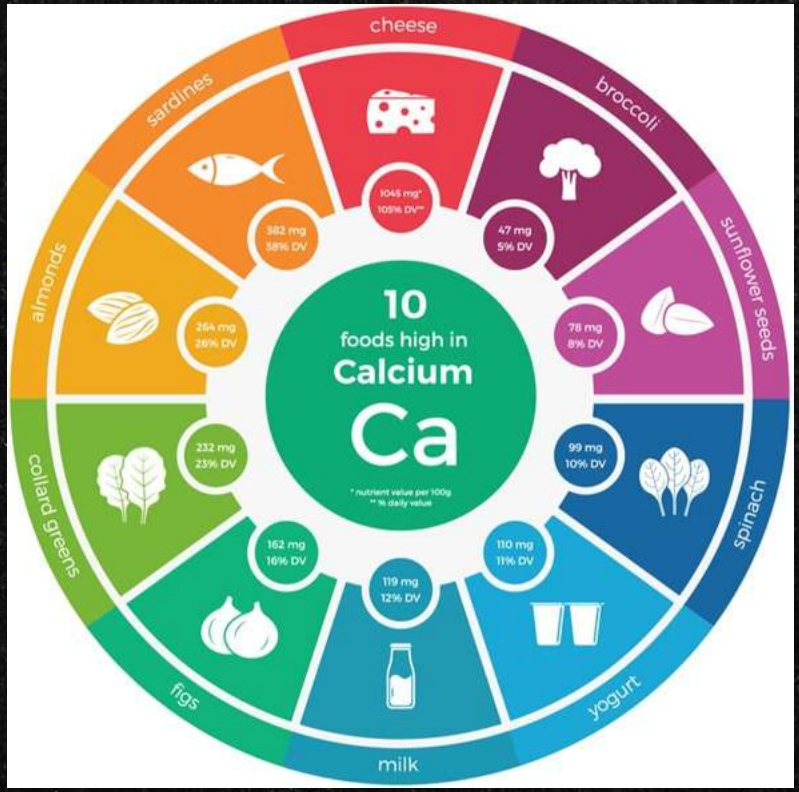
Goals of nutrition :
(i) stay hydrated
(ii) provide immediate fuel
(ìì) boost performance
(ív) preserve muscle and
(v) improve recovery.

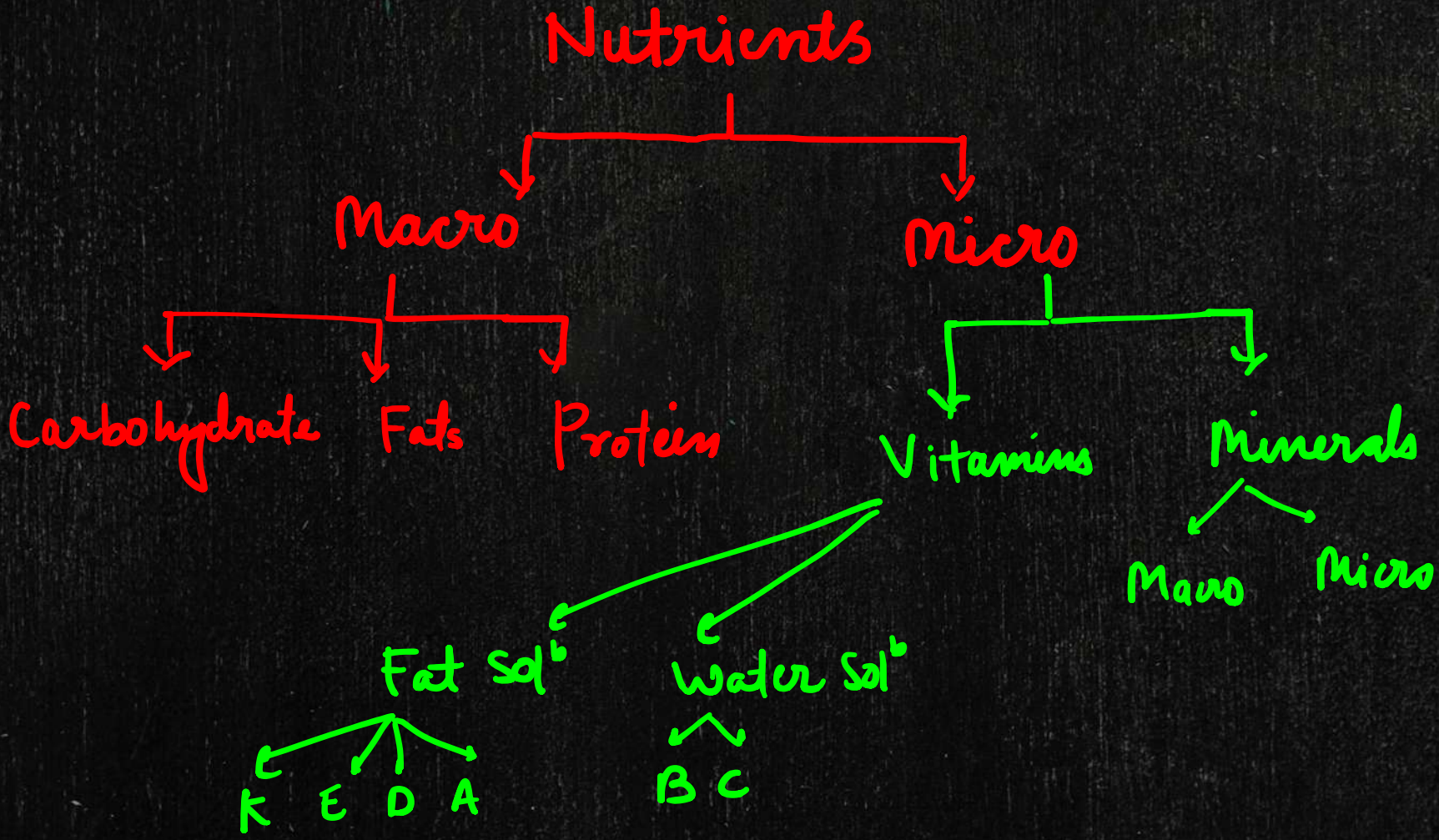
5.2 : Macro & Micro Nutrients :

Some nutrients are needed in larger amounts, these are called **macronutrients.**

Nutrients like Carbohydrates, proteins and fats along with water are macronutrients.

Other nutrients like vitamins and minerals are required in small amounts and are called **micronutrients.**




Nutrients
Macro
Micro
Carbohydrate
Fats
Protein
Vitamins
Minerals
Macro
Micro
Fat sol^b
Water sol^b
K
E
D
A
B
C

Macro nutrients :

Macronutrients mainly include carbohydrates, proteins and fats and also water which are **required in large quantities** and their main function being the release of energy in body.

Carbohydrates, proteins and fats are macronutrients and are also called '**proximate principles**' because they form the main bulk of the diet.

In Indian meals, they contribute to the total energy intake in the following proportion: **carbohydrates: 55-60%; protein: 10-15% and fats: 20-30%.**

Water does not provide energy but is a vital nutrient required in large quantity for functioning of metabolic processes in the body and various regulatory functions. Therefore, it is also considered a macronutrient.

Micro nutrients :

Micronutrients mainly comprise vitamins and minerals which are required in minute quantities.
However, both macro nutrients as well as micro nutrients are essential.

Ex : Micro nutrients are **chlorine, iron, manganese, zinc, boron, sodium, copper, molybdenum and nickel.**

5.3 Non-Nutritive and Nutritive Components of Diet

Nutritive components of diet :

CARBOHYDRATES –

Carbohydrates are organic compounds made up of Carbon, Hydrogen and Oxygen.
Carbohydrates are a major source of energy and provide **4kcal per gram.**

Carbohydrates are needed to provide energy during **exercise**.
Carbohydrates are stored mostly in the **muscles and liver**.
Complex carbohydrates are found in foods such as pasta, bagels, whole grain breads, and rice

PROTEIN –

Protein is important for **muscle growth and to repair body tissues**. Protein can also be used by the body for energy, but only after carbohydrate stores have been used up.

Only strength training and exercise will change muscle. Athletes, even body builders, need only a little bit of extra protein to support muscle growth.

Athletes can easily meet this increased need by eating more total calories (eating more food).

Protein requirement for Indian adults is **1 g/kg body weight** (according to ICMR).

Thus, for a man weighing 60 kg, the protein requirement would be 60g/day. In terms of percentage of total energy intake, protein intake should be between 10-15% of total energy consumed.

In no case, it should exceed 35% of total energy intake. Protein requirement,
however, may increase to up to 2 g/kg body weight during sports and exercise depending upon the type of sports and duration and intensity of training.

Too little, or, excess intake of protein have health implications, hence proteins **should be consumed as required and recommended.**

Fat-

Lipids or Dietary Fats a broader term used for both oils and fats.
Oils are basically liquid at room temperature and fats are solid at room temperature. It is the presence of different types of fatty acids which make them liquid or solid.

Fatty acids are the building blocks of fats and oils. Fatty acids are classified as Saturated or Unsaturated Fats depending upon the **presence of double bond** in their chemical structure.

Fat-

It provides the **highest concentration of energy** of all the nutrients. One gram of fat equals nine calories. One pound of stored fat provides approximately 3,600 calories of energy.

Saturated fats are found primarily in animal sources like meat, egg yolks, yogurt, cheese, butter, milk. This type of fat is often solid at room temperature. Unsaturated fats include monounsaturated and polyunsaturated fats, which are typically found in plant food sources and are usually liquid at room temperature.

Saturated Fat

meats, butter,
dairy products

solid at room
temperature

increase levels of
"bad" cholesterol
(low-density lipoprotein)

low-density lipoprotein
clogs arteries

Unsaturated Fat

vegetable oils

liquid at room
temperature

increase levels of
"good" cholesterol
(high-density lipoprotein)

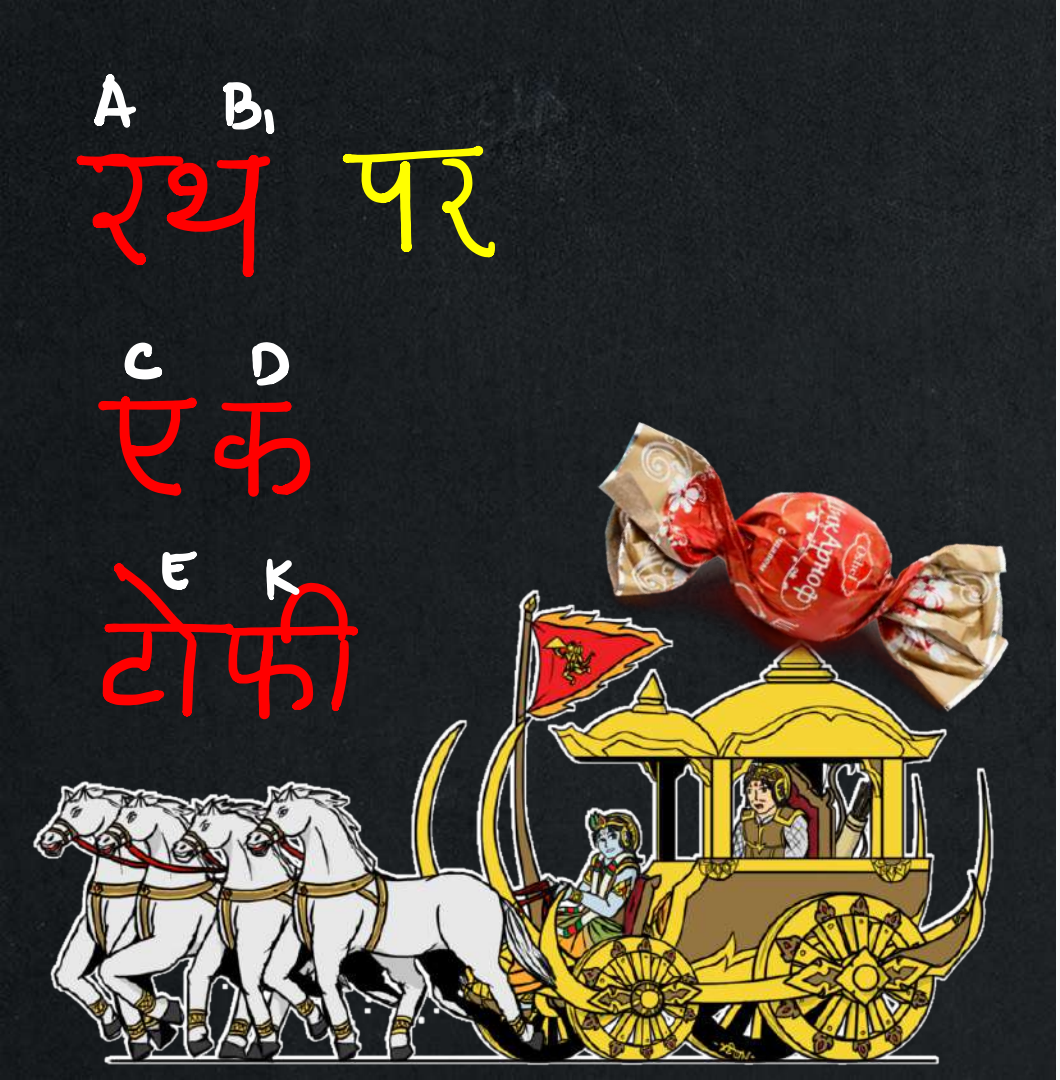
high-density lipoprotein,
or HDL, "grabs" LDL
and escorts it to the liver
where **LDL is broken down
and eventually removed
from the body**

Vitamin –

A well-planned and nutritionally adequate diet should meet an athlete‘s vitamin and mineral needs. Supplements will only be of any benefit if your diet is inadequate or you have a diagnosed deficiency, such as an iron or calcium deficiency.

Use of vitamin and mineral supplements is potentially dangerous and they should not be taken without the advice of a qualified health professional.

Form/Scientific Name	Common Name
Retinol	Vitamin A
Thiamine	Vitamin B1
Riboflavine	Vitamin B2
Pantothenic Acid	Vitamin B5
Pyridoxine	Vitamin B6
Niacin or Nicotinic Acid	Vitamin B3
Biotin	Vitamin B7
Folic Acid	Vitamin B9
Cobalamin	Vitamin B12
Ascorbic Acid	Vitamin C
Calciferol	Vitamin D
Tocopherol	Vitamin E
Phytomenadione	Vitamin K
NOTE: Tocopherol is a form of Vitamin E, retinol is a form of Vitamin A.	



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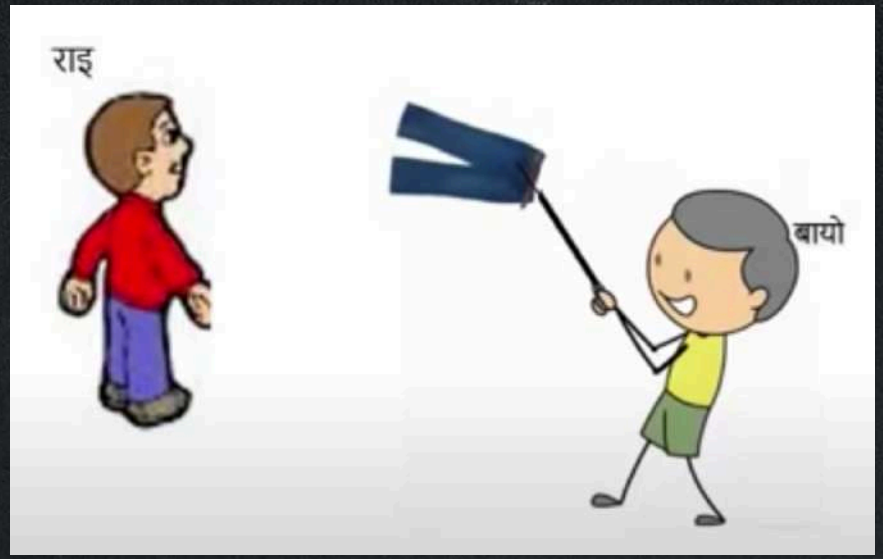
Cobalamin	Vitamin B12
Ascorbic Acid	Vitamin C
Calciferol	Vitamin D
Tocopherol	Vitamin E
Phytomenadione	Vitamin K
NOTE: Tocopherol is a form of Vitamin E, retinol is a form of Vitamin A.	

- B1 – थायमिन
- B2-राइबोफ्लेविन
- B3-निकोटिनेमाइड
- B5-पैण्टोथेनिक
- B6-पायरीडॉक्सीन
- B7-बायोटिन
- B11-फॉलिक अम्ल
- B12-सायनोकबालमीन



B1 B2 B3 B5
थी राइ की नीको पेन्ट
पाई बायो ने फास कर
B6 B7 B11 B12

Vitamin	Inventor/ Discoverer
A	Mc. Collum
B	Mc. Collum
C	Holst
D	Mc. Collum

Q7. Who discovered Vitamin A?

a) Dr. Mc Collum
b) Dr. Coubertin
c) Dr. J.B.Nash
d) Dr. Harvard

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

Q8. What according to you is the main cause for night blindness?

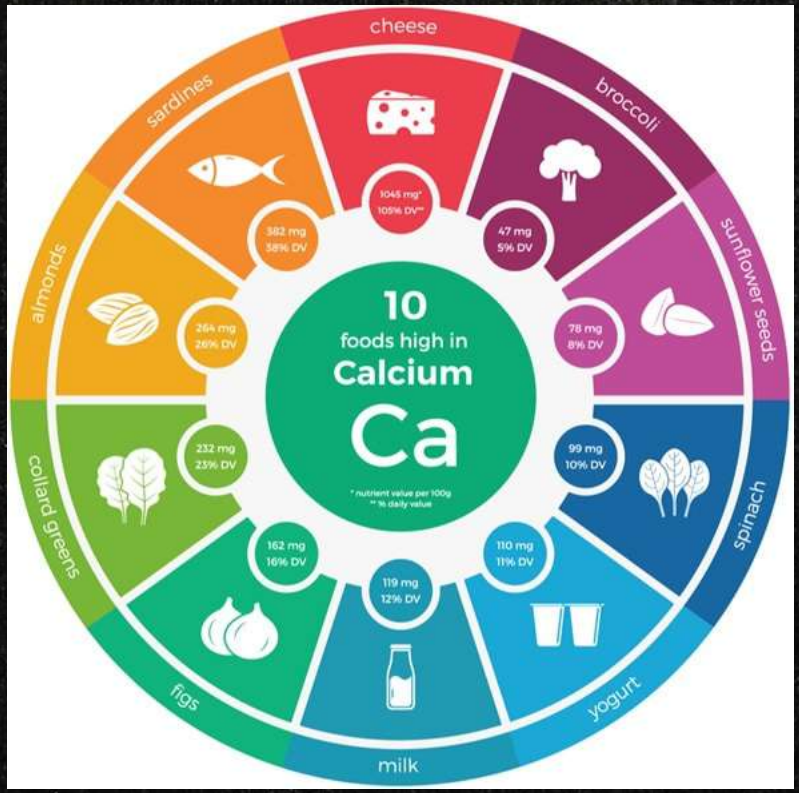
a) Deficiency of Vit. E
b) Deficiency of Vit. C
c) Deficiency of Vit. A
d) Deficiency of Vit. D

Vitamins	Benefits of Vitamins
A	Needed for healthy eyes, skin, nervous, respiratory, digestive systems
B	Needed for better metabolism process
C	Needed for teeth, bones and heeling purpose
D	Needed for bones
E	Needed for restoration of cell membrane and body structure
K	Needed for blood clotting

Minerals: -

Mineral are very essential in our diet. 4% of our body weight is made up of minerals. These are required **for healthy teeth, bones and muscles.**

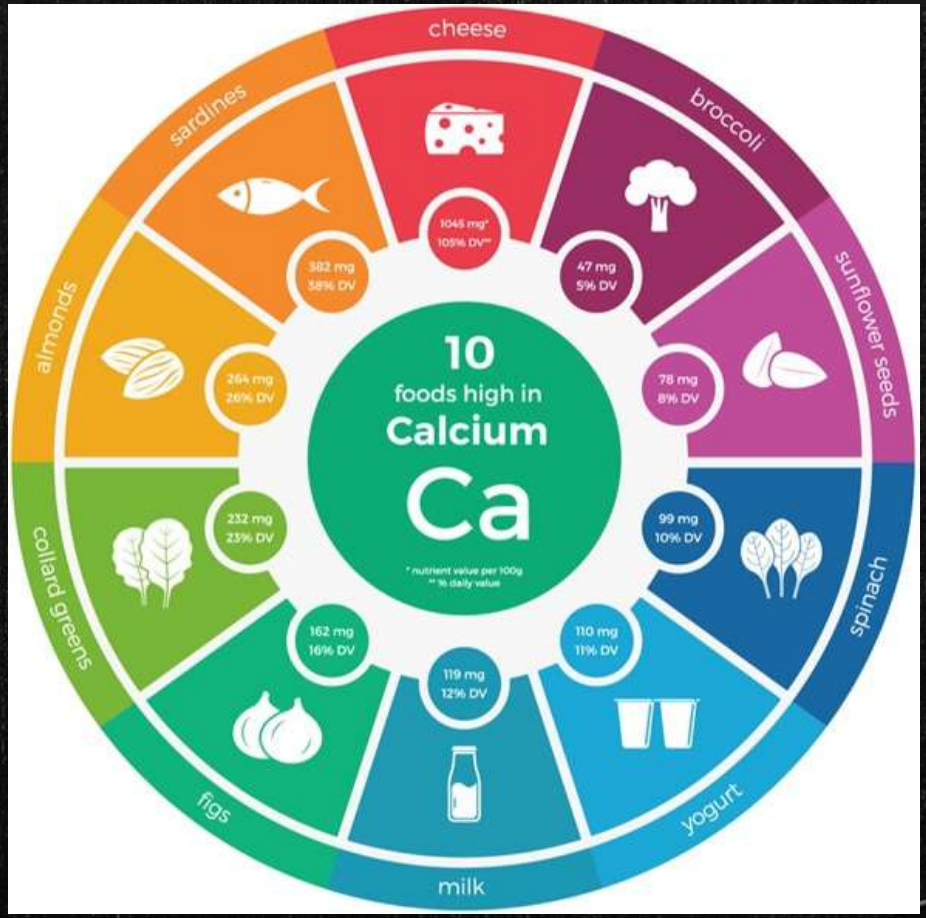
It is also used by body for various activities such as transmission of nerve impulses, formation of hormones and maintenance of heart beat etc.



Macro Minerals: -

a) Calcium : Calcium is among the top macro-minerals in terms of growth and development of our bones and teeth. It helps in blood clotting.

Its deficiency may cause **rickets**. The sources are cheese, milk, orange, juice, eggs, green leafy vegetables and cereals.



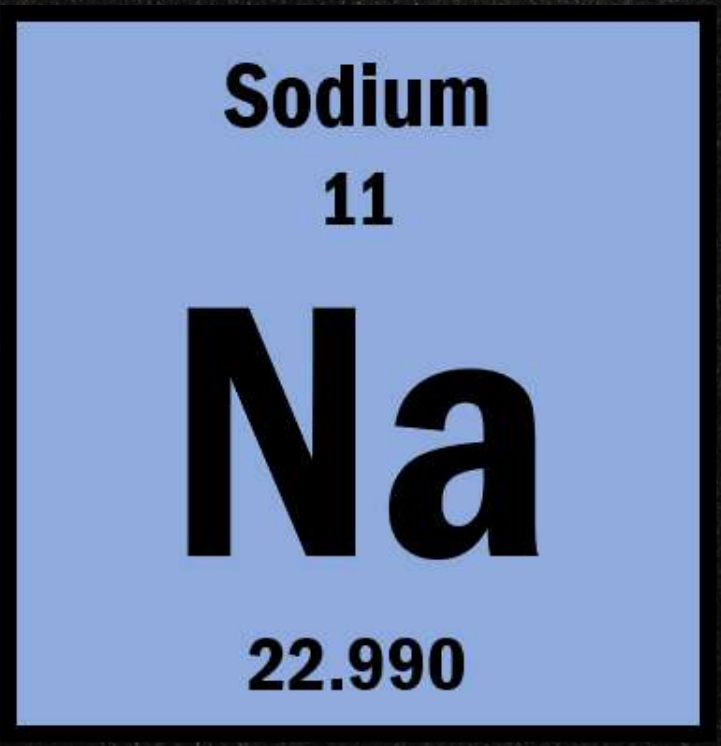
b) Potassium :

Potassium is one of the most required minerals in diet. It is helpful in keeping the nervous system and muscular system fit and active all the time.

It helps in maintaining the amount of water in blood and tissues. Its main sources are banana, tomatoes, green leafy vegetables, beans etc.

c) Sodium : It helps in muscular activities. It also helps in **transmission of nerve impulses.**

The sources are table salts, pickles and butter etc.



d) Magnesium: It **repairs and maintains body cells.** It is found in meat, brown rice, beans and whole grains etc.

e) Phosphorus :

Phosphorus helps in the formation of bone and teeth. It keeps the muscles and nerve activities normal.

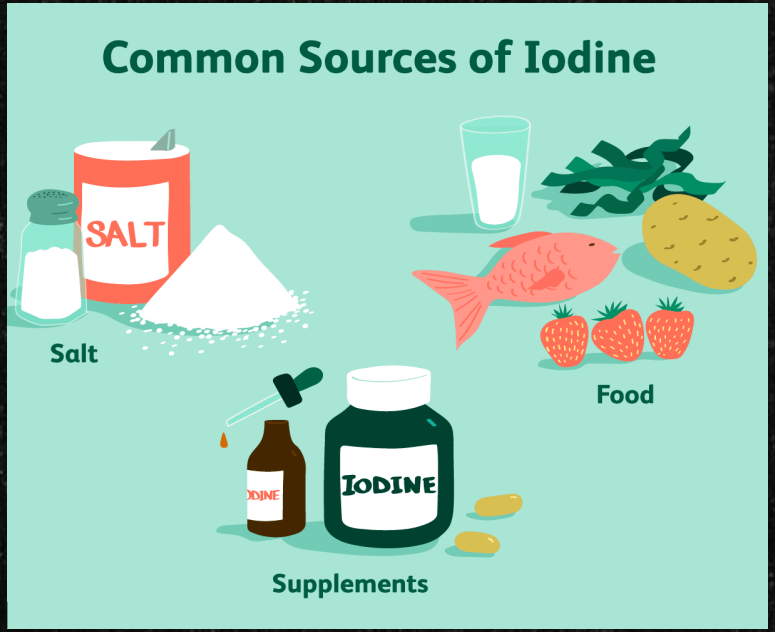
The sources are egg, fish, liver, milk, and unpolished rice etc.

Micro Minerals :

a) Iodine :

It produces the hormones for the **thyroid gland**. It is also significant for proper growth and development.

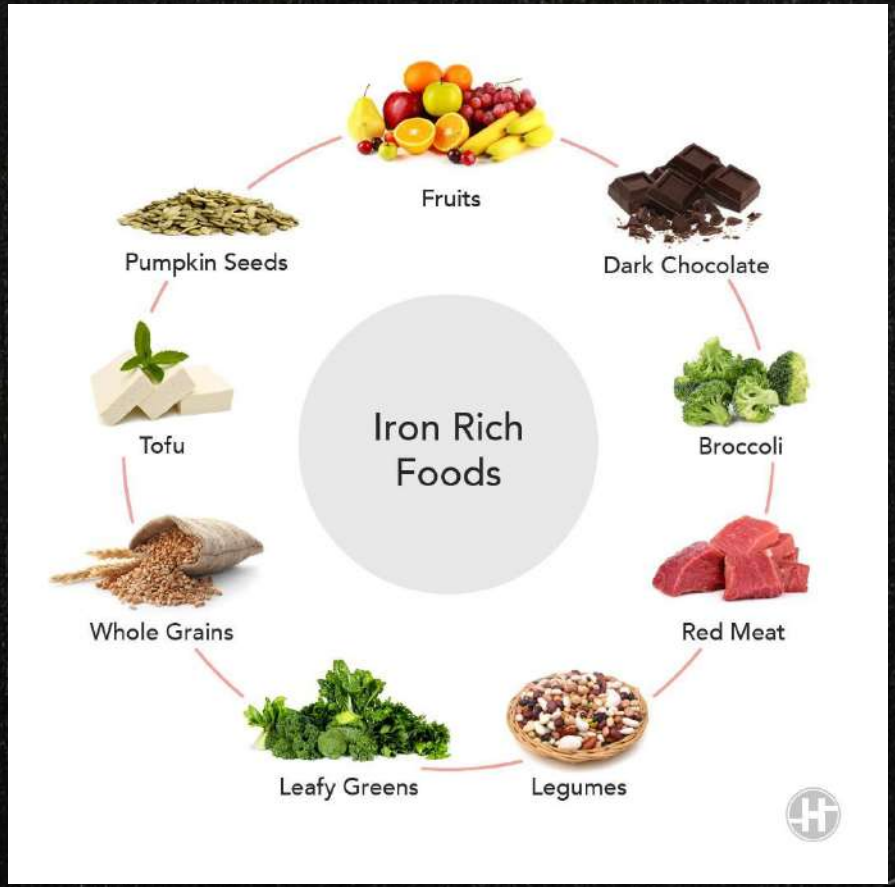
Lack of iodine can **cause goiter** (swollen thyroid gland) and mental retardation. The sources are iodized salt, fish and sea food.



b) Iron :

It is essential in the production of **hemoglobin**.
Its deficiency causes anemia.

The sources are meat, egg, dry fruits, spinach banana and greet leaf vegetables.



c) Chromium :

It is essential in the production of hemoglobin. Its deficiency may cause diabetes.

The sources are soya beans, black gram, carrot, tomato, groundnuts, bajra and barley.

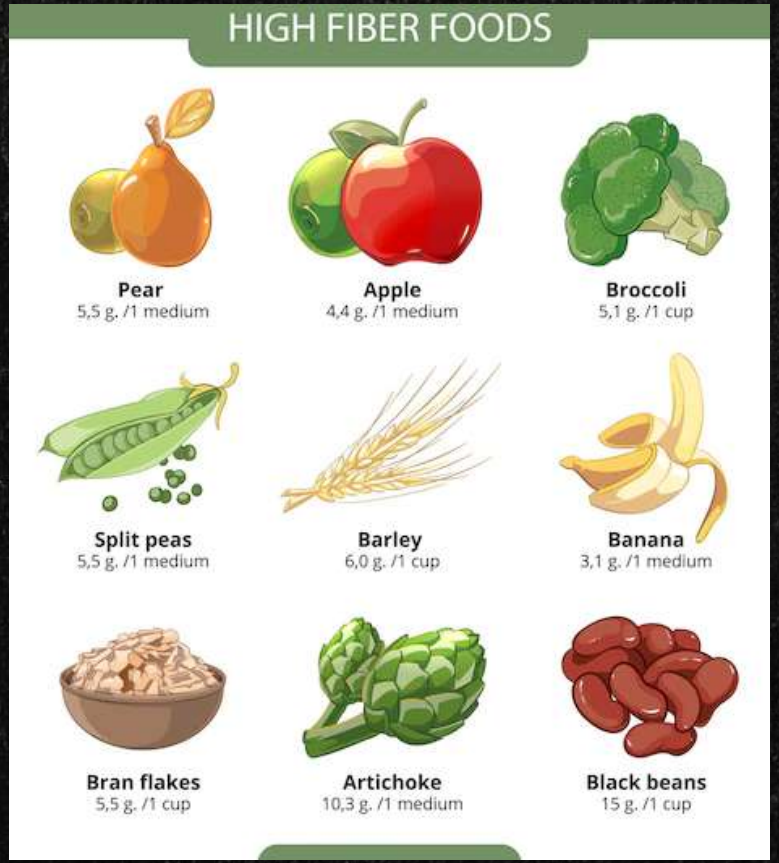
Non nutritive components of diet :

a) Water
b) Roughage
c) Artificial sweeteners
d) Preservatives
e) Plant products

Fiber or roughage has **no nutritive value**. It is undigested part of the food or it can be said that it cannot be digested by human intestinal tract.

It **improves intestinal function** by adding bulk to the food.

It helps the individual to **satisfy the appetite.** It prevents constipation.



Nutrient	Function	Sources
Carbohydrates	Carbohydrates provide energy needed by the body and the nervous system, brain and red blood cells; spare proteins for their important functions (if enough carbohydrates are not available, proteins are used for energy-giving);	Fruits, cereal grains, milk, suger, rice, vegetables, pasta, breads

	enable proper utilisation of fat by providing substrates for fat metabolism.	
Roughage	**Dietary fibre or roughage** provides feeling of fullness ie., one does not feel hungry soon after having a meal: provides bulk to the diet, helps in smooth elimination of stool or faeces; prevents diseases like cancer, diabetes and heart disease, has cholesterol lowering effect; Provides energy (4Kcal/gm)	Whole grain cereals (whole wheat atta), whole pulses, GLVs, peas, beans and other vegetables, fruits like guava, orange, pineapple
Proteins	Proteins build and repair body cells; form part of various enzymes, hormones, and antibodies; Provide energy (4 Kcal/ gm)	Milk and milk products, vegetables, grains, fish, eggs, poultry, meat, legumes
Fats	Fats provide energy (9kcal/g); carry fat-soluble vitamins; are part of cell membranes, membranes around nerves, hormones, bile (for fat digestion)	Meat, poultry, fish, milk and milk products, nuts and seeds, vegetable oils, *desi ghee*, *vanaspati ghee*, butter, margarine, cheese

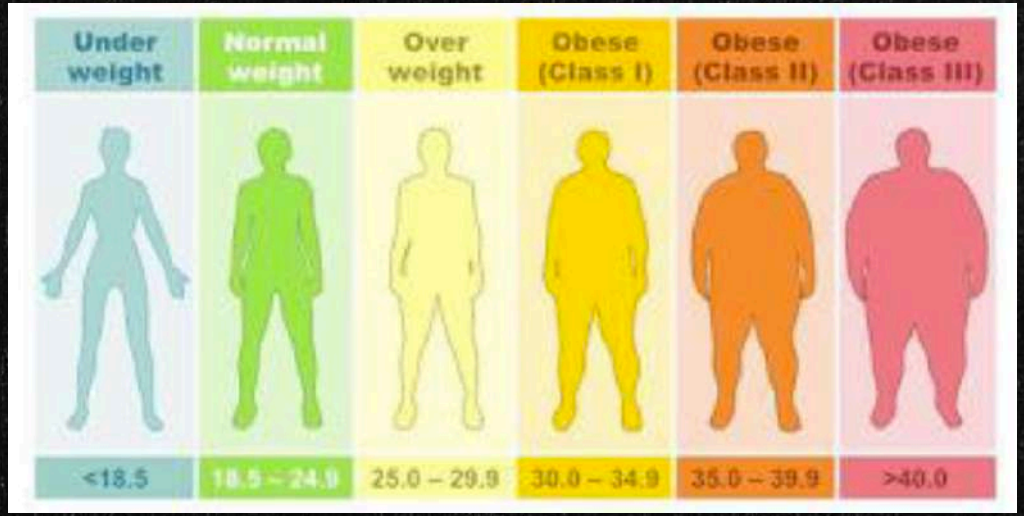
5.4 Eating for weight control :-

A healthy weight is a weight that lowers your risk for health problems, generally Body Mass Index (BMI) and waist size are good ways to achieve healthy weight.

Method to calculate BMI = Weight in Kg/(Height in m^2)

Category of BMI

1. Under Weight
2. Normal Weight
3. Over Weight
4. Obesity Class I
5. Obesity Class II
6. Obesity class III



Here are some useful tips for weight control with proper eating:

a. Avoid common pitfalls
b. Put a stop to emotional eating
c. Tune in what you eat
d. Fill up with fruit, veggies and fiber
e. Indulge without overindulging
f. Take charge of your food environment

PITFALL OF DIETING:

An individual who is overweight wants to reduce weight they starve for reducing weight many times skip meals to lose weight, sometimes take slimming pills.

- Extreme Reduction of Calories.
- Restriction on some nutrients
- Skipping meals
- Intake of calories through drinking

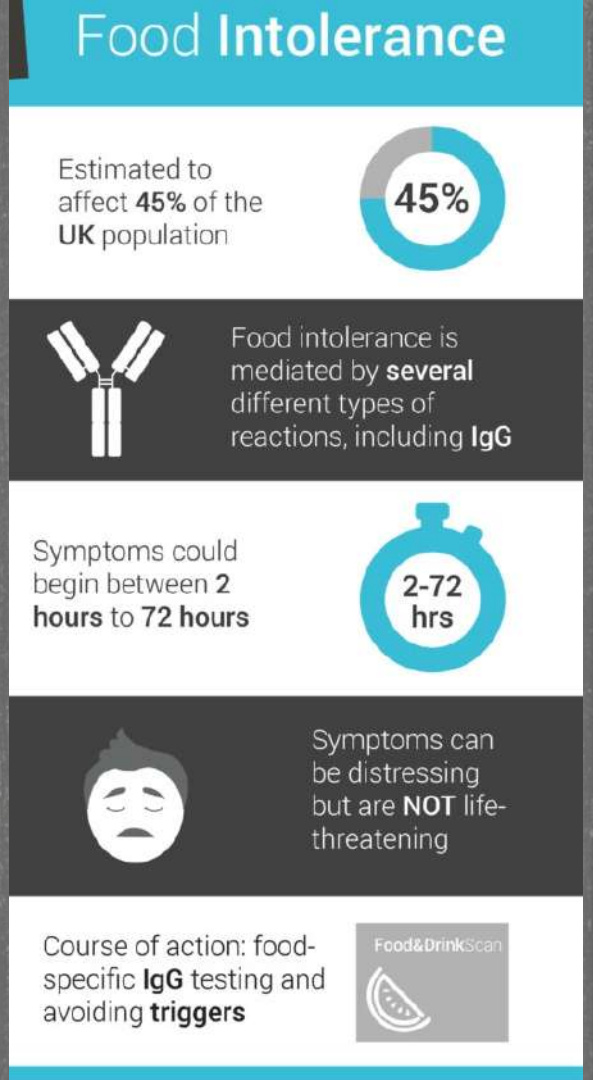
- Under estimating the calories.
- Intake of Labelled foods.
- Not preferring physical activities.
- low energy diet.
- Taking less liquids
- Starving

Food Intolerance:

Food intolerance is that when a **person has difficulty in digesting a particular food.**

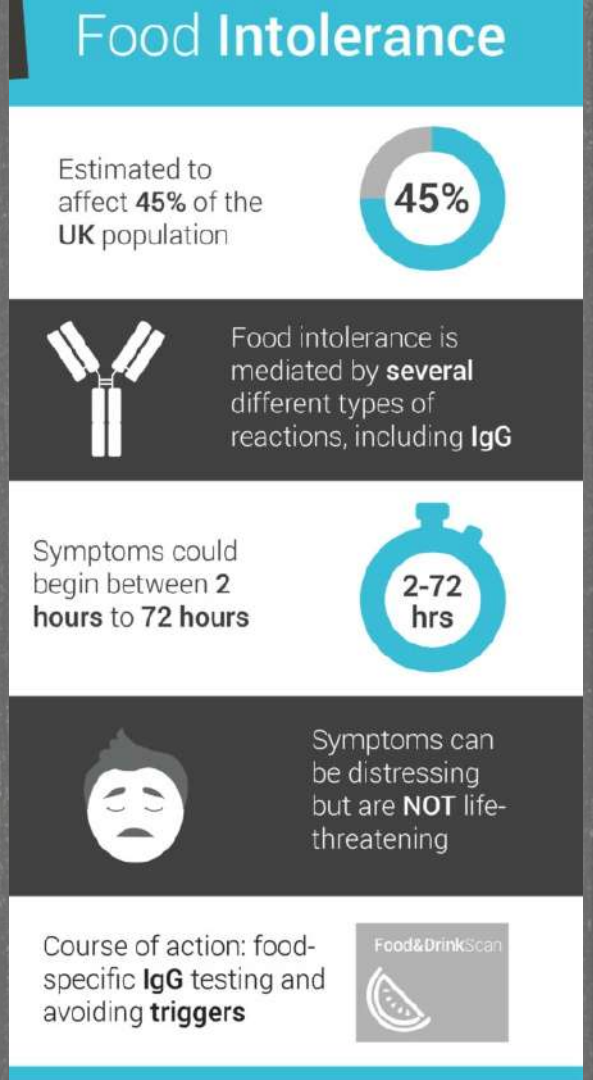
Symptoms : Nausea, Vomiting, Pain in joints, headache and rashes on skin, Diarrhea, sweating, palpitations, burning sensations on the skin stomach.

Food Intolerance means the **individual elements of certain foods that can not be properly processed** and absorbed by our digestive system.



Causes : Absence of activity of enzymes responsible for breaking down the food elements.

These are usually innate sometimes diet related or due to illness.



Food myths :

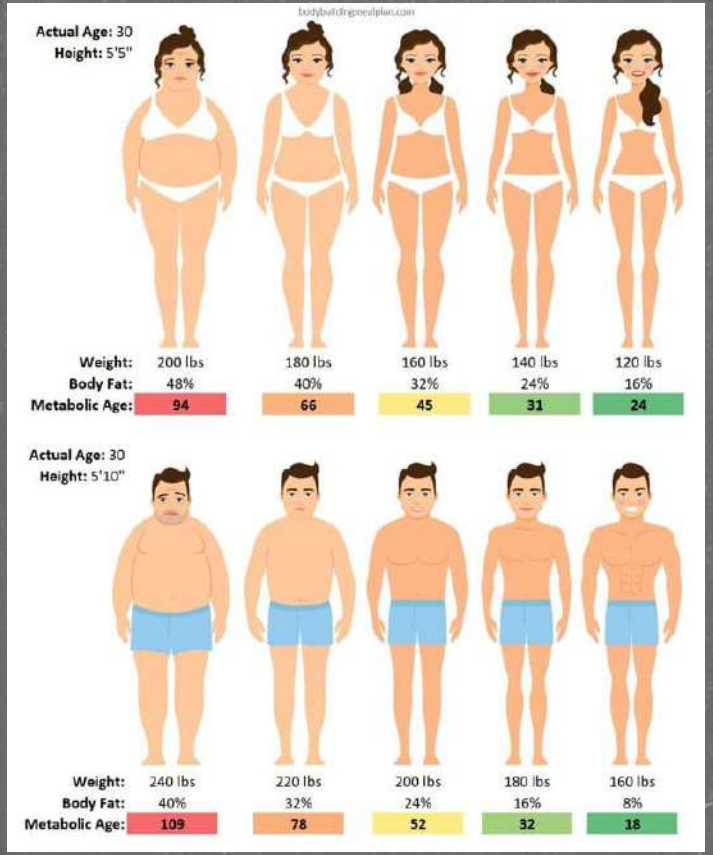
1. Eggs increases cholesterol level so avoid them
2. Drinking while eating makes you fat
3. Low fat or No fat diet are good.
4. Dieting or Fasting may loose weight.
5. Food eaten late night is more fattening.
6. Low fat milk has less calcium that full fat milk.
7. Vegetarian cannot build muscles.
8. Healthy food is expensive.

5.5 Importance of Diet in Sports -Pre, During and Post competition Requirements :

(1) To repair and recover.

(2) Helps in achieving body composition goals.

(3) Right kind of nutritional composition in pre- competition meals, during competition and post competition meals can help improve performance, delay fatigue and speed up recovery.



(4) Knowledge of nutrition is essential to make fitness, weight loss and weight gain programs successful in athletes.
Those sports persons who play in weight categories can achieve body weight goals with appropriate diets.
During offseason or no practice period, the diet should be such that it does not alter too much of body composition and prevents excessive weight gain.

(5) Increase performance.

(6) Dehydration can impair athletic performance. Therefore, sufficient intake of fluids and electrolytes ensures maximum hydration before, during and after exercise.

MCQs

Q1. What is the other name for Vitamin A?

a) Ascorbic Acid
b) Thiamine
c) Ratinol
d) Calciferol

Q2. What is the other name for Vitamin D?

a) Ascorbic Acid
b) Thiamine
c) Folic Acid
d) Calciferol

Q3. What is the other name for Vitamin C?

a) Ascorbic Acid
b) Thiamine
c) Folic Acid
d) Calciferol

Q4. What is the other name for Vitamin B2?

a) Niacin
b) Thiamine
c) Folic Acid
d) Riboflavin

Q5. What is the other name for Vitamin B1?

a) Niacin
b) Thiamine
c) Folic Acid
d) Riboflavin

Q6. What is the other name for Vitamin B11?

a) Niacin
b) Thiamine
c) Folic Acid
d) Riboflavin

Q1. Which is NOT a Micronutrient?

(a) Minerals
(b) Vitamins
(c) None
(d) Protein.

Q.2 Nutrients are the chemical in food which.....

1. Are needed for replacement of tissues
2. Are essential for growth
3. Our body needs
4. All of the above.

3. One function of proteins in our body is to.....

1. increase bulk of muscles
2. Improve our endurance
3. Form tissue and repair broken tissues.
4. Provide energy for normal activities

4. Which one of the following in not a macro nutrient?

1. Fats
2. Carbohydrates
3. Roughage.
4. Proteins

5. Which of the following is not a form of carbohydrate?

A. Multiple.
B. Simple
C. Complex
D. All of these

6: The mineral ..... is required for developing strong bones and teeth.

1. Potassium
2. Phosphorous.
3. Sodium
4. Copper

7: Which of the following vitamins is commonly known as Riboflavin?

1. B1
2. B2.
3. B3
4. B Complex

8. Which of the following is not a pitfall of dieting?

1. Eating too little
2. Skipping breakfast every day
3. Not performing normal exercises
4. None of the above.

9. Which of the following vitamins is **not fat soluble**?

1. B Complex.
2. E
3. K
4. A

10. Which of the following vitamins is not fat soluble?

1. C.
2. D
3. K
4. A

11. Fats and oils come under:

(a) protective or regulatory foods
(b) energy giving foods.
(c) bodybuilder group
(d) routine foods

12. 1 gram of fat provides

(a) 3 kcal
(b) 4 Kcal
(c) 5 Kcal
(d) 9 Kcal

Sample Paper Questions

10. Given below are two statements, one of which is labelled as Assertion (A) and the other is labeled as Reason (R).

Assertion: Scurvy is caused due to the deficiency of Vitamin C.

Reason: The disease sets in when the diet does not include fresh vegetables and fruits for a long time.

Which one of the following statements is correct?

(a) Both (A) and (R) are true and (R) is the correct explanation of (A)

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

Ans. (b) Both (A) and (R) are true but (R) is not the correct explanation of (A)

Explanation: Scurvy is a deficiency disease caused by deficiency of vitamin C. Source of vitamin C includes citrus fruits like orange, lemon and vegetables like cabbage, green peppers, spinach etc.

11. One gram of carbohydrate contains _____ Calories

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

Ans. (c) 4

Explanation: Carbohydrates provide energy needed by the body (1g of Carbohydrates provides 4 Kcal of energy).

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(b) Anthocyanins are a group of antioxidants found in red, purple, and blue fruits and vegetables. Anthocyanin gives grapes, blueberries, cranberries, and raspberries their dark colour. They have been shown in the laboratory to have anti-inflammatory and anti-tumour properties.

(c) Flavonoid compounds are products extracted from plants and they are found in several parts of the plant. Flavonoids are found in vegetables, fruits and grains like soybeans, chickpeas and may act a little bit like oestrogen.

Q48. Calculate the BMI of a girl and identify the category if her weight is 68kg and height is 161cm.

a) Underweight
b) Normal weight
c) Overweight
d) Obesity Class I

Case Studies

Q52. Jatin is a weightlifter in the 96 kg category. He has to participate in a weightlifting competition next week for which he is taking good care of his practice and diet. He has included all the essential nutrients in his diet. Based on this case, answer the following questions.

What do you think would be the most important component of Jatin's diet?

a. Proteins
b. Carbohydrates
c. Vitamins
d. Minerals

03. Vikas a state level wrestler has been advised by his coach to take adequate amounts of simple carbohydrates, vitamins, minerals and proteins in his diet along with the training schedule. He has also been advised to follow the diet plan and be aware of the drawbacks of unsupervised dieting.

(i) Glucose, Fructose, Lactose are .....

(a) Simple Carbohydrate
(b) Complex Carbohydrate
(c) Minerals
(d) Fats

(ii) Which amongst these is a Pitfall of dieting?

(a) Skipping meal
(b) Reducing energy food
(c) Drinking lot of water
(d) Taking food supplements

(iii) Amino acids and protein are the ..... of life.

(a) Building block
(b) Training blocks
(c) Fitness blocks
(d) Both (a) and (b)

Assertion and Reason Based Questions

44. **Assertion** (A) Food intolerant foods cannot be properly processed by our digestive system.
Reason (R) Absence of certain enzymes do not lets the food to be properly processed.

Codes

(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

45. **Assertion** (A) Vitamins are compounds of carbon which are essential for the normal growth and working of the body.
Reason (R) Vitamin D is essential for normal growth of the body. Deficiency of Vitamin A leads to night blindness and also effects kidneys, nervous system and digestive system.

Codes

(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

46. **Assertion** (A) Traditional, conventional or common misconceptions about food are food myths.
Reason (R) People believe in these myths are they are followed by generation.

Codes

(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

47. **Assertion** (A) Micro nutrients constitute the majority of individual's diet.
Reason (R) Minerals and vitamins are included in micro-nutrients.

Codes
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false
(d) (A) is false, but (R) is true

48. **Assertion** (A) People who fall in the category of underweight have BMI less than 18.5.
Reason (R) If the BMI is 30 or greater, the person is considered to be overweight.

Codes
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false
(d) (A) is false, but (R) is true

Previous Year Questions

10. Role of water in human body is to _____ [1]

(a) regulate body temperature

(b) give energy

(c) repair cell

(d) protect from disease

Ans. (a) regulate body temperature

11. Which of the following are water soluble vitamins? [1]

(a) Vitamin D & K

(b) Vitamin B & C

(c) Vitamin A & E

(d) Vitamin A & C

Ans. (b) Vitamin B & C

23. What is BMI? Calculate BMI of a child whose weight is 72 kg and height 1.68 mt. [1+1]

Ans. BMI is Body Mass Index and is known as Quetelet Index because it was invented by Adolphe Quetelet. Body Mass Index is a value derived from the mass and height of a person. The BMI is defined as the body mass divided by the square of the body height, and is expressed in units of kg/m^2, resulting from mass in kilograms and height in metres.

$$BMI = \frac{\text{Weight (Kg)}}{\text{Height} \times \text{Height (m)}}$$

$$= \frac{72\,Kg}{1.68 \times 1.68\,m}$$

$$= \frac{72\,Kg}{2.8224\,m^2}$$

$$= 25.51\ kg/m^2$$

24. Differentiate between Macro and Micro Nutrients. **[2]**

Ans. Difference between Macro and Micro nutrients are:

	Macro Nutrients	**Micro Nutrients**
(i)	They are required in larger quantities.	They are required in very minute quantities.
(ii)	Energy from macro nutrients is for the metabolic system. Proteins, fiber, carbohydrates, and fats are examples of macro-nutrients.	Micro nutrients contributes to body growth and disease prevention. Antioxidants, Minerals, and Vitamins are examples of micro-nutrients.

lives of the children whose

26. Write the functions of Vitamin D and Vitamin K and mention their sources. [1.5+1.5]

Ans. The functions of Vitamin D and Vitamin K and their sources are:

(i) Vitamin D is a fat-soluble vitamin that has long been known to help the body absorb and retain calcium and phosphorus; both are critical for building bone. Vitamin D can reduce cancer cell growth, help control infections and reduce inflammation. The sources of Vitamin D are Cod liver oil, Salmon, Swordfish, Tuna fish, Dairy and plant milks fortified with vitamin D, Sardines, Egg yolk and Fortified cereals.

(ii) Vitamin K is a fat-soluble vitamin which helps to make various proteins that are needed for blood clotting and the building of bones. Vitamin K is found throughout the body including the liver, brain, heart, pancreas, and bone. It is broken down very quickly and excreted in urine or stool. It activates proteins and calcium essential to blood clotting. The sources of Vitamin K are green leafy vegetables including collard and turnip greens, kale, spinach, broccoli, brussels, sprouts, cabbage, lettuces, Salad dressings made with soybean or canola oil and fortified meal replacement shakes.

1. Food component present in sugar is? [2020]

A. Fats
B. Protein
C. Vitamin
D. Carbohydrate.

2. Main source on vitamin C is? [2020]

A. Guava.
B. Egg
C. Milk
D. Banana