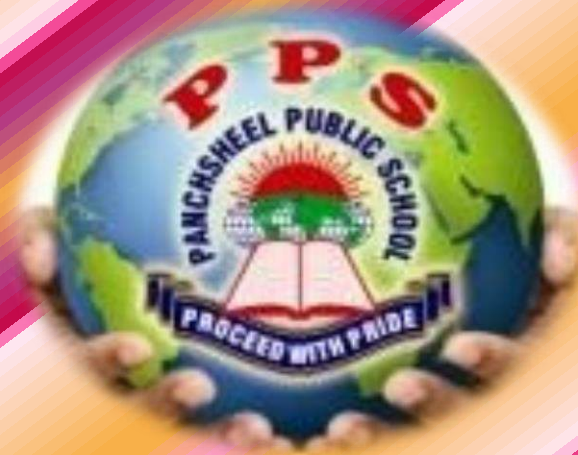


**PANCHSHEEL PUBLIC SCHOOL**  
**SESSION 2024-25**  
**ENTRANCE EXAMINATION**



**CLASS - 7**  
**SYLLABUS**  
**STUDY MATERIAL**  
**SAMPLE PAPER**

# SCIENCE

## SYLLABUS

- 1) Eat for Nourishment
- 2) Clothing as Shelter
- 3) Plant a tree





## EAT FOR NOURISHMENT



We all need food in order to stay alive, to be in good health and to develop normally. When our body absorbs the nutrients from the food that are nutrient- rich, it gets nourished.



Essential nutrients which are important for our nourishment includes carbohydrates, proteins, fats, vitamins and minerals.

### Proteins:



Have you ever wondered how professional wrestlers and Olympic athletes get strong muscles? Well, it has a lot to do with a nutrient 'Protein' which builds muscles. Protein is a nutrient that is naturally found in plants and animals. It is made up of microscopic building blocks called amino acids, when you look at amino acids under a microscope they look like a tangled string. Protein is an important and necessary part of your daily meals and helps you to grow and stay healthy. Protein is a superfood. This nutrient has a lot of work to do to keep your body running. When you eat protein rich foods it breaks down into amino acids which is sent in your body to different parts to keep them healthy and growing. The part of the body that needs protein are your muscles.



Children grow very quickly and protein helps the muscles to grow and help you move, walk, run and exercise.



*Did you know that the blood in your body is also made of protein?*



**Carbohydrates-** They are the fuel of our body. For doing work and to keep our body warm we need carbohydrates. Cellulose, sugar and starch are the common examples of carbohydrates.



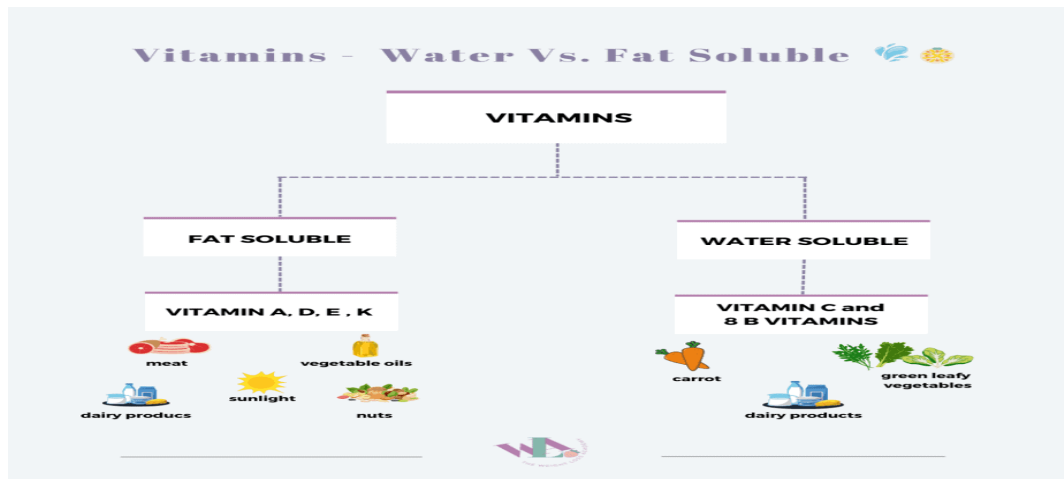
Presence of sugar in the food items can be tested very easily with the help of benedict's solution. There will be a change in colour of the **benedict's solution** with sugar in it from-

1. **Blue** to **green**, if the sugar content is low in food
2. **Yellow** ( **Orange** ) if sugar content is medium in food
3. **Red**, if sugar content is high in food.

In the same way, presence of starch in food can also be detected by **Dilute Iodine Solution**. It means a potato turns blue or black at the point where dilute iodine solution is dropped showing the presence of starch in that.

**Fat and oils-** Together they are termed as fats. Fats are saturated which are normally solid at room temperature, but oils are unsaturated fats which are normally liquid at room temperature. They are essential part of our body and they are two times richer in energy than the same amount of carbohydrates. Sources of fats are milk, butter, cream, cheese, egg and meat.





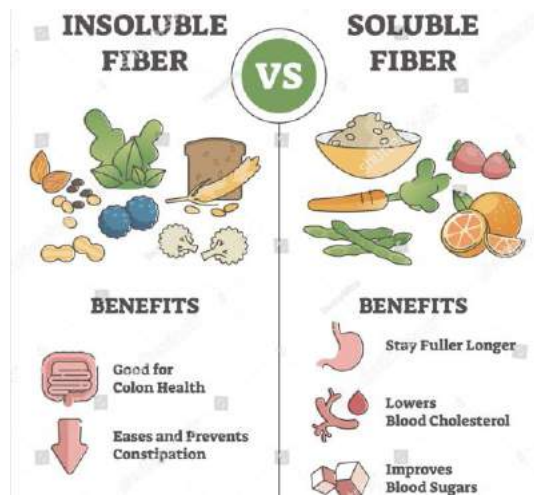
There is an easy way to test the fats also, by using just a piece of paper, When we crush a food item and wrap it around a normal paper, we can see an oily patch, which will confirm the presence of fat or oil in food.

**Vitamins-** The word Vitamin comes from a Latin word Vita meaning life.



*Do you know ? vitamin D is known as sunshine vitamin. Sun rays react with the oils of the skin to produce vitamin D in the body in a natural way. People living in air conditioner houses and offices are said to be deficient in vitamin D.*

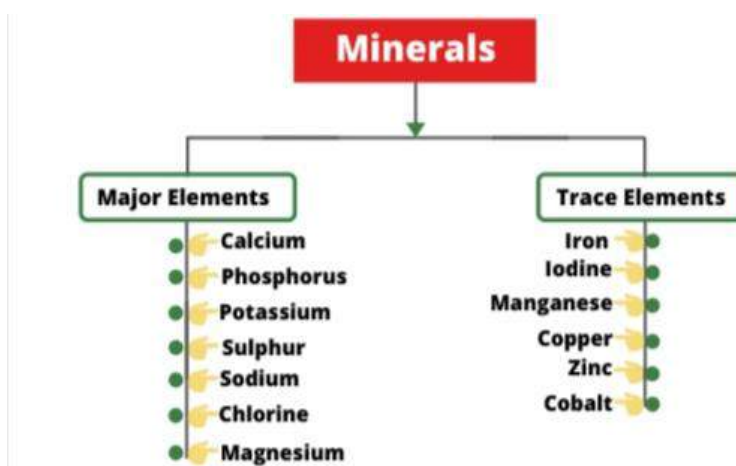
**Fibres** - Fibres are not a nutrient but an important part of our food. They form the bulk of our food. They help in filling the stomach but doesn't satisfy our appetite hence they are termed as dietary fibres. Fibres are indigestible. Fibres are also termed as roughage. Have you ever felt constipated in your stomach? It is because of the deficiency of fibres in your body. Most of the roughage comes from the fibre present in crunchy fruits, crunchy vegetables like Carrot, Radish, Cucumber, Cabbage, leafy vegetables, tomatoes.



*Have you ever observed a vendor selling fresh fruit juice? On extraction of the juice through a juicer, the pulp left is the fibre.*

**Minerals-** Minerals are the elements in the form of salts. Our body needs some minerals in good quantity and some in traces. For example, calcium and phosphorus are required in good quantity for the formation of strong and healthy bones and teeth, Iron is an important constitute of hemoglobin present in red blood cells, Sodium and common salt help in the flow of blood. Zinc, Potassium and Iodine are required in traces though they are essential too.

**Balanced diet -** A diet that includes adequate number of different components of food, required for the healthy functioning of our bodies is called balanced diet. A balanced diet meets the necessary requirement of the body according to the age and nature of work we perform. Eating a balanced diet makes you smart and healthy. Balanced diet does not mean expensive food items only.



*Did you know ? You need to eat around 2,000 calories every day to maintain your weight.*



**Malnutrition-** A person not eating enough food suffers from malnutrition. Some people go without food due to poverty or famine. Fashion conscious people specially women and models go on dieting. This make them eat too Little. In the long run such people suffer from weak muscles, poor eyesight and brittle bones. This disorder is called **anorexia**.

A weak body maybe due to the deficiency of one or more than one nutrient in the diet for long period of time. The disease due to nutritional deficiency is called **deficiency disease**.

*Did you know? A baby is born with a very soft bony structure. At birth the bones of a baby are made of soft, rubber like bendy fibrous protein called collagen.*



## CLOTHING AS SHELTER



In day to day life, clothing serves as a form of shelter by providing protection against various environmental conditions. Have you ever noticed that clothing acts as a shield against sun's rays and prevent sunburn and overheating. At the same time clothing provides insulation, helping to return body heat and protect against chilly winds. Clothing reflects cultural identity and personal expression offering a sense of belonging and individuality. The pandemic highlighted the importance of protective clothing like masks and gloves.

During extreme conditions such as heat waves or snow storms, appropriate clothing is crucial for personal safety and individual may seek refuge in designated Shelters.



Imagine wearing a warm jacket on a chilly day or a raincoat during a sudden rain shower. Your clothes act like guardians, keeping you comfortable and protected from the weather. When you wear a helmet while riding a bike or specific gear for sports, your clothes become guardians by providing safety during different activities. Wearing clean clothes helps guard your body against dirt and germs, contributing to personal hygiene. Your choice of clothes reflects your personality and interests. It acts as a guardian by letting you express who you are and what you like. If it starts raining unexpectedly, your raincoat or jacket becomes a guardian, providing a quick shelter to keep you dry. *This is really interesting*



*to know that how did people manage when there were no clothes.* During the early years of human history, humans used animal skin and leaves from trees as their clothing. For shelter, they lived inside caves and under huge trees. Traditional clothing from different cultures often serves as a form of shelter too. For example, in some cultures, people wear long robes and head coverings to protect themselves from



the sun and also maintain modesty. Your shoes are like little shelters for your feet. They protect your feet from rough things and surfaces.

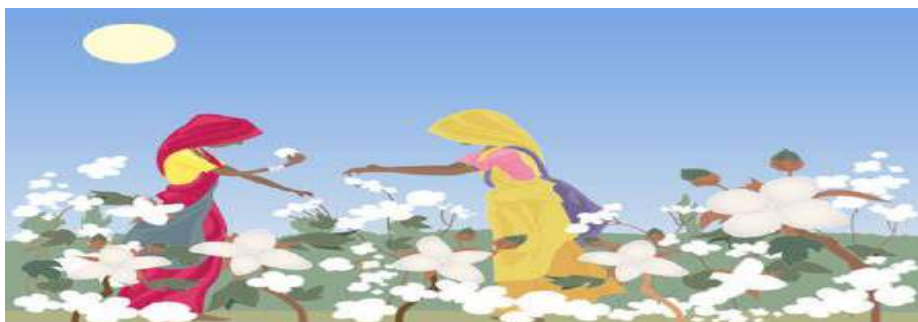
**Fibre from Plants-** Cotton and jute comes from plant. Both are plant fibres. There are many more plant fibres. Do you know that cotton fibre comes from cotton plant. It is a kind of shrub with broad leaves. This plant bears bell shaped, yellow white or pink flowers. Cotton fibre is the outer growth on the seed. Seeds in cotton are covered all around with the fibre.



Cotton plants grow well in black soil and warm climate. In India cotton is cultivated in Madhya Pradesh Maharashtra, Rajasthan, Gujarat, Punjab and in some parts of Tamil Nadu. In most of the places, cotton is cultivated along with peanut (Groundnut).

### Processing of cotton

**1. Plucking and ginning-** Cotton is plucked by hand from the balls on cotton plants by hand. Cotton fibre is then separated from the seeds. This is done by the process called ginning. With the use of a gin (a common device) cotton fibres are pulled from the seed.



**2. Carding-** Lumps are stressed with hand on a cushion of fine needle to make fibre fluffy. This is called carding.

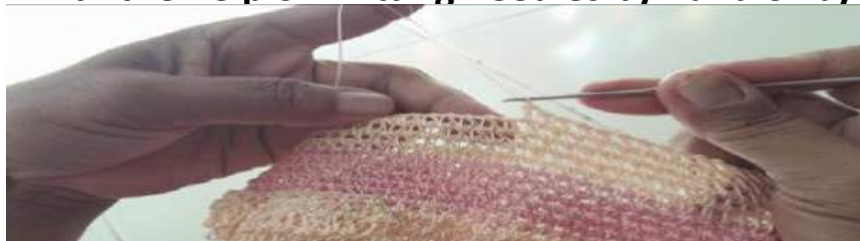
**3. Spinning-** Spinning fibre into yarn is drawing of yarn from fibre. Yarn may be spun on hand spindle, spinning wheel or machines.



**4. Weaving-** Yarn is weaved into fabric on looms, handlooms or on the power looms. In the process of weaving threads are arranged lengthwise, called wraps and the other crosswise, called weft.



**5. Knitting Yarn-** It is a process in which fabric is made by interlocking loops of single Yarn with the help of knitting needles by hand or by machines.



***DID YOU KNOW?*** *Oldest known clothing are made of plant fibres and date back to around 36000 years ago. These garments were discovered in a cave in Georgia, Europe.*

**Other plant fibres-** Hemp comes from a bark on the stem of hemp plant. It is used for better quality Gunny bags, for stronger ropes, meant to be used in holding and drawing water from the well and in the production of handbags, carpets, nets and paper. Jute is a valuable fibre obtained from the bark of the plants.

Jute is widely cultivated in West Bengal in India and in Bangladesh. Jute is used for making strings cords, carpets, rugs and also used as a packing fabric and handbags.



## PLANT A TREE

Have you ever thought that how plants breath? It's through a process called photosynthesis. Plants convert carbon dioxide into oxygen, contributing to the air we need for respiration. Many of our favourite food we eat come directly from plants. Fruits, vegetables, grains and nuts are all examples of plant-based foods that provide us with the essential nutrients.

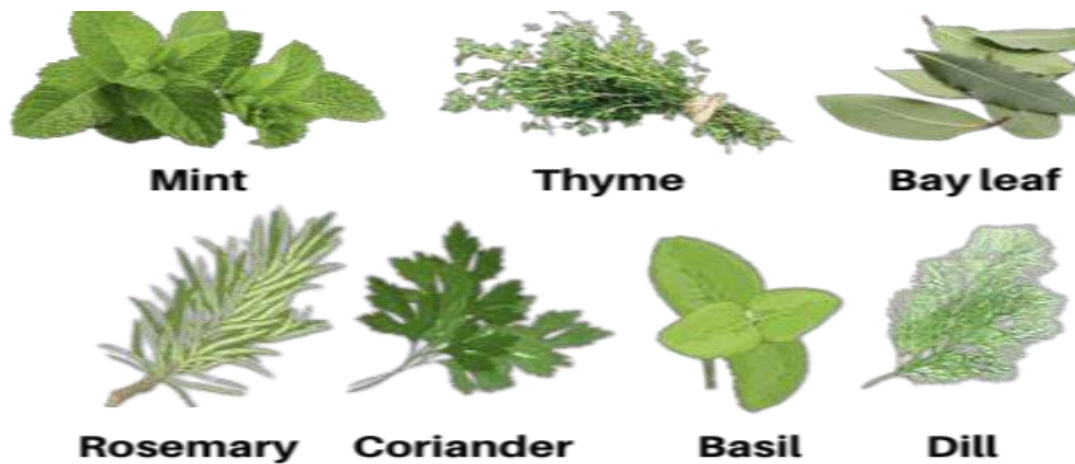
Imagine the world without trees. Then who will provide shade, help to cool



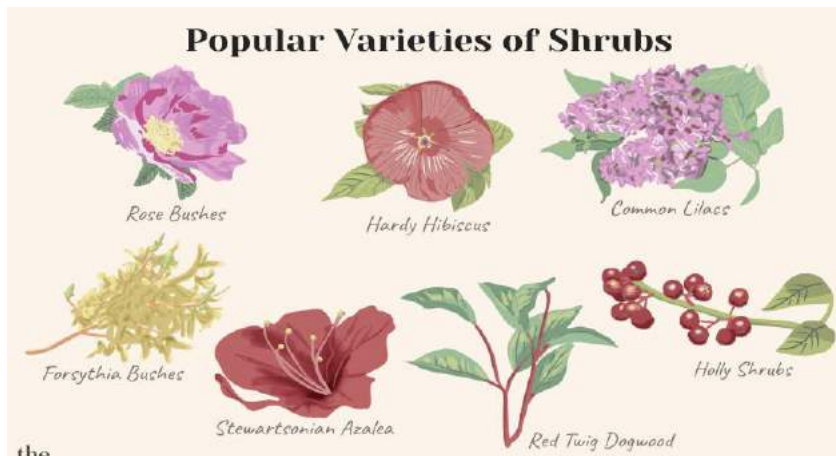
down outdoor areas. They act as natural air conditioners, making the environment more comfortable on hot days. Paper and wood products, such as notebooks, furniture, and even the pencils we use, come from plants. Trees are harvested for these materials, emphasizing the importance of sustainable practices.

**Flowering plants around us-** If you notice your surroundings, you will notice various types of trees and plants. Flowering plants are grouped into 3 categories on the basis of their size, the kind of stem and their life span.

1. Herbs- They are small plants with green and soft tender stem. Herbs are short in size. They do not grow more than a metre in height. They have a short life span. Their live for hardly 2 seasons in a year. For example, plants of Wheat, Paddy, Maze, Tomato, Brinjal, Potato, Marigold, Sunflower and many others.



**2. Shrubs-** They are medium sized bushy plants with hard and woody stem and branches out from near the base. They live for many years for example Rose, China rose, Heena, Jasmine etc.

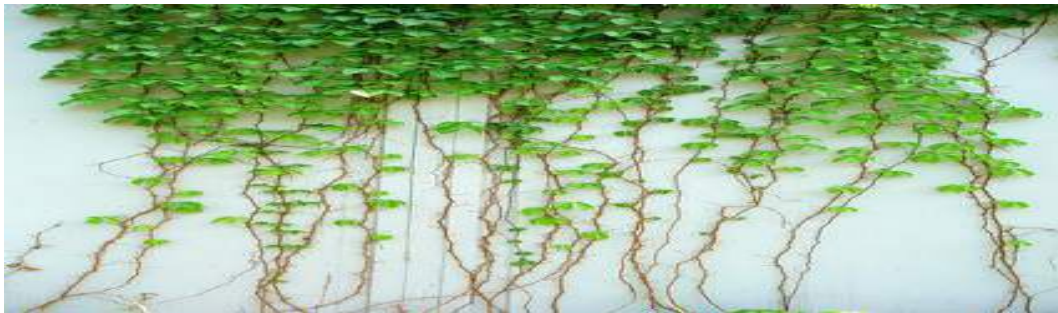


**3. Trees-** They are big and tall plants with a trunk. The trunk is thick and has branches, leaves, flowers and fruits on it's top only. Trees have a long life span. For example Apple, Orange, Lemon, Jamun, Peepal, Banyan etc



**4. Creepers - Some plants have weak stem. They are unable to grow up right. They either creep along the ground or climb with a support. Creeper and climbers may be herbs or shrubs. For example, herbs like Melons, Pumpkin and Cucumber are creepers and herbs like Pea plant, Bitter gourd, Bean plant are plants are some of the climbers.**

**Germination of seed- a seed is covered with two layered seed coat. Seed coat protect the seed. Everyday seed has a sleeping baby plant inside attached to the food- laden cotyledons.**



**The baby plant has a short baby root towards outer side and a short baby shoot inside the seed. The stage through which a seed grows to give rise to a young plant is called the germination of a seed.**



**"One of the seeds wanted to grow rapidly and wished to touch the sky as soon as possible. While the second seed was afraid to open its buds, he thought if he grew, then a snail would eat him. As time passed, the first seed grew and became tall. He spread his roots deep into the soil."**

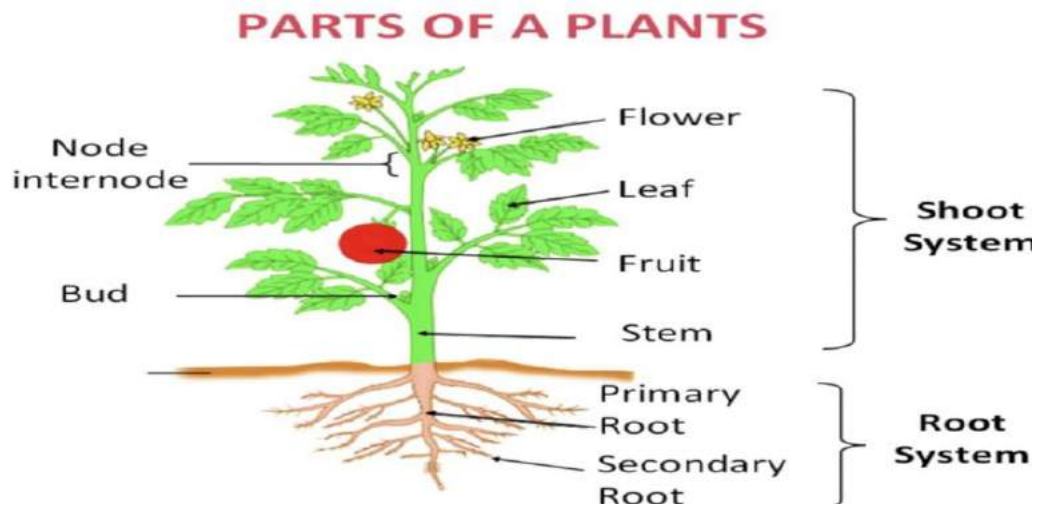


## ***Do You Know?***

***Which came first, the plant or the seed? According to many scientists, plants came first.***

***The study of the seeds is known as spermology.***

***The Great Basin Bristlecone Pine is the oldest tree and can reach an age of over 5,000 years.***



**Parts of plant-** a flowering plant has two main parts.

**1. Root system-** Roots fix the plant to the soil. They are non-green, do not have buds, leaves, flowers and grow into the soil away from light. Roots may be modified to store food.

**2. Shoot system-** Shoot includes stem, leaves, internodes, leaves, branches, flowers, fruits and seeds. Stems may be modified to store food, bear thorns and tendrils and may be green to take up the function of the green leaves.

**3. Leaves** are flat and green, bearing a bud in its axil. Green leaves help in photosynthesis, manufacture food and purify air. Leaves also transpire water.

**4. Flower** are the reproductive parts of plant. Stamens represent the male part and pistil is the female part of the flower.

***Redwood trees are among the tallest living organisms. Some can grow over 300 feet tall, towering above many other trees. The "Dancing Plant" or Mimosa pudica is known for its ability to fold its leaves when touched. It's a defence mechanism against herbivores. Trees in a forest can communicate with each other through an underground network of fungi called mycorrhizal***

***networks. This network allows them to share nutrients and information. Plants form partnerships with fungi in the soil. The fungi help the plant to absorb nutrients, and in return, the plant provides the fungi with sugars.***

## SAMPLE PAPER

**Q1. Which food is considered as Super Food?**

- a. Vitamin      b. mineral      c. protein      d. Roughage

**Q2. What will be the consequences if all the trees disappear from earth?**

- a. Loss of oxygen      b. Soil erosion  
b. Loss of medicinal resource      d. All of these

**Q3. What is the purpose of flowers in a plant?**

- a. Photosynthesis      b. Reproduction  
c. Water absorption      d. Nutrient storage



**Q4. Find out the method of cotton processing by observing the figure.**

- a. Carding      b. Spinning      c. Knitting      d. None of these

**Q5. Observe the given figure and identify the category of plant. Now choose from the following, which is the example above category**



- a. Neem      b. People      c. Mango      d. Pumpkin

**Q6. Which type of solution helps in detecting the presence of sugar in a food sample.**

- a. Benedict's solution      b. Iodine solution  
c. Both (a) &(b)      d. None of these



**Q7. Alex consumes a diet including sources like lean meats, eggs, and dairy. Alex is also actively involved in sports and outdoor activities.**

**Taylor, on the other hand, has a diet consisting mostly of processed snacks and sugary drinks. Taylor is not actively engaged in any physical activities.**

**a) Based on the information provided, predict the difference in their diet because of which physical activity may be influencing the overall health.**



**b) What changes can be made into Taylor's diet and activities that can improve his overall health and energy levels.**

**Q8. Renu is an athlete. She is preparing herself for the competition. But during practice she is feeling pain and cramps in her muscles. She visits a doctor regarding this. Doctor tells her that she is having nutrient deficiency.**

**According to you which nutrient deficiency is causing this pain in her muscles? What are the various sources of this nutrient? What is the role of this nutrient in our body?**

**Q9. Complete the given food plate by filling all the important nutritional food items which will fulfil all body requirements.**

- 1. Fibres-.....**
- 2. Protein- .....**
- 3. Vitamins- .....**
- 4. Fats- .....**

## 5.Carbohydrates -.....

