

## CDT Materials (2018-19)

Class – IV

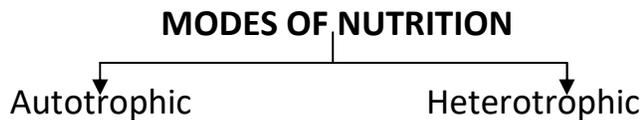
EVS and G.K.



### 1. LIFE PROCESSES

All living organisms show similarity in their activities. They have to eat, digest food, derive energy, remove wastes, respond to their environment and produce more of their own kind. It is through these activities that they maintain and continue their lives. These basic activities which all living beings perform are called **life processes**. Nutrition, respiration, excretion, reproduction, response to stimuli are some of the basic life processes.

**(a) NUTRITION** : The process of taking food is called nutrition.



**AUTOTROPHIC NUTRITION**: Here the organism makes its own food from simple substances. Example: Green plants make their own food by the process of photosynthesis. Leaves of green plants are chemical factories producing food. It also represents the conversion of energy i.e., solar energy  $\longrightarrow$  chemical energy.

Raw materials for photosynthesis: a. Carbon dioxide which enters the leaves through stomata.

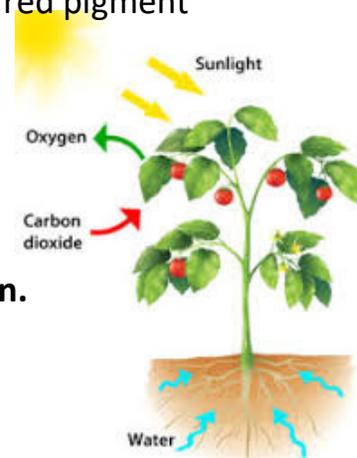
b. Water absorbed from the soil by roots.

Sunlight (energy source).

Chlorophyll traps sunlight and makes it available for photosynthesis. Some plants like **Croton**, have chlorophyll but they appear dark red in colour as they contain a red pigment which hides the green colour.

As the autotrophs can prepare their own food so they are called **producers**.

**Equation of photosynthesis**: carbon dioxide + water  $\longrightarrow$  sugar + oxygen.



**HETEROTROPHIC NUTRITION:** All animals including man and non green plants show heterotrophic mode of nutrition. They derive food from other organisms directly or indirectly from plants.

Example: herbivores, carnivores, omnivores, scavengers, decomposers.

**OTHER FORMS OF NUTRITION:**

a. Saprophytic: Feeding on dead and decaying matter.



b. Parasitic: Living on another organism and deriving food from the organism.



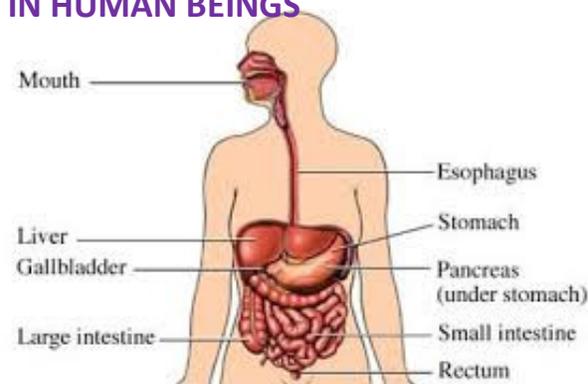
c. Symbiotic: Two different organisms live together and both benefit from each other. Ex- bacteria living in root nodules help to fix atmospheric nitrogen and in turn get shelter.



**(b) THE PROCESS- DIGESTION AND THE DIGESTIVE SYSTEM IN HUMAN BEINGS**

The food we eat is used by our body for various purpose. But before our body can use the food it has to be broken down into a smaller, soluble and simpler form.

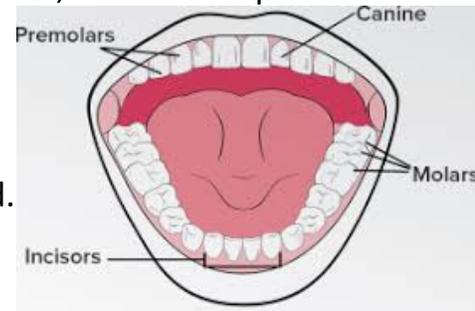
The process of breaking down of food into a simple and soluble form so that it can be taken in or absorbed by the body is called **digestion**.



The digestive system in human beings comprises of the following organs. Let's have a look at the different organs and their functions.

**1. Mouth:** The food we take in is broken down into smaller pieces, with the help of teeth. The different types of teeth are as follows:

- a. Incisors: These are 8 in total and help to bite the food.
- b. Canines: These are 4 in total and help in tearing the food.
- c. Premolars: These are 8 in total and help in cracking, crushing and grinding the food.
- d. Molars: These are 12 in number and help in crushing and grinding the food.



The food gets broken into smaller pieces, due to chewing action of our teeth. The tongue helps in mixing the food with **saliva**, a watery substance in the mouth to digest starch.

- 2. Food pipe:** As we swallow the food it moves to the next part, the food pipe or the oesophagus. It carries the food from mouth to the stomach.
- 3. Stomach:** It is a hollow, muscular J- shaped bag. The juice produced by the walls of the stomach helps to break down the proteins in the food.
- 4. Small Intestine:** The small intestine is a long coiled tube. It's walls produce juice which help in the digestion of food. The liver and pancreas pour their juices into the small intestine which along with the juice produced by the small intestine helps in complete digestion of food. The walls of the small intestine absorb the digested food which then passes to the blood. The blood takes the digested food to different parts of the body.
- 5. Large Intestine:** The undigested food passes from the small intestine to the large intestine. The walls of the large intestine absorb water from the undigested food. The remaining waste is thrown out of the body through anus.

### (c) HEALTHY EATING HABITS

- Eat a balanced diet and ensure you drink plenty of water.
- Try to eat all the three meals at a fixed time every day.
- Eat slowly and chew the food properly.
- Do not overeat.
- Wash your hands before and after eating.
- Rinse your mouth after eating anything.

## (d) BREATHING AND RESPIRATION

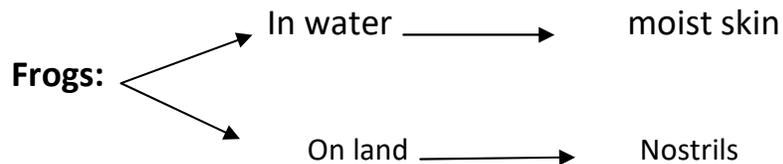
The process of taking in and giving out air is called breathing.

Organs (parts) of the body which aid in breathing and respiration in a few animals are:

**Insects :** *Spiracles*, openings present on the body surface helps in breathing.

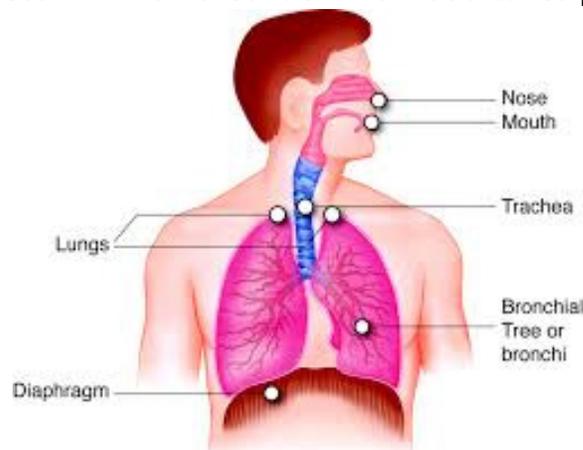
**Fishes:** *Gills*, trap oxygen dissolved in water and help in respiration.

**Earthworms:** The earthworms breathe through their moist skin.



**Human Beings:** We breathe through the nose. Movement of ribs and diaphragm help to draw in air and out of lungs. Small pockets inside lungs called alveoli help in exchange of gases, whereby, oxygen goes into the blood and carbon dioxide comes out of it.

**RESPIRATION:** It is a process in which breakdown of food takes place, usually carbohydrates with release of energy.



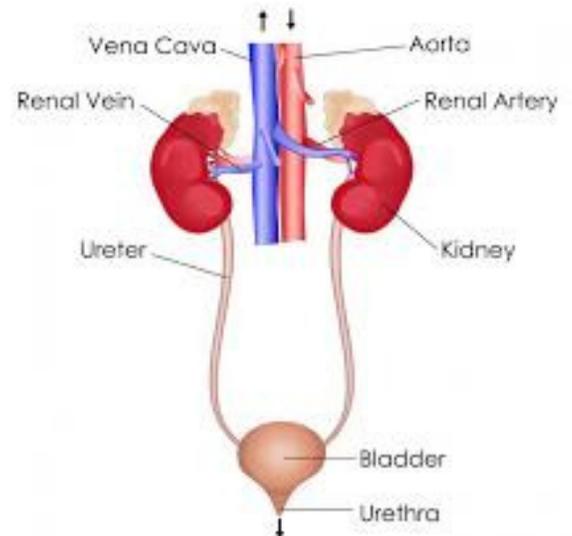
Carbohydrates + Oxygen  $\longrightarrow$  Carbon dioxide + water vapour + energy

- a. **CIRCULATION OF BLOOD:** Blood circulates in our body. It flows through the blood vessels. Heart and the blood vessels form the circulatory system. The blood vessels are the arteries and veins.
- b. Arteries:
  1. Carry oxygenated blood.
  2. Blood flows under pressure.
  3. Carry blood away from the heart.
- c. Veins:
  1. Carry deoxygenated blood.
  2. Blood flows with less pressure.
  3. Carry blood towards the heart.

Blood pressure is measured by an instrument called **sphygmomanometer**.

**(e) EXCRETORY SYSTEM:** The excretory system is made of organs which remove harmful nitrogenous wastes, salt and water. It consists of

- a. A pair of kidneys.
- b. A pair of ureters.
- c. A urinary bladder.
- d. A urethra.



**KIDNEYS :**These are a pair of bean shaped structures , about 10 cm long. These are located above the waist on either side of backbone. They filter waste from the blood in the form of urine.

**URETERS:** These carry urine from the kidneys to the urinary bladder.

**URINARY BLADDER:** Sac like structure which stores urine temporarily.

**URETHRA:** It lets the urine pass out of the body.

### **MOVEMENT IN PLANTS**

Movement is the change in position of the whole organism or a part of it. Plants exhibit response to stimulus in the form of movement of certain parts of plants. Plants are able to react to light, gravity, water, touch etc.

Common forms of plant responses are:

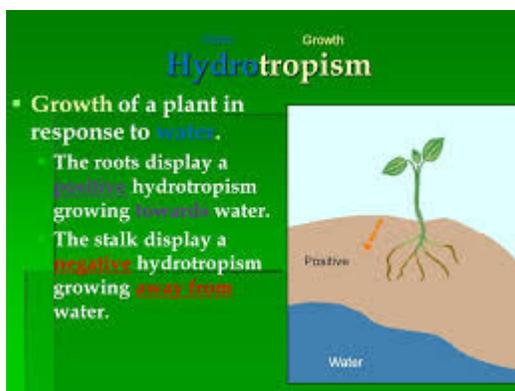
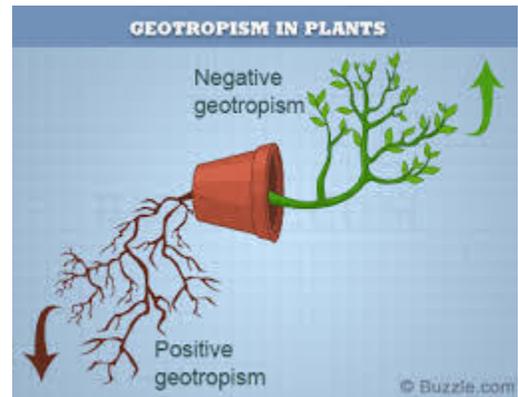
### INTRODUCTION

- **Phototropism** is the growth of an organism which responds to a light stimulus.



- a. **Phototropism**: Movement of plant parts in response to light. Ex: stems grow towards light so are positively phototropic.

- b. **Geotropism**: Movement in response to earth's gravity. Ex: roots grow downwards, so are positively geotropic.



- c. **Hydrotropism**: Movement in response to water. Ex: roots grow towards water source, hence, are positively hydrotropic.

- d. **Touch responses**: reaction of plants in response to stimulus of touch; as seen in climbing plants, insectivorous plants, leaf movement in "touch me not" plant.



## 2. Food

Food contains **nutrients**. Nutrients are very important substances as some give us **energy**, some help us to **grow** while others **protect us from diseases** and keep us **healthy**.

Besides nutrients, the food we eat also contains **water** and **roughage**.

| Nutrient      | Source                                       | Function                          |
|---------------|--|-----------------------------------|
| Carbohydrates | Potato ,cereal, grains rice, Cane sugar etc. | They provide energy very quickly. |

|          |         |  |  |
|----------|---------|--|--|
| Proteins |         | Fish ,cheese, milk, soya bean, Meat ,bean ,pulses ,egg, etc. | They are the main body builders. Helps in growth ,repair, making new skin. |
| Fats     |         | Butter,cheese,ghee,oil,meat,egg etc.                         | Produce energy. Keep us warm.  |
| Vitamins |         | Fresh fruits, vegetables,milk,eggs,etc.                      | Protect us from diseases and keep us healthy.                              |
| Minerals | calcium | Milk,curd,cheese,almond                                      | Builds bones ,teeth.   |
|          | iron    | Spinach, apples, green leafy vegetables.                     | Helps in blood formation.  |

### As A Matter of Fact

- **Growing children and people who do a lot of physical work, like farmers and labourers, need a lot of energy .They need food rich in carbohydrates.**
- **Children need a lot of proteins as their bodies keep growing.**
- **Fats give us more energy and heat than carbohydrates. They keep our body warm. Our body requires little amount of fats.**
- **Roughage is non nutrient which is required for removal of faeces from our body. We get roughage from whole grains, fresh fruits, vegetables, salads etc.**
- **Water makes up to  $\frac{3}{4}$  of our body. It helps in digestion of food and removal of wastes from our body. We need to drink at least 6-8 litres of water every day.**

**FOOD PYRAMID:** A food pyramid is a triangular diagram showing the proportion of different nutrients to be included in a healthy diet.



### 3. WATER

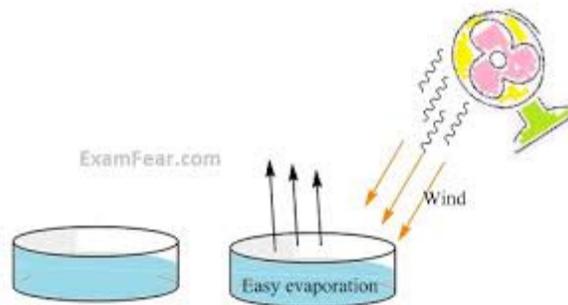
Nearly  $\frac{3}{4}$  of the Earth is covered with water. Water is found in ponds, lakes, seas, wells, under the ground, as water vapour in the air.

Water exists in three forms:

Solid, liquid and gas. The physical state of water depends on the temperature and it changes its form on either heating or cooling.

When water is heated, steam or water vapour can be seen rising from it, showing that water has changed from liquid to gaseous form. When water is cooled sufficiently, it turns into ice. Ice is the solid form of water.

**1. EVAPORATION:** The change of water into water vapour on heating is called evaporation.



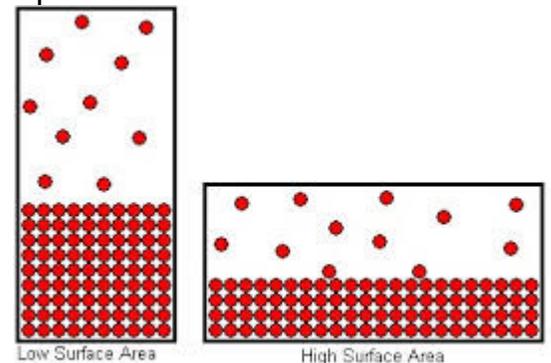
**Factors affecting evaporation:**

**a. Temperature:** The higher the temperature, the faster is the evaporation of water. So, clothes dry faster in the Sun than in shade.

**b. Wind:** The stronger the wind, the faster is the evaporation of water. So clothes dry faster on windy days.

**a. Amount of exposed surface (surface area):**

Water evaporates faster when more of its surface is exposed to the surrounding air.



**2. Condensation:** It is a process in which water vapour turns into droplets of water on cooling. In nature water vapour condenses to form clouds, rain, dew, frost hail and snow.

**a. Dew:** In winters, the water vapour present in the air condenses as it comes in contact with cold surface as grass or flowers. This is why



we see dew drops on glass and flowers on cold winter mornings.

- b. Frost:** When the weather is very cold, dew drops freeze into tiny ice crystals called frost.



- c. Fog:** In winter, the water vapour sometimes condenses on dust particles present in the air to give a cloudy appearance very close to the ground. The clouds so formed are called fog.

- d. Hail:** When raindrops pass through a very cold region of air, they freeze and become hard balls of ice called hailstones.



- e. Snow:** High up on the mountains, where the temperature is low, the rising water vapour sometimes condenses to form ice crystals instead of water drops. This leads to snowfall.

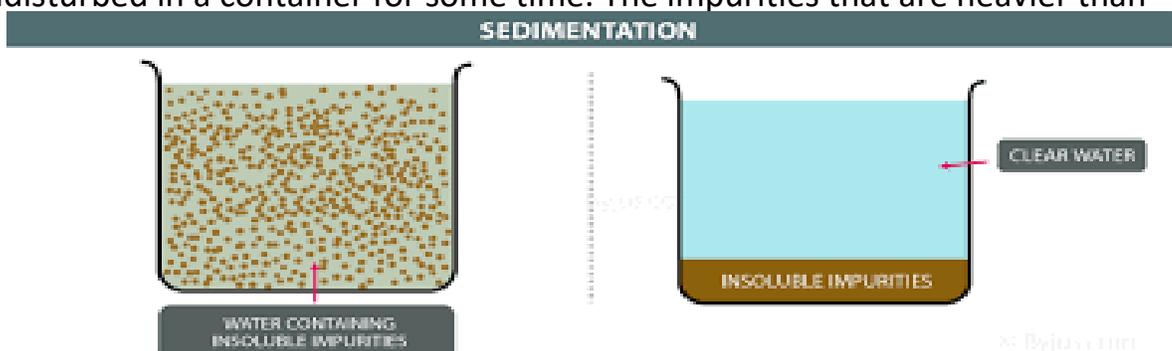
**3. MELTING:** It is a process in which ice changes to water on absorbing heat.

**4. FREEZING:** It is a process in which water changes into ice on cooling.

## PURIFICATION OF WATER

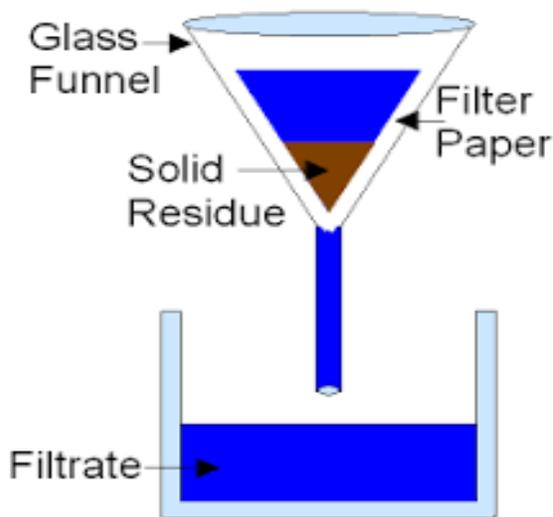
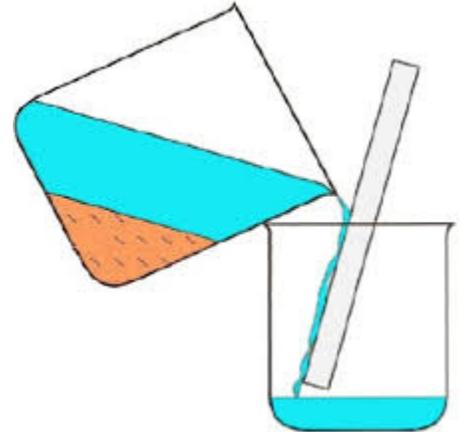
### WAYS TO REMOVE INSOLUBLE IMPURITIES

- 1. SEDIMENTATION AND DECANTATION:** In this method water is allowed to stand undisturbed in a container for some time. The impurities that are heavier than



water, settle down at the bottom. The process of settling down heavier and insoluble impurities is called **sedimentation**. Once the sediments have settled down, we can see clear water at the top.

This clear water is poured gently into another container without disturbing the settled impurities. This process is called **decantation**.



- 2. FILTRATION:** In this process, the impure water is passed through a filter paper. The impurities are left behind on the filter paper while clear water is collected below. Filtration is a better process than decantation as it can remove impurities which are lighter and float on the surface of water.

## WAYS TO REMOVE GERMS

Water purified by sedimentation or by decantation is not fit for drinking as it contains disease causing germs. To remove disease causing germs, the following methods are applied.

- 1. BOILING:** It is the simplest way to purify water. Water should be boiled for at least 10 minutes after appearance of bubbles, in order to kill germs.
- 2. CHLORINATION:** The process of adding chlorine in water to kill germs is called chlorination.

## 4. WEATHER AND CLIMATE

The day to day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind speed etc. is called the **weather** of that place.

The average weather pattern taken over a long time is called **climate** of the place.

a. **SEA BREEZE:** During the day when the sun shines the land gets heated up faster than the sea water.

Air above the land gets heated up, while the air above the sea is cooler.

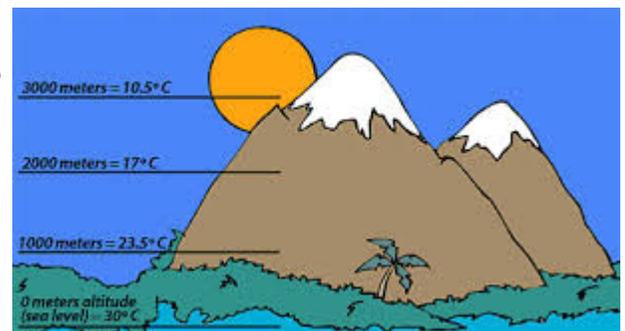
The hot air above the land being lighter rises up and cool air from the sea flows in to take place. This cool breeze that blows from the sea towards the land during the day is called the **sea breeze**.

b. **LAND BREEZE:** At night, there is no sunlight. The land cools down faster than the sea water. Hence, air above the land cools down while air above the sea remains warmer. The warm air above the sea rises up, while the cool air from above the land rushes to take its place. This cool breeze that blows from land to the sea, at night is called land breeze.

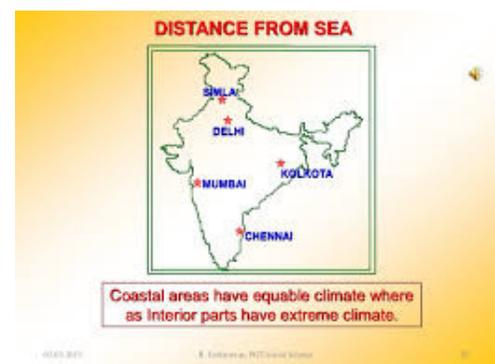
### FACTORS THAT INFLUENCE CLIMATE:

a. **Distance from the Equator :** The Sun's rays fall directly over the Equator. This makes the regions near the Equator very hot. As we move away from the Equator, the Sun's rays spread out over a large area. So the rest of the world is not as hot as regions near the Equator. As the distance from the Equator increases, temperature decreases. This makes the climate of places away from the Equator cooler.

b. **Altitude :** Altitude is the height of a place above the mean (average) sea level. As the altitude increases, the temperature decreases. Therefore, places located on mountains and hills are cooler than the surrounding areas.



c. **Distance from the Sea :** The climate of places located on the coast is affected by the sea. Their climate is neither too hot nor too cold. Mumbai is a coastal city, so it has a moderate climate. Delhi is locked by land on all sides so it is very hot in summer and very cold in winter.



d. **Winds :** The direction of winds also affects the climate of a place. Winds that blow from warm place are warm. These winds further increase the temperature of the region they blow into. Winds that blow from cold regions are cool. They help in

bringing down the temperature of a place. For example ,in summer, hot winds from Rajasthan blow over North India and cause the temperature to rise further. In winter, cold winds blow from the Himalayas and cause the temperature to fall. Winds also bring rain to some parts of the world. For example, the monsoon winds bring rain bearing clouds to India.

- e. **Humidity and Rainfall** : Humidity is the amount of water vapour or moisture in the air. It depends on both the distance of a place from the sea and the wind direction. A place close to the sea is more humid than a place away from the sea. Winds blowing from the sea towards the land are laden with moisture and make the coastal areas humid. Rainfall determines climate to a great extent. Some places receive rainfall all throughout the year. Some places are dry, as, deserts.

## **Abbreviations and Acronyms.**

| <b><u>Sl.</u></b> | <b><u>Short form</u></b> | <b><u>Full form</u></b>   |
|-------------------|--------------------------|---|
| 1.                | <b>AICTE</b>             | All India Council Of Technical Education.                           |
| 2.                | <b>ASEAN</b>             | Association Of South East Asian Nations.                            |
| 3.                | <b>BARC</b>              | Bhabha Atomic Research Centre.                                      |
| 4.                | <b>BHEL</b>              | Bharat Heavy Electricals Ltd.                                       |
| 5.                | <b>BIMSTEC</b>           | Bangladesh, India, Myanmar, Srilanka, Thailand Economic Cooperation |
| 6.                | <b>CAG</b>               | Comptroller and Auditor General Of India.                           |
| 7.                | <b>CBDT</b>              | Central Board Of Direct Taxes.                                      |
| 8.                | <b>DNA</b>               | Deoxyribo-nucliec Acid  |
| 9.                | <b>DTP</b>               | Desktop Publishing  |
| 10.               | <b>FIR</b>               | First Information Report  |
| 11.               | <b>GATE</b>              | Graduate Aptitude Test in Engineering                               |
| 12.               | <b>GSLV</b>              | Geo-Synchronous Satellite Launch Vehicle                            |
| 13.               | <b>GSM</b>               | Global System for Mobile Communications                             |
| 14.               | <b>IPC</b>               | Indian Penal Code   |
| 15.               | <b>LASER</b>             | Light Amplification by Stimulated Emmission of Radiation            |
| 16.               | <b>NABARD</b>            | National Bank for Agriculture and Rural Development.                |
| 17.               | <b>NATO</b>              | North Atlantic Treaty Organization.                                 |
| 18.               | <b>ONGC</b>              | Oil and Natural Gas Corporation.                                    |
| 19.               | <b>SEBI</b>              | Securities and Exchange Board of India.                             |
| 20.               | <b>WWW</b>               | World Wide Web  |

## Books and Authors

| <u>Sl.</u> | <u>Book</u>               | <u>Author</u>         |
|------------|---------------------------|-----------------------|
| 1.         | Akbarnama                 | AbulFazal             |
| 2.         | Chitra                    | RabindraNath Tagore   |
| 3.         | Gitanjali                 | RabindraNath Tagore   |
| 4.         | Godan                     | Prem Chand            |
| 5.         | Guide                     | R K Narayan           |
| 6.         | Hamlet                    | William Shakespeare   |
| 7.         | Harvest                   | ManjulaPadmanabhan    |
| 8.         | Jungle Book               | Rudyard Kipling       |
| 9.         | Saket                     | Maithili Sharan Gupta |
| 10.        | The Dairy of a Young Girl | Anne Frank            |

## Important dates and days

| <u>Sl.</u> | <u>Days</u>  | <u>Event</u>         |
|------------|--------------|----------------------|
| 1.         | January 30   | Martyr's Day         |
| 2.         | March 20     | World Day for Water  |
| 3.         | April 7      | World Health Day     |
| 4.         | April 22     | Earth Day            |
| 5.         | July 11      | World Population Day |
| 6.         | August 29    | National Sports Day  |
| 7.         | September 15 | Engineer's Day       |
| 8.         | September 27 | World Tourism Day    |
| 9.         | October 9    | World Post Day       |
| 10.        | October 16   | World Food Day       |

## Important awards and honors.

| <u>Sl.</u> | <u>Awards</u>           | <u>Concerned Field</u>                       |
|------------|-------------------------|--|
| 1.         | BhartaiyaJnanpith Award | Literary Award for Indian Languages          |
| 2.         | SahityaAkademi Award    | Outstanding Literary Contribution            |
| 3.         | SaraswatiSamman         | Outstanding Literary Contribution            |
| 4.         | Kalinga Prize           | Popularising Science                         |
| 5.         | Dada SahebPhalke Award  | Film   |
| 6.         | TulsiSamman             | Traditional and folk arts.                   |
| 7.         | Arjuna Award            | Sports                                       |
| 8.         | Dronacharya Award       | Coaches to different games                   |
| 9.         | Booker Prize            | Novels in English                            |
| 10         | Roman Magsaysay Award   | Outstanding Contribution to Public Services. |

## Scientific Instruments and Uses

Some of the important scientific instruments are listed below.

| <u>Sl.</u> | <u>Instruments</u> | <u>Uses</u>   |
|------------|--------------------|---|
| 1.         | Altimeter          | In aircraft to measure altitude.                                    |
| 2.         | Ammeter            | Electric current.   |
| 3.         | Audiometer         | Intensity of sound  |
| 4.         | Barometer          | Atmospheric pressure  |
| 5.         | Cardiogram         | Tracing movement of heart   |
| 6.         | Dynamo             | Mechanical energy to electrical energy                              |
| 7.         | Galvanometer       | Small current   |
| 8.         | Hydrometer         | Specific gravity of liquids   |
| 9.         | Lactometer         | Purity of milk  |
| 10         | Odometer           | Electric or mechanical vibrations                                   |
| 11.        | Rain gauge         | Rainfall at a place   |
| 12.        | Stethoscope        | Movements and condition of heart and lungs.                         |
| 13.        | Telescope          | To view distant objects.  |
| 14         | Transformer        | High voltage to low voltage and vice-versa.                         |
| 15.        | Xylophone          | Musical instruments with tuned wooden bars of different dimensions. |

## SAMPLE QUESTIONS

1. Leaves of which of these plants appear red in colour, even though they contain chlorophyll?

- a. Neem            b. Croton            c. Rose            d. Banyan            Ans : b.

2. Vitamins and minerals are:

- a. Energy giving food   b. Body building food.   c. Protective food   d. None of these.  
Ans: c.

3. Which of these is a scavenger?

- a. Vulture            b. Trees            c. Deer            d. Squirrel            Ans: a.

4. Which of these represents evaporation?

a. water  $\longrightarrow$  ice   b. ice  $\longrightarrow$  water   c. water  $\longrightarrow$  watervapour

d. water vapour  $\longrightarrow$  water.            Ans:c.

5. Rate of heart beat increases when you

- a. Sleep   b. Exercise   c. Both of these   d. None of these.            Ans:b.

6. Which of these is the richest source of protein?

- a. Fish   b. Meat   c. Egg   d. Soya bean            Ans :d

7. The process of settling down heavier insoluble impurities in water is called:

- a. Sedimentation   b. Decantation   c. Chlorination   d. None of these.            Ans: a

8. Which of these is an incorrect statement regarding the process of respiration:

- a. It is merely breathing in and out of air   b. Carbon dioxide is produced.  
c. Energy is produced            d. Food is broken down            Ans : a.

9. As the altitude of a place increases, the temperature:

- a. Increases   b. There is no effect on temperature   c. Decreases   d. None of these.            Ans :c

10. Among the following who needs more carbohydrates?

- a. Growing children   b. Farmers   c. Labourers   d. All of these.            Ans:d

11. Plants are called:

a. Producers b. Autotrophs c. Heterotrophs d. Both a and b. Ans : d

12. The movement of air from land to sea is called:

a. Sea breeze b. Land breeze c. Day breeze d. Cyclone Ans: b

13. The humidity of a place depends on it's:

a. distance from the sea b. direction of wind c. Both a and b d. None of these. Ans :c.

14. The liver makes a juice called:

a. Saliva b. Bile c. Gastric juice d. Intestinal juice. Ans b

15. In a normal adult human being the rate of heart beat is:

a. 60-70 times per min b. 70-80 times per min c. 80-90 times per min d. None of these.

Ans :b

16. Which Day is celebrated as World Health Day?

A. 30 January

B. 1 April

C. 7 August

D. 7 April

Ans: d

17. Which of the following award is given for contribution in public services?

A. Kalinga Prize

B. Lata Mangeshkar Prize

B. Booker Prize

D. Roman Magsaysay Award

Ans: d

\*\*\*\*\*