



# Today SCIENCE

(Teacher Manual)

**Class-5**



# Today Science Class - 5

## Chapter - 1 — Reproduction in Plants

**Let's Explore** — Do it yourself

### Revisit and Relearn

- A. 1. Cotyledon    2. (a) dandelion    3. (c) Rose  
4. (a) Rice    5. (c) wheat
- B. 1. Seed coat    2. Monocot    3. Coconut    4. Stem  
5. Winter
- C. 1. F    2. T    3. T    4. F    5. T
- D.1. Outer layer of seed is called seed coat. It protects the seed. If seed coat is removed, there are seed leaves known as cotyledons. Cotyledon provide food to the growing plant. Between the cotyledon is the baby plant, called the embryo. Baby plant grows into a seedling.
2. The process by which a seed grows into a new plant is called germination.
3. Wind:    Dandelion, Maple  
Water:    Coconut, lotus  
Explosion: Pea, poppy
4. **Kharif Crops:** These are the crops grown in summer season. For example: Rice, jowar  
**Rabi Crops:** These are the crops grown in winter season. For example: wheat, gram
5. Some tips to yield healthy crops are:  
(i) Good quality of seeds should be selected.  
(ii) Sufficient water should be provided.

### HOTS

1. If we do not look after the crops properly, they get destroyed.
2. If all the seeds fall under the parent plant, there will be competition among them for water, air, sunlight etc. due to which most of them will not grow into plants.
3. Mango tree can grow from stem cuttings but the success rate of growing mango from stem cutting is low. They grow from seeds.

**Value-Based** — Do it yourself.

### Inquiry based

Pistil helps to receive pollen and in the fertilization process.

### National Cyber Olympiad Question

1. (b) Wind    2. (a) Potato is an underground stem.

## Chapter - 2 — Animal Around Us

### Let's Explore

1. Pangolin
2. Raccoon
3. Meerkat
4. Puma
5. Red Panda
6. Koala

### Research & Discover — Do it yourself

#### Revisit and Relearn

- A. 1. (a) terrestrial animals                      2. (c) feathers  
3. (c) gills                      4. (c) scales                      5. (b) duck
- B. 1. F                      2. T                      3. F                      4. T                      5. F
- C. 1. (b)                      2. (d)                      3. (e)                      4. (c)                      5. (a)
- D.1. Tortoises, turtle and snail are protected by hard shells. These animals draw their heads and feet into the shell and hide to protect themselves from enemies.
2. Proboscis is a long tube that butterflies and mosquitoes have to suck their food in the form of nectar and blood.
  3. Insects like grasshoppers and mosquitoes have small openings called spiracles on their body. The spiracles lead into network of tubes called trachea. Air enters the spiracles and then passes through trachea. Oxygen from this air absorbed by the tissue of the body. Carbondioxide is removed from the body through spiracles.
  4. Reptiles like lizard, crocodile and snake use different forms of locomotion. Lizards and crocodiles have small legs that they use to crawl on ground. Snakes use scales present on the underside of their body to crawl.
  5. Migration is the mass mvement of animals from one region to another, in response to changes in weather, habitat or availability of food. Arctic tern and monarch butterflies are two migratory birds.

#### HOTS

1. Humans, birds and reptiles are all living beings, they all take oxygen and give out carbon dioxide.
2. Adaptation determines whether an animal can survice in a given environment. For example: Fish has gills to breathe in water but human beings do not so they can't survive in water. Moreover human beings do not have streamlined body to swim in water.
3. Humans cannot breathe underwater because they do not have gills and streamlined body to swim.

#### National Cyber Olympiad Question

1. (a) supply of food
2. (d) all of these

**IBQ** — Do it yourself.

**Value-Based** — Do it yourself.

**Activity Bonanza** — Do it yourself

## Chapter - 3 — The Skeletal System and Muscular System

### Let's Explore

SKELETAL, MUSCULAR, CIRCULATORY, DIGESTIVE

### Research & Discover

Doctor can see the picture of a broken bone through X-Ray.

### Critical Thinking — Do it yourself

### Revisit and Relearn

- A. 1. (a) cells      2. (c) brain      3. (b) 12      4. (a) Thigh Bone  
5. (c) elbow
- B. 1. organ      2. ribs      3. 206  
4. Pivot      5. Voluntary
- C. 1. (c)      2. (e)      3. (a)      4. (b)      5. (d)
- D. 1. T      2. T      3. F      4. T      5. T

E.1. Functions of skeletal system:

- (i) It gives shape to our body.  
(ii) It allows us to move.

2. We are able to talk because of the lower movable jaw of the skull.
3. **Backbone:** It forms the central axis of the skeleton. It is made up of 33 irregularly shaped bones called vertebral. the spinal cord passes through the holes of the ventebrae and is thus protected. It helps us to bend and holds our body upright. The backbone is also known as spine. the backbone is also known as spine.

**Ribcage:** There are 12 pairs of ribs in our body that form a cage. They protect the heart and the lungs.

4. Different types of movable joints are:

- (i) Ball and socket joint      (ii) Hinge Joint  
(iii) Pivot joint      (iv) Gliding joint

5. Voluntary muscles are under our control whereas involuntary muscles are not under control. Muscles in our arms and legs are voluntary. Muscles in our stomach and intestine are involuntary.

### HOTS

1. If we don't have a backbone, we won't be able to sit, stand or walk or we will fall down every second.



3. There may be several reasons such as bug bites or high glucose level that causes damage in nerves.

**Value-Based Question** — Do it yourself.

**Experiential Learning** — Do it yourself.

**Activity Bonanza** — Do it yourself.

**National Cyber Olympiad Question**

(a)

## Chapter - 5 — Food and Health

**Let's Explore** — Do it yourself

**Research & Discover** — Do it yourself

**Revisit and Relearn**

- A. 1. (c) Rice      2. (c) both      3. (a) Apple  
4. (b) Malaria    5. (b) Scurvy
- B. 1. five            2. calcium      3. Roughage  
4. mosquito      5. iron
- C. 1. T            2. T            3. F            4. F            5. T
- D.1. There are five main nutrients:  
a. Carbohydrates: give us energy.  
b. Protein: helps us to grow.  
c. Vitamins and Minerals: help to fight against diseases.  
d. Fats: give us energy.
2. A diet that contains all the nutrients in right amount is called a balanced diet.
3. Two types of diseases are:  
(i) Communicable disease                      (ii) Non-communicable disease
4. Communicable disease can operate through air and water.
5. Preventive measure of communicable diseases are:  
(i) Store water in closed containers. Always drink purified or boiled water.  
(ii) Have wire nettings on the windows or doors of your house which restrict the entry of mosquitoes and allows air and sunlight to come in.
5. Diseases that are caused due to deficiency of a particular nutrient are called deficiency diseases. For example: Scurvy and Goitre.

### HOTS

1. He might have fallen sick because the food that he ate had germs and bacteria on it because most of the street hawkers keep their food in open. They do not cover the food.

2. Diseases of lungs are very common now because the air we breathe is polluted these days.
3. Extra fat is stored in our body for later use. But we don't do any physical exercise to use the extra fat so it is kept stored.

**Value-Based** — Do it yourself.

**Experiential Learning** — Do it yourself.

**Activity Bonanza** — Do it yourself.

### National Cyber Olympiad Question

1. (i) and (iv)
2. (b) fats give us energy to get rid of undigested food.

## Chapter - 6 — Air and Water

**Let's Explore** — Do it yourself

**Research & Discover** — Do it yourself

### Revisit and Relearn

- |    |                    |                   |             |
|----|--------------------|-------------------|-------------|
| A. | 1. (c) troposphere | 2. (b) oxygen     | 3. (c) pure |
|    | 4. (a) evaporation | 5. (b) filtration |             |
| B. | 1. five            | 2. 78%            | 3. weight   |
|    | 5. boiling         | 4. filter         |             |
| C. | 1. (b)             | 2. (a)            | 3. (e)      |
|    |                    |                   | 4. (c)      |
|    |                    |                   | 5. (d)      |

E.1. The atmosphere has five layers:

- i. Troposphere: It is the lowermost layer. All the weather changes take place in it.
  - ii. Stratosphere: This layer starts from where the troposphere ends. This layer has ozone layer which absorbs ultraviolet rays.
  - iii. Mesosphere: This layer lies next to stratosphere which prevents small rocks called meteoroids from reaching the earth's surface by burning them.
  - iv. thermospheric: This layer is called hot layer as it has high temperature. Many space shuttles orbit in this layer.
  - v. Exosphere: It is the outermost layer of the atmosphere. Beyond this layer is a vast space.
2. We can prove that air supports burning by following activity:  
Take two burning candles. Cover one with glass. We will see that the candle covered with glass, stops burning but the one that is non-covered till burns. This shows that air supports burning.
  3. Properties of water are as follows:
    - Pure water has no colour, taste or smell.

- Water can dissolve many things.
  - Water can absorb a lot of heat.
4. The action of purifying a liquid by a process of heating and cooling is called distillation.
  5. The process of settling down of heavier insoluble particles at the bottom of a liquid is called sedimentation. Decantation is a process of separating the lighter liquid by tilting and draining or pouring it into another vessel.

## HOTS

1. All living things breathe oxygen but percentage of oxygen in the air does not decrease because plants give out oxygen during the process of photosynthesis.
2. Distillation does not remove chemicals. It only removes soluble minerals therefore it is not used to purify water.
3. Water in our house can be made safe for drinking by boiling or purifying using purifiers.

**Value-Based** — Do it yourself

**Activity Bonanza** — Do it yourself.

**Experiential Learning** — Do it yourself

## National Cyber Olympiad Question

1. (b) (i) and (iii)
2. (c)

# Chapter - 7 — Light, Shadow and the Moon

**Let's Explore** — Do it yourself

**Research & Discover** — Do it yourself

## Revisit and Relearn

- A. 1. (a) Clear glass    2. (c) moon    3. (b) gibbous moon  
 4. (c) Weather Sattelite    5. (c) eclipse
- B. 1. Sun    2. Opaque    3. Crescent    4. Navigation  
 5. lunar
- C. 1. F    2. F    3. T    4. T    5. F
- D.

1.	Transparent	Translucent	Opaque
	It allows light to pass through them.	It allows some light to pass through them.	It does not allow light to pass through them at all.
	Example: clear glass, clean water	Example: coloured glass, dirty water	Example: wood, stone



2. Different phases of the moon are:
- New moon:** When the side of the moon facing the earth reflects no sunlight, we cannot see the moon.
- Crescent moon:** When a small portion of the moon can be seen.
- Half moon:** When half of the moon can be seen.
- Gibbous moon:** When we can see three-quarters of the moon.
- Full moon:** When the entire side of the moon facing the earth gets sunlight, we can see the full moon.
3. When an opaque object is placed before a source of light, a dark patch is formed near the object. This dark patch is called shadow.
4. Uses of artificial satellite:
- Communication satellites send signals for TV and radio programmes
  - Weather satellite helps in determining weather conditions.
5. When the earth comes between the sun and the moon, the shadow of the earth falls on the moon. This is called lunar eclipse.
6. When moon casts its shadow on earth and comes between the sun and the earth, it is called solar eclipse.
- E. 1. (c)            2. (a)            3. (e)            4. (b)            5. (d)

### HOTS

1. Do it yourself.
2. Shadows are formed when an opaque object comes is placed before a source of light.
3. Moon does not have atmosphere. Hence life is not possible.

### National Cyber Olympiad Question

1. (c) April 3, 1984            2. (c)

**Value-Based** — Do it yourself.

**Experiential Learning** — Do it yourself.

**Activity Bonanza** — Do it yourself.

## Chapter - 8 — Natural Distasters

### Let's Explore

1. Earthquake    2. Cyclone    3. Flood    4. Drought

**Research & Discover** — Do it yourself

### Revisit and Relearn

- A. 1. (a) Crust    2. (b) focus    3. (a) crater  
 4. (c) coastal areas    5. (b) famine



- Causes of air pollution: smoke and harmful gases released from running vehicles, chimneys of factories and power station.  
Causes of water pollution: Water gets polluted when wastes from industries and farms and sewage from homes and hospitals is thrown into water resources.
- Noise pollution causes high blood pressure and deafness in people and animals.

## HOTS

- We can reuse the bottle or reduce the use of it.
- CNG creates less pollution than petrol.
- Plastic bags when burnt caused a lot of pollution and harmful gases were released. Hence they were banned.

**Activity Bonanza** — Do it yourself.

## Problem Solving

- running
- waste
- Land pollution, waste
- dispose

**Value-Based** — Do it yourself.

## National Cyber Olympiad Question

- (d)
- (a)

# Chapter - 10 — Soil Erosion and Conservation

**Let's Explore** — Do it yourself

**Research & Discover** — Do it yourself

## Revisit and Relearn

- (c) Soil
    - (b) soil
    - (a) topsoil
    - (c) both a and b
    - (b) hills
  - T
    - F
    - T
    - F
    - T
  - soil
    - Weathering
    - Soil erosion
    - Deforestation
    - Afforestation
- Without soil there would be no life, as all living things directly or indirectly depend on soil. Plants grow in soil. Human beings and most of the animals obtain food from plants. If there is no soil there would be no plant and no other living things.
  - When topsoil is carried away by wind, water and other elements. This process is called soil erosion.
  - By wind: Strong winds blow away a lot of topsoil with them.  
By water: when rain falls, the running water carries the topsoil with it.

4. The protection of soil against soil erosion is called soil conservation.
5. We can conserve soil by:
  - i. Afforestation: Planting of trees in large numbers.
  - ii. Terrace farming: It is done on the hills. The slope is cut into steps to reduce the speed of flowing water.

## HOTS

1. Herbivores graze grass and grass holds the soil when overgrazing takes place soil is eroded.
2. Terrace farming is done on hilling areas as steps so this is also called step farming.
3. The roots or stems might hold the soil tightly.

## Problem Solving

- (a) topsoil    (b) soil    (c) step farming    (d) deforestation.

**Value-Based** — Do it yourself.

**Activity Bonanza** — Do it yourself.

## National Cyber Olympiad Question

1. (b)                      2. (b)

# Chapter - 11 — Rocks and Minerals

## Let's Explore

1. Marble    2. Sandstone    3. Slate

**Research & Discover** — Do it yourself

## Revisit and Relearn

- A. 1. (a) Granite    2. (b) Shale    3. (c) Quartzite  
 4. (c) silver                                      5. (a) coal
- B. 1. minerals    2. three    3. Pumice    4. Gniess    5. coal
- C. 1. T                      2. F                      3. T                      4. F                      5. T
- D.1. There are three kinds of rocks are igneous, sedimentary, and metamorphic.
2. Sedimentary rocks are formed from deposits of pre-existing rocks or pieces of once-living organism that accumulate on the Earth's surface. If sediment is buried deeply, it becomes compacted and cemented, forming sedimentary rock
3. The three main types of metamorphic rocks are:  
 a. Slate                      b. Marble                      c. Gneiss
4. Using pumice for a kitchen slab instead of granite might not be the best idea. While pumice is lightweight and porous, making it easy

to shape, it lacks the durability and hardness of granite. Pumice is also more prone to scratching, staining, and chipping, which are not desirable qualities for a kitchen countertop that undergoes frequent use and contact with various substances. Additionally, pumice's porous nature could harbor bacteria if not properly sealed, making it less hygienic than granite. Therefore, while pumice has its uses, it's not the most practical material for a kitchen countertop.

5. Using solar and wind energy in day-to-day life can be quite practical:
  - a. Solar Power: Install solar panels on your roof to generate electricity for your home. Use solar-powered outdoor lights, chargers for phones and other gadgets, and even solar-powered cooking appliances.
  - b. Wind Power: Consider installing a small wind turbine if you have enough space and live in a windy area. Wind turbines can generate electricity for your home, especially useful in rural areas where grid connections might be unreliable or costly.

Both these renewable energy sources can reduce your reliance on fossil fuels and help lower your electricity bills while also being environmentally friendly.

## HOTS

1. Do it yourself
3. Gemstones like rubies, sapphires, and others are used in jewelry because of their inherent beauty, rarity, and durability. They add value, color, and sparkle to pieces, making them highly desirable for adornment. Additionally, these gemstones often carry symbolic or cultural significance, further enhancing their appeal.

**Value-Based** – Do it yourself; **Activity Bonanza** – Do it yourself

## National Cyber Olympiad Question

1. (c) Black Gold is another name of granite
2. (b) Petroleum

# Chapter - 12 — Simple Machine

**Let's Explore** — Do it yourself

**Research & Discover** — Do it yourself

## Revisit and Relearn

- |    |                |                          |             |         |          |
|----|----------------|--------------------------|-------------|---------|----------|
| A. | 1. (c) Fulcrum | 2. (a) First-class lever |             |         |          |
|    | 3. (c) tongs   | 4. (b) incline plane     | 5. (b) nail |         |          |
| B. | 1. fulcrum     | 2. second                | 3. pulley   | 4. cars | 5. wedge |
| C. | 1. (c)         | 2. (d)                   | 3. (e)      | 4. (b)  | 5. (a)   |

D.1. Difference between simple and complex machines:

<b>Simple machines</b>	<b>Complex machines</b>
1. A simple machine is a simple device with few or no moving parts.	1. A complex machine is a combination of two or more simple machines.
2. A lever is a solid bar used to lift heavy loads and is a simple machine.	2. A scissor is a complex machine as it is a combination of two simple machines.
3. A simple machine is simple to use.	3. A complex machine like a sewing machine is relatively tough to use.
4. Pulleys, inclines planes, wedges, etc are some of the examples of simple machines.	4. Sewing machines, bicycles, elevators, etc are some of the examples of complex machines.

2. There are three types of levers:
  - a) First-class lever: In this lever, the fulcrum is located between the effort and the load. Examples include a seesaw and a crowbar.
  - b) Second-class lever: Here, the load is between the fulcrum and the effort. A wheelbarrow and a nutcracker are examples of second-class levers.
  - c) Third-class lever: In this case, the effort is applied between the fulcrum and the load. Examples include a fishing rod and a pair of tweezers.
3. A pulley is a simple machine consisting of a wheel with a groove around its circumference and a rope or belt that runs along the groove. Pulleys are used to lift or move heavy objects more easily by allowing the force needed to lift the object to be spread out over multiple lengths of rope or belt. They are commonly used in various applications, such as lifting weights in a gym, hoisting sails on a boat, or in more complex machinery like cranes and elevators. Pulleys can be fixed, movable, or a combination of both, and they are fundamental components in many mechanical systems.
4. Inclined planes are used to move heavy loads over vertical obstacles. Examples vary from a ramp used to load goods into a truck, to a person walking up a pedestrian ramp, to an automobile or railroad train climbing a grade.
5. A screw is better than nails as it holds the things better than a nail. This is due to the presence of threading in screws that grips the surrounding material tightly. Also screws are easier to control than nails and can be removed easily.

## HOTS

1. Hence, we use a simple machine called a pulley to remove a huge rock that has blocked the road after a landslide. A pulley is capable of doing heavy work. A pulley is a simple machine made of a wheel with a Shaft around its rim and a rope passing through the shaft, which is used to lift heavy objects.
2. A wheel can be turned into a simple machine by making a wheel and axle arrangement. This forms a class I lever. A wheel or an axle separately do not form any simple machine. One such example is a pulley in which a wheel is present on an axle or shaft that helps in movement or in changing the direction of the force

## Problem Solving

- a. fulcrum and effort    b. pulley    c. effort force    d. wedge

**Value-Based** — Do it yourself

**Activity Bonanza** — Do it yourself

## National Cyber Olympiad Question

1. (A) i, iii and iv                      2. (B) I only



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