



6th

7th

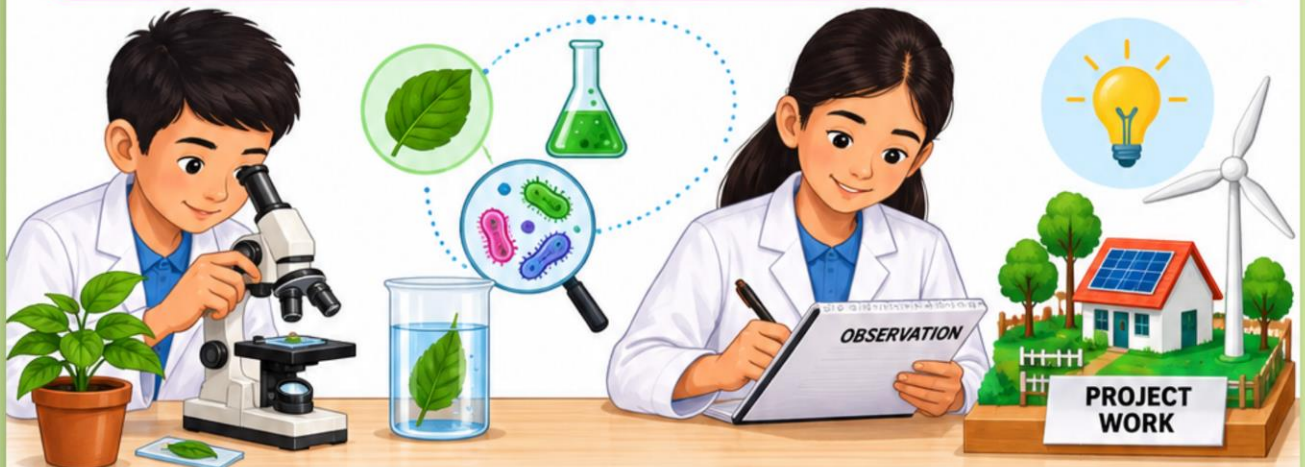
8th

9th

10th

FARMATIVE ASSESMENT-2

LAB ACTIVITIES & PROJECT WORKS



www.apbstf.online



EXPLORE



EXPERIMENT



CREATE



ANALYSE



PRESENT

BIOLOGY FOR A BETTER TOMORROW

CONTRIBUTORS

K MANJULA SA (BS)

ZPHS(G) MUDDIREDIPALLI, HINDUPUR(M), SRI SATYA SAI(D)

B SIVALAKSHMI SA (BS)

ZPHS REDDIVAARIPALLI/PV, VEERABALLI(M), KADAPA(D)

V TRIVIKRAM RAO SA (BS)

ZPHS ALLADA, JALUMURU (M), SRIKAKULAM (D)

K S KIRAN KUMAR SA (BS)

ZPHS LINGANAHAL, BOMMANAHAL (M), ANANTAPUR (D)

T MURALI KRISHNA SA (BS)

ZPHS KALUGOTLA, VELDURTHI (M), KURNOOL(D)

S BHANUPRASAD SA (BS)

GOVT HIGH SCHOOL, ATTILI (M), WEST GODAVARI(D)

P SIVA PRASAD SA (BS)

ZPHS CHINNAORAMPAADU, OBULAVAARIPALLI(M), TIRUPATI (D)

FA-II SYLLABUS 2026-27

GENERAL SCIENCE/BIOLOGICAL SCIENCE

6th Class Science	The World of Science,
	Diversity in the living world
	Mindful Eating
	Exploring magnets
7th Class Science	Electric circuits and their Components
	Metals and Non Metals
	Changes Around us
	Adolescence
8th Class Biology	Health,
	Nature's Harmony
9th Class Biology	Tissues (2.1 & 2.2)
	Tissues (2.2 & 2.3)
10th Class Biology	Control and Coordination
	How do organisms reproduce?

6th LAB ACTIVITIES

Activity 1: Relation between roots and leaves

Aim: To find relation between venation and roots.

Materials Required: Different plants.

Procedure:

1. Observe leaves and roots.
2. Record observations.

Observation Table:

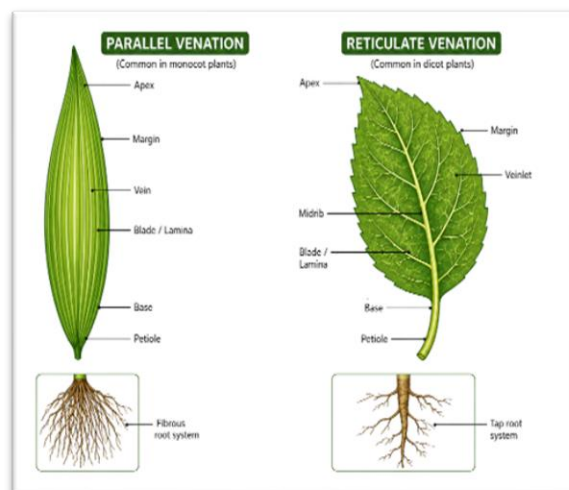
S. No.	Name of the plant	Type of venation (Parallel / Reticulate)	Type of root (Taproot / Fibrous root)
1.	Lemongrass	Parallel	Fibrous root
2.	Wheat	Parallel	Fibrous root
3.	Hibiscus	Reticulate	Taproot
4.	Mustard	Reticulate	Taproot
5.	Mango	Reticulate	Taproot

Observation:

Parallel venation → Fibrous root

Reticulate venation → Taproot

Conclusion: Leaf venation and root type are related.



Activity 2: Let us compare

Aim: To compare types of seeds.

Materials Required: Chickpea, maize seeds.

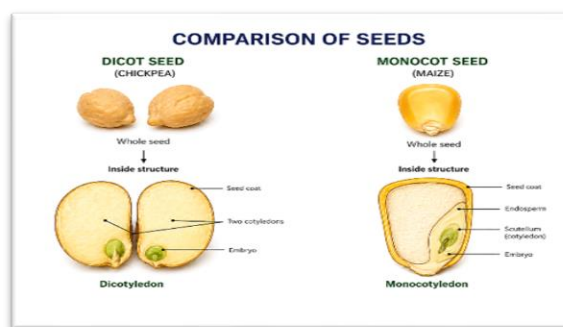
Procedure:

1. Soak seeds.
2. Observe inside structure.

Observation:

- Chickpea → Two cotyledons
- Maize → One cotyledon

Conclusion: Seeds are of two types: dicot and monocot.



Activity 3: Let us record

Aim: To record the food we eat in a week.

Materials Required: Notebook, pen.

Procedure:

1. Observe the food you eat every day.
2. Write the food items for each day.
3. Continue for one week.
4. Fill the table neatly.

Observation Table 3.1: Food items consumed over a week:

Day	Food items
Monday	Rice, dal, vegetables
Tuesday	Chapati, curry, milk
Wednesday	Idli, sambar, fruit
Thursday	Rice, curry, salad
Friday	Chapati, dal, curd
Saturday	Dosa, chutney, juice
Sunday	Biryani, egg, sweets

Observation:

Food varies every day.

Conclusion: We eat a variety of food.



Activity 4: Test for Starch

Aim: To test the presence of starch.

Materials Required: Potato, rice, bread, iodine solution.

Procedure:

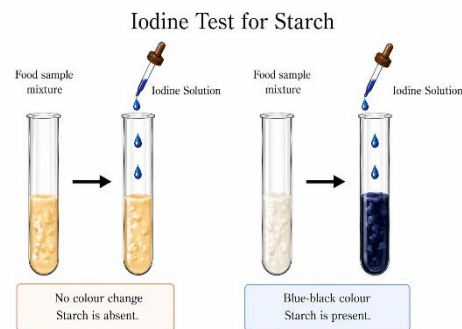
1. Take small pieces of food items.
2. Place them on a plate.
3. Add iodine drops.
4. Observe colour change.

Observation:

Blue-black colour appears – Starch is present.

No colour change – Starch is absent.

Conclusion: Starch is present.



Activity 5: Test for Fats

Aim: To test the presence of fats.

Materials Required: Food items, paper.

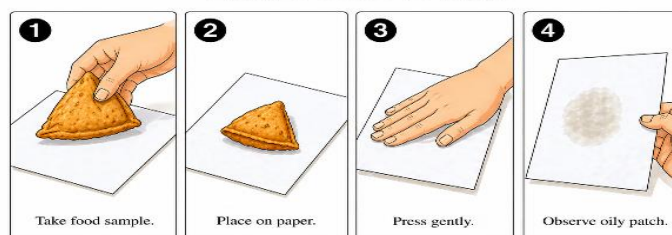
Procedure:

1. Take food sample.
2. Place on paper.
3. Press gently.
4. Observe oily patch.

Observation: Oily patch appears.

Conclusion: Fat is present.

Test for Fats



Activity 6: Finding Directions

Aim: To show that a magnet points North–South.

Materials Required: Magnet, thread, stand

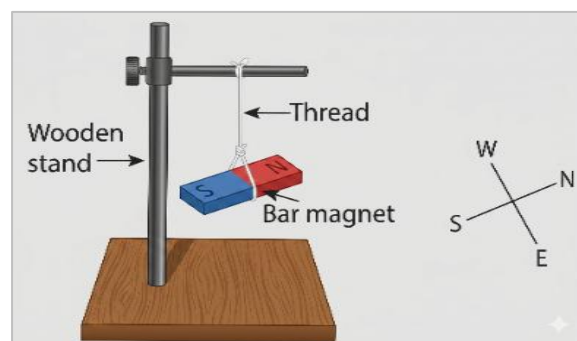
Procedure:

1. Tie a thread to the magnet.
2. Hang it freely.
3. Let it come to rest.

Observation:

The magnet always points in the same direction.

Conclusion: A freely hanging magnet shows the North–South direction.



Activity 7: Attraction and Repulsion

Aim: To study attraction and repulsion of magnets.

Materials Required: Two magnets, pencils.

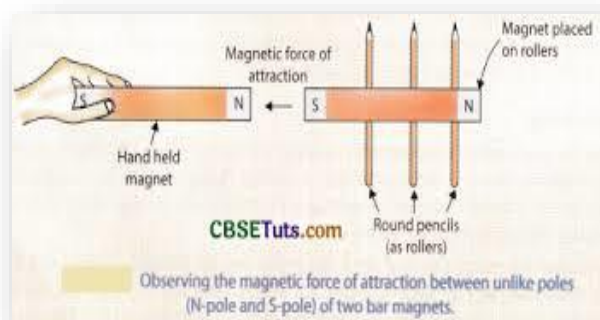
Procedure:

1. Place one magnet on pencils.
2. Bring another magnet close.
3. Try different pole combinations.

Observation:

1. Same poles move away.
2. Different poles come closer.

Conclusion: Like poles repel and unlike poles attract.



6th PROJECT WORKS

Project-1: Tiger and Wildlife Conservation

Aim:

To learn how India protects tigers and other wild animals.

Objectives:

1. To understand why we should protect animals and plants.
2. To learn about Project Tiger.
3. To learn about other wildlife protection projects.

Project Tiger:

- Project Tiger was started by the Government of India in **1973**.
- It helps protect tigers and their forests.
- It also helps stop poaching and improves tiger habitats.
- It monitors the number of tigers and reduces conflicts between people and wild animals.

Project	Started	Protects	Main Purpose
Project Tiger	1973	Tigers	Protect tigers and forests
Project Crocodile	1975	Crocodiles	Protect crocodiles and wetlands
Project Elephant	1991–92	Asian elephants	Protect elephants and their habitats
Project Snow Leopard	2009	Snow leopards	Protect Himalayan habitats
Project Dolphin	2020	River dolphins	Protect dolphins and rivers
Project Cheetah	2022	Cheetahs	Help cheetahs increase in number

Conclusion:

Wild animals and plants are our **natural wealth**. We must protect them and their habitats.

Project-2: Balanced Diet for a 12-Year-Old Child

Aim:

To prepare a simple, healthy and low-cost food chart using local foods.

Examples of healthy local foods:

1. **Grains:** Ragi, Jowar, Rice
2. **Protein foods:** Groundnuts, Green gram, Dal, Eggs
3. **Vegetables:** Tomato, Drumstick, Spinach, Thotakura
4. **Fruits:** Guava, Papaya, Banana

Meal	Food	Main Benefits
Breakfast	Ragi Java / Idli with peanut chutney	Energy, calcium and protein
Lunch	Ragi Sangati/Rice + Dal + leafy vegetables	Protein, iron and vitamins
Evening Snack	Boiled chana/groundnuts + banana/guava	Protein, fibre and vitamins
Dinner	Jowar Roti/Rice + vegetable curry + buttermilk	Fibre, minerals and hydration

Conclusion:

We do not need expensive foods to stay healthy. **Local, fresh and home-cooked foods** can give us the nutrients we need.

Project Work 3: Hopping Frog Toy

Aim:

To make a toy using magnetic repulsion.

Materials:

Plastic scale, ring magnets, paper, scissors, colours, glue and a thin plastic strip.

Procedure:

1. Fix ring magnets on the plastic scale.
2. Make a small paper frog and colour it.
3. Fix another magnet under the frog.
4. Place the frog on the scale.
5. Move the frog along the scale and observe it.

Learning Outcome:

- 👉 Like poles repel each other.
- 👉 The magnets push the frog upward and make it hop.

Project-4: Uses of Magnets in Medicine

Aim: To learn how magnets are used in hospitals and medical science.

Medical Use	How Magnet Helps	Benefit
MRI	Uses powerful magnets and radio waves	Helps doctors see inside the body
Removing Metal Splinters	Magnet attracts small iron/steel pieces	Helps remove them safely
Targeted Drug Delivery	Tiny magnetic particles can guide medicine	Helps deliver medicine to a specific area
Heart Pacemakers	Magnetic switches are used in the device	Helps control abnormal heartbeats

Conclusion:

1. Magnets are very useful in modern medicine.
 2. MRI is one of the most important medical uses of magnets.
-

Project-5: Junk Food and Healthy Food

Aim: To find out which junk foods students eat and suggest healthier choices.

Junk Food	Why It Is Less Healthy	Healthy Choice
Potato Chips	High in salt and unhealthy fats	Roasted chana / Makhana
Instant Noodles	High in salt and refined flour	Vegetable poha / Upma
Soft Drinks	High in sugar	Lemon water / Coconut water
Burger / Samosa	Often deep-fried and high in fat	Sprouts salad / Veg wrap
Cookies / Candies	High in sugar and additives	Fresh fruits / Peanut laddoo

Result:

Students often choose junk food because it is tasty and convenient. Choosing **fruits, roasted foods, sprouts and homemade snacks** can give us better nutrition.

Project Work 2: Food Journey – Farm to Plate

Aim:

To learn how food reaches our home.

Example: Rice

Growing → Harvesting → Drying → Milling → Transport → Shop → Cooking → Eating

What to do:

1. Choose rice, wheat or another food.
2. Draw its journey from the farm to your plate.
3. With the help of an adult, find out which foods are grown near your area.
4. Make a small poster about local food.

Benefits of Local Food

1. Less transport
2. Less pollution
3. Supports local farmers
4. Food can be fresher
5. Saves transport cost

My Pledge:

“I will take only the food I can eat and will not waste food.”

Activity-1 Make a Battery and Light a Bulb!

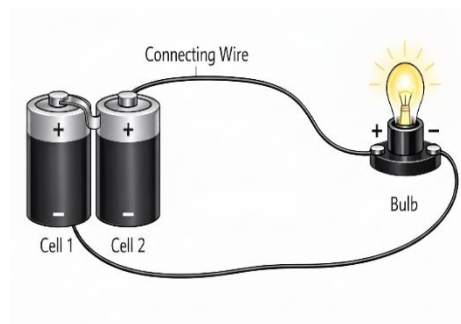
Aim: To learn how two cells make a battery and light a bulb.

Materials

1. 2 torch cells
2. 1 small bulb
3. 2 wires
4. Tape

Procedure

1. Find the + (positive) and – (negative) ends of each cell.
2. Join the + end of one cell to the – end of the other cell.
3. Fix the two cells together with tape.
4. Connect the two free ends to the bulb using wires.

**Observation**

- + to – connection: The bulb lights up. 💡
- + to + or – to – connection: The bulb does not light.

Conclusion

Two or more cells joined together form a battery.

Connecting the cells + to – gives enough electrical energy to light the bulb.

Activity-2: Electric Circuit Symbols

Aim: To learn how to draw electric circuits using simple symbols.

Materials

1. Pencil
2. Ruler
3. Notebook or paper

Procedure:

1. Use a ruler to draw straight lines.
2. Draw a cell and bulb and connect them with wires.
3. Add a switch to control the circuit.
4. Write the names of the parts: Cell, Bulb, Wire, Switch.

Conclusion:

1. Circuit symbols make drawings easy and neat.
2. A closed switch allows electricity to flow.
3. An open switch stops the flow of electricity.
4. These symbols help us understand electric circuits easily.

Common Electrical Circuit Symbols	
Cell	
Battery	
Bulb	
Switch (Open)	
Switch (Closed)	
LED	
Resistor	
Wire	

Activity-3: Why Do Iron Nails Rust?

Aim: To find out what causes iron to rust.

Materials

1. 3 test tubes
2. Iron nails
3. Water
4. Cooking oil
5. Dry calcium chloride

Procedure

1. **Tube A:** Put a nail in water with air.
2. **Tube B:** Put a nail in boiled water and cover it with oil. This keeps air away.
3. **Tube C:** Put a nail in dry air with calcium chloride. This removes moisture.
4. Leave all three tubes for **3–4 days**.

Observation

Tube	Air	Water	Result
A	✓	✓	Rust appears
B	✗	✓	No rust
C	✓	✗	No rust

**Conclusion**

Iron needs both oxygen (air) and water to rust.

Activity 4: Burning Magnesium Ribbon

Aim: To observe what happens when magnesium burns in air.

Materials

1. Magnesium ribbon
2. Tongs
3. Spirit lamp or burner

Procedure

1. The teacher cleans the magnesium ribbon with sandpaper.
2. The teacher holds it with tongs.
3. The teacher places it in the flame.
4. Observe carefully.

Observation

- Magnesium burns with a bright white light.
- A white powder is formed.

Conclusion

Magnesium combines with oxygen and forms magnesium oxide.

Magnesium + Oxygen $\rightarrow$ Magnesium Oxide



Burning of magnesium ribbon

Activity 5: Burning of a Candle

Aim: To show that burning a candle has both physical and chemical changes.

Materials

1. Candle
2. Matchbox

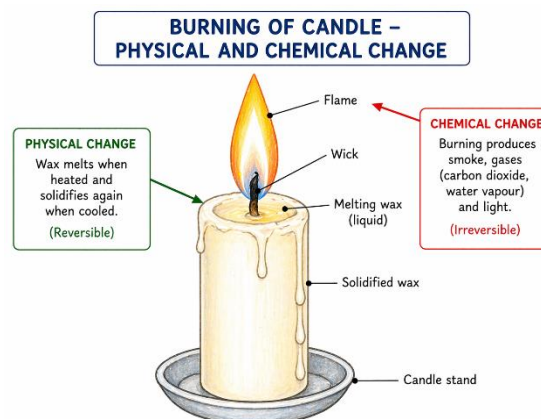
Procedure

1. Light the candle.
2. Observe the melting wax and the burning flame.

Observation

1. Wax melts and becomes solid again when cooled $\rightarrow$ Physical change.
2. Wax burns and forms new substances like gases $\rightarrow$ Chemical change.

Result: Burning a candle involves both physical and chemical changes.



Activity 6: Heating Copper Sulphate Crystals

Aim

To show that heating copper sulphate causes a chemical change.

Materials

- Blue copper sulphate crystals
- Test tube
- Burner

Procedure

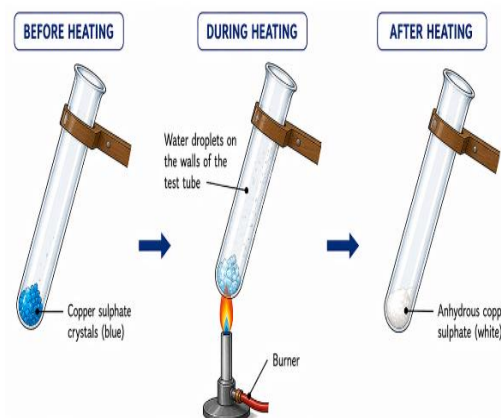
1. Take a few blue copper sulphate crystals in a test tube.
2. Heat them gently.
3. Observe the colour change.

Observation

1. Blue crystals become white.
2. Water droplets appear on the test tube.

Result

1. The crystals lose their water when heated.
2. Blue copper sulphate becomes white anhydrous copper sulphate.
3. A new substance is formed.



Activity 7: Changes During Growing Up

Aim: To identify the changes that happen during adolescence.

Materials

1. Jar
2. Paper slips
3. Pen or pencil

Procedure

1. Take a jar and some paper slips.
2. Write different changes that happen while growing up.
3. Fold the slips and put them in the jar.
4. Pick the slips one by one.
5. Discuss the changes with the class.



Observation

No.	Change	Observation
1	Height	Height increases
2	Weight & strength	Body becomes stronger
3	Appearance	Hair and skin may change
4	Voice	Voice changes
5	Behaviour	Feelings and behaviour change

What We Learned

1. Height and weight increase during adolescence.
2. Voice and appearance change.
3. Boys and girls develop some different physical features.
4. Feelings and behaviour may also change.

Result: Adolescence is a stage of growth when the body and behaviour change gradually.

Activity 8: Social Media Awareness

Aim: To learn how to use social media safely and responsibly.

Materials

1. Chart paper
2. Markers
3. Posters or printouts
4. Glue and scissors

Procedure

1. Work in groups.
2. Make a poster about safe social media use.
3. Discuss the Do's and Don'ts.
4. Write your points in a table.



Observation

Do's ☒	Don'ts ☒
Be kind and respectful.	Do not bully others.
Think before posting.	Do not spread rumours.
Keep personal information private.	Do not share passwords.
Use strong passwords.	Do not accept unknown requests.
Report harmful content.	Do not share personal photos with strangers.
Ask permission before posting others' photos.	Do not post false information.
Limit screen time.	Do not spend too much time online.

What We Learned

1. Keep your personal information safe.
2. Be kind and respectful online.
3. Do not talk to or share information with strangers.
4. Think carefully before posting anything.
5. Use social media safely and wisely.

Result: Safe and responsible use of social media helps us avoid online problems and stay safe.

7th PROJECT WORKS

Project-1: DISTRIBUTION OF METALS IN INDIA

1. Introduction

India is rich in many useful minerals and metals. Metals are obtained from ores found inside the Earth.

Different metals are found in different parts of India.

Some important metals found in India are iron, aluminium, copper, manganese, gold and zinc.

2. Objectives

1. To learn about important metals found in India.
2. To know the major states where these metals are found.
3. To understand the uses of different metals.
4. To learn why metals are important in our daily life.

3. Distribution of Important Metals

Metal	Major States/Areas	Main Uses
Iron	Odisha, Chhattisgarh, Jharkhand, Karnataka	Making steel, machines and buildings
Aluminium	Odisha, Chhattisgarh, Jharkhand, Gujarat	Aircraft, utensils, electrical items
Copper	Rajasthan, Madhya Pradesh, Jharkhand	Electrical wires, machines
Manganese	Odisha, Karnataka, Maharashtra, Madhya Pradesh	Making steel and batteries
Gold	Karnataka, Andhra Pradesh	Jewellery and electronics
Zinc	Rajasthan, Andhra Pradesh	Batteries, alloys and galvanising

5. Why Are Metals Important?

Metals are useful in many ways:

1. Iron is used to make buildings, bridges and machines.
2. Aluminium is used to make utensils, vehicles and aircraft.
3. Copper is used mainly in electrical wires.
4. Manganese is used in steel production.
5. Gold is used in jewellery and electronics.
6. Zinc is used in batteries and galvanising.

6. Conclusion

India has many important metal resources. These metals are found in different states of the country. They are very useful for industries, transport, construction, electricity and everyday life. We should use mineral resources carefully and avoid unnecessary wastage.



PROJECT 2: DIFFERENT TYPES OF ELECTRIC CELLS

Aim: To learn about different types of electric cells, their sizes, and their uses.

Objectives

- To identify different types of cells.
- To know where different cells are used.
- To learn why different devices need different cells.
- To learn the importance of choosing the correct cell.

Method

1. Visit a nearby electrical or electronics shop with a teacher or adult.
2. Observe different types of cells and batteries.
3. Ask the shopkeeper about their names, sizes, and uses.
4. Record the information in a table.

Observation Table

S.No.	Type of Cell	Shape	Uses
1	Dry Cell	Cylindrical	TV remote, clock, torch, toys
2	Alkaline Cell	Cylindrical or button	Camera, computer mouse, games
3	Button Cell	Small and round	Watches, calculators, key fobs
4	Lithium-Ion Cell	Cylindrical or pack	Mobile phones, laptops, power banks
5	Lead-Acid Battery	Large box	Cars, bikes, inverters
6	NiMH Rechargeable Cell	Cylindrical	Cameras, emergency lights, cordless phones

Conclusion

We learned that cells store electrical energy. Different devices use different types of cells according to their size and power needs.

PROJECT-3: CONDUCTORS AND INSULATORS AT HOME

Aim: To find objects at home that are conductors and insulators.

Objectives

1. To understand conductors and insulators.
2. To identify them in daily life.
3. To learn how insulators keep us safe.

Method: Observe household objects and group them as conductors, insulators, or both.

Observation Table

Category	Object	Material	Why?
Insulator	Plastic scale	Plastic	Does not allow electricity to pass easily
Insulator	Rubber eraser	Rubber	Does not allow electricity to pass easily
Conductor	Iron nail	Iron	Metal allows electricity to pass
Conductor	Copper wire	Copper	Copper is a good conductor
Both	Screwdriver	Metal + Plastic	Metal conducts; plastic protects
Both	Electric plug	Metal + Plastic	Metal conducts; plastic protects

Conclusion

Metals are generally good conductors. Plastic, rubber, glass and dry wood are insulators. Many household objects use both to make them safe and useful.

PROJECT 4: METALS AND NON-METALS IN SMARTPHONES

Aim

To identify some metals and non-metals used in smartphones.

Objectives

1. To learn about materials used in mobile phones.
2. To identify metals and non-metals.
3. To know their uses.
4. To understand why recycling electronic waste is important.

Materials Required

- Smartphone or smartphone pictures
- Textbook or internet

Method: Observe the main parts of a smartphone and find out what materials are used in them.

Procedure

1. Observe a smartphone without opening it.
2. Identify parts like the screen, battery, camera and circuit board.
3. Find out the materials used in these parts.
4. Write the information in a table.

Observation Table

Material	Type	Used In	Use
Copper	Metal	Wires, circuit board	Carries electricity
Aluminium	Metal	Phone body	Makes the phone light and strong
Lithium	Metal	Battery	Helps store electrical energy
Cobalt	Metal	Battery	Helps the battery work
Nickel	Metal	Battery, electronic parts	Used in some components
Gold	Metal	Circuit board	Makes good electrical connections
Silver	Metal	Electronic contacts	Conducts electricity
Tin	Metal	Circuit board	Joins components
Silicon	Metalloid	Computer chip	Helps process information
Carbon	Non-metal	Battery	Used in some battery materials
Oxygen	Non-metal	Glass and other materials	Forms useful compounds
Fluorine	Non-metal	Some battery materials	Forms useful compounds

Result

A smartphone contains metals, non-metals and metalloids. Each material has a special job that helps the phone work properly. Recycling old phones helps reduce electronic waste.

8th LAB ACTIVITIES

Activity 1: Let Us List

Aim

To identify healthy and unhealthy habits.

Requirements

1. Notebook
2. Pen

Procedure

1. Write good daily habits.
2. Write unhealthy habits.
3. Compare both lists.
4. Decide which healthy habits to follow.

Observation

Healthy Habits	Unhealthy Habits
Eating healthy food	Eating junk food
Exercise	No exercise
Good sleep	Sleeping late
Personal hygiene	Too much mobile use



Conclusion

Healthy habits keep us fit and disease-free.

Precautions

1. Follow healthy habits daily.
2. Avoid junk food and excess screen time.

Activity 2: Let Us Infer

Aim

To understand antibiotic resistance.

Requirements

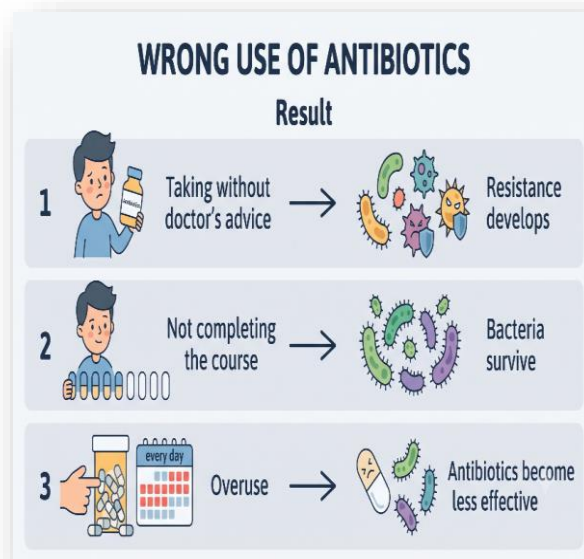
1. Textbook
2. Notebook

Procedure

1. Observe the infographic.
2. Read how antibiotic resistance develops.
3. Discuss ways to prevent it.
4. Write your conclusions.

Observation

Wrong Use of Antibiotics	Result
Taking without doctor's advice	Resistance develops
Not completing the course	Bacteria survive
Overuse	Antibiotics become less effective



Conclusion

Antibiotics should be taken only as prescribed by a doctor.

Precautions

1. Never take antibiotics without a doctor's advice.
2. Complete the full course of medicine.

Activity-3: Explore Two Habitats

Aim

To identify the living and non-living components of two habitats.

Requirements

1. Notebook
2. Pencil
3. Teacher's guidance
4. School garden/pond/park

Procedure

1. Visit any two nearby habitats.
2. Observe the plants, animals, water, soil and other things.
3. List the living and non-living components.
4. Record the observations in a table.

Observation Table

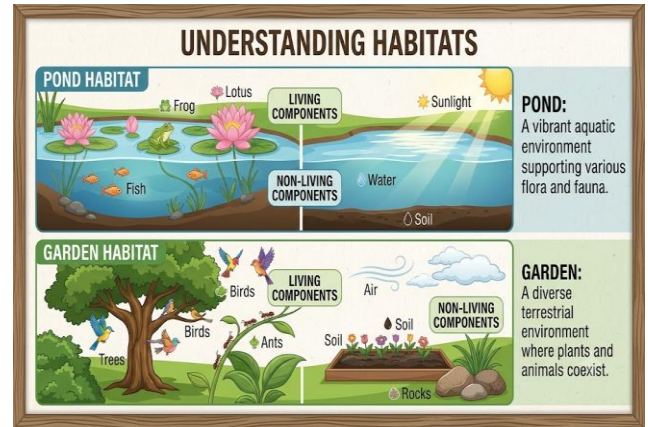
Habitat	Living Components	Non-living Components
Pond	Fish, Frog, Lotus	Water, Soil, Sunlight
Garden	Trees, Birds, Ants	Air, Soil, Rocks

Conclusion

Every habitat contains both living (biotic) and non-living (abiotic) components.

Precautions

1. Observe carefully without disturbing plants and animals.
2. Work under the teacher's supervision.



Activity-4: Draw a Food Chain

Aim

To understand the food chain.

Requirements

1. Chart paper
2. Pencil
3. Colour pens

Procedure

1. Identify organisms in a grassland.
2. Arrange them from producer to consumer.
3. Draw arrows to show food flow.
4. Label each organism.

Observation Table

Organism	Role
Grass	Producer
Grasshopper	Primary Consumer
Frog	Secondary Consumer
Snake	Tertiary Consumer
Eagle	Top Consumer

Conclusion

A food chain shows who eats whom in nature.

Precautions

1. Draw arrows in the correct direction.
2. Arrange organisms correctly



8th PROJECT WORKS

PROJECT-1: ADULT CPR – BASIC STEPS

Introduction:

CPR means Cardiopulmonary Resuscitation. It is an emergency procedure used when a person is unresponsive and not breathing normally.

Importance:

CPR is a practical skill. Students should learn it from a trained instructor. In a real emergency, call 112 in India and follow the emergency operator's instructions.

Basic Steps

1. Check for Safety

Make sure the place is safe for you and the person.

2. Check the Person

Tap the person's shoulder gently and ask loudly, "Are you okay?"

3. Call for Emergency Help

If the person does not respond and is not breathing normally, ask someone to call emergency medical services (112 in India) and get an AED (Automated External Defibrillator) if one is available.

4. Start Chest Compressions

If you are trained in CPR, begin chest compressions on the centre of the person's chest. Keep your arms straight and press firmly and regularly.

5. Give Rescue Breaths

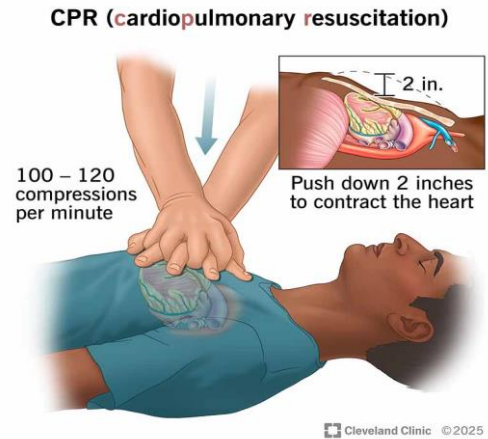
A trained rescuer may give rescue breaths along with chest compressions. If not trained or uncomfortable giving breaths, hands-only CPR (chest compressions) is better than doing nothing.

6. Use an AED

If an AED is available, turn it on and follow its spoken or visual instructions. Make sure nobody touches the person when the AED tells you to stand clear.

Conclusion

CPR is an important emergency first-aid skill. Knowing how to recognize an emergency, call for help, and begin appropriate CPR can help a person until professional medical care arrives.



PROJECT-2 : DESIGN YOUR OWN SCHOOL HEALTH CARD

Aim

To design a simple School Health Card to record important health information of a student.

Introduction

A School Health Card is a record of a student's basic health information. It helps students, parents, and teachers keep track of important health details.

My School Health Card

Name: _____

Class/Section: _____

Roll No.: _____

Age: _____

1. Physical Measurements

Height: _____ cm

Weight: _____ kg

2. Health Checks

Vision: _____

Hearing: _____

Dental Check: _____

3. Medical Information

Allergies: _____

Important medical information: _____

4. Vaccination Record:

Vaccine 1: ☐

Vaccine 2: ☐

Vaccine 3: ☐

Doctor/Health Worker Signature: _____

Healthy Habits Checklist

Healthy Habit	Yes/No
I eat healthy food.	_____
I drink enough water.	_____
I wash my hands regularly.	_____
I brush my teeth twice a day.	_____
I get enough sleep.	_____
I play or exercise regularly.	_____

Conclusion

A School Health Card helps us know, record, and take care of our health. It encourages students to follow healthy habits and stay healthy.

"Healthy Student = Happy Student!"

PROJECT 3: INDIGENOUS FARMING & SCHOOL HERBAL GARDEN

Objective

To learn natural farming methods and grow useful plants in school.

Traditional Farming Methods

1. **Neem spray:** Neem leaves can help keep harmful insects away.
2. **Natural manure:** Cow dung and compost improve soil.
3. **Crop rotation:** Different crops are grown in different seasons.
4. **Legumes:** Beans and lentils help improve soil fertility.

Herbal Garden Steps

1. Choose a sunny place.
2. Fill pots with soil and compost.
3. Plant **Tulsi, Mint, Aloe Vera and Lemongrass**.
4. Water and take care of the plants regularly.

Conclusion

Natural farming protects the soil, plants and environment.

PROJECT 4: FARM FIELD STUDY & SUSTAINABLE FARMING

Objective

To learn simple ways to make farming eco-friendly.

Eco-Friendly Farming Methods

1. Drip Irrigation

Water is given directly to plant roots. It saves water.

2. Biological Pest Control

Birds, frogs and ladybird beetles help control harmful insects.

3. Composting

Farm waste and cow dung can be changed into useful compost.

4. Multi-Cropping

Growing different crops together helps protect soil and supports insects.

Science Fair Ideas

Poster: “Nature's Defenders: Earthworms and Beetles”

Working Model:

Show the difference between:

1. Bare soil → more soil erosion
2. Soil with plant roots → less soil erosion

Expert Talk:

Invite a farmer or agriculture officer to explain natural farming.

Conclusion

Sustainable farming saves water, protects soil and helps farmers grow healthy crops.

PROJECT 5: FOUR-WEEK TREE TRACKER

Objective: To observe one tree for four weeks and record its changes.

Choose a tree: Neem / Peepal / Gulmohar

Observation Table

Week	Leaf Changes	Flowers/Fruits	Birds/Insects
Week 1	Green leaves	Small buds	Sparrows, ants
Week 2	New light-green leaves	Buds opening	Bees, butterflies
Week 3	Many leaves	Flowers	Sunbirds, ladybugs
Week 4	Some leaves turn yellow	Small fruits	Squirrels, caterpillars

Activity

Observe the same tree every week and write down the changes.

Conclusion

Trees change with seasons. Regular observation helps us understand nature.

Citizen scientists can also share observations with [Season Watch](#).

9th LAB ACTIVITIES

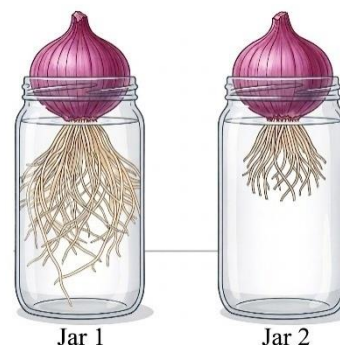
Activity 6.1: Growth of Roots in Onion Bulb

Aim: To observe the growth of roots and role of root tips.

Materials Required: Two glass jars, water, two onion bulbs, scale, blade/ knife.

Procedure:

1. Take two glass jars and fill them with water.
2. Place one onion bulb on each jar.
3. Observe root growth for 3 days.
4. Measure root length daily.
5. On day 4, cut root tips of onion in jar 2.
6. Continue observing for 5 more days and record in a table.



Observation:

Lenth	Day1	Day2	Day3	Day4	Day5
Jar1	0.5 cm	1cm	1.5 cm	2cm	3cm
Jar2	0.5 cm	1cm	1.5 cm	1.5 cm	1.5 cm

Roots in **jar 1** continue growing.

Roots in **jar 2** stop growing after cutting tips.

Result: Root growth occurs at the tips.

Conclusion: Roots in jar 1 grow continuously because their tips are not cut, while roots in jar 2 do not grow because their tips are cut. This shows that root tips help in growth, and the apical meristem present at the tips helps the roots to grow.

Activity 6.3: Observation of Epidermal Tissue

Aim: To observe the epidermal cells and stomata in Rhoeo leaf.

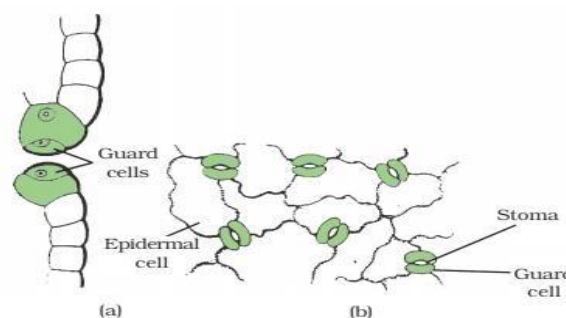
Materials Required: Rhoeo leaf, forceps, slide, cover slip, water, safranin, microscope.

Procedure:

1. Take a fresh Rhoeo leaf and stretch it gently.
2. Peel off the thin outer layer.
3. Put the peel in water in a petri dish.
4. Stain with safranin and wait for some time.
5. Place the peel on slide and cover with a cover slip.
6. Observe under a microscope.

Observation:

1. A thin layer of epidermal cells is seen.
2. The cells are closely packed and arranged in a single layer.
3. Small openings called stomata are also clearly visible.



Activity 6.4: Observation of Blood Cells

Aim: To observe different types of blood cells using a fresh blood drop.

Materials Required: Slide, cover slip, needle/sterile pin, cotton, antiseptic, microscope.

Procedure:

1. Clean the fingertip with antiseptic.
2. Prick the finger gently using a sterile needle.
3. Place a drop of blood on a clean slide.
4. Carefully place a cover slip over the drop.
5. Observe under the microscope.

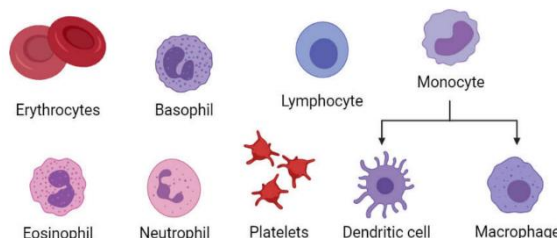
Observation: Different types of blood cells are seen such as red blood cells, white blood cells, and platelets.

Result: Blood contains different types of cells.

Conclusion: Blood has different cells like red blood cells, white blood cells, and platelets. Each has a special function. Red blood cells carry oxygen, white blood cells protect the body, and platelets help in clotting. So, blood is a connective tissue that helps in transport, protection, and healing.

Precaution: Use a sterile needle and clean the finger properly to avoid infection.

Types of Blood Cells



Activity 6.5: Study of Muscle Tissues

Aim

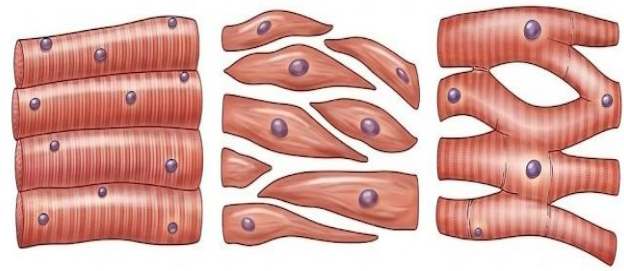
To compare different types of muscle tissues.

Materials Required

Charts or diagrams of muscle tissues, microscope, and prepared slides.

Procedure

1. Observe the different muscle tissues.
2. Look at the shape of the cells.
3. Check for stripes (striations).
4. Observe the number and position of nuclei.
5. Write the differences in a table.



Striated / Skeletal muscle

Smooth muscle

Cardiac muscle

Observation Table

Feature	Striated Muscle	Smooth Muscle	Cardiac Muscle
Shape	Long and cylindrical	Spindle-shaped	Branched
Stripes	Present	Absent	Present
Nuclei	Many	One	One or two
Nucleus position	At the side	At the centre	At the centre
Main function	Body movement	Movement of internal organs	Heartbeat

Easy Points to Remember

- Striated muscle → Stripes + many nuclei
- Smooth muscle → No stripes + one nucleus
- Cardiac muscle → Branched + stripes + one nucleus

Result

Different muscle tissues have different shapes and structures.

Conclusion

Muscle tissues are of three main types:

1. Striated muscles help in body movements.
2. Smooth muscles help in the movement of internal organs.
3. Cardiac muscles help the heart to beat continuously.

Activity 6.2 – Study of Plant Tissues (Stem Section)

Aim: To observe different types of cells in plant tissue.

Materials Required: Plant stem, blade, slide, cover slip, safranin, glycerine, microscope.

Procedure:

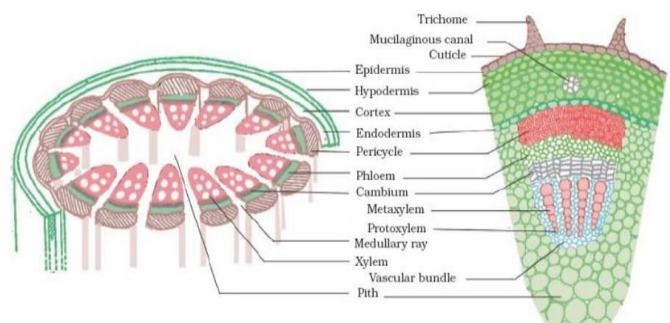
1. Cut thin sections of plant stem.
2. Stain with safranin.
3. Place on slide and add glycerine.
4. Cover with cover slip.
5. Observe under microscope.

Observation:

1. Different types of cells are seen.
2. Cells are arranged in groups.

Result: Different tissues are present in plant stem.

Conclusion: Plants have different types of tissues with specific functions.



9th PROJECT WORKS

PROJECT 1: STUDY OF PLANT TISSUES

Aim

To study different plant tissues and their functions.

Objectives

1. To identify plant tissues.
2. To learn their structure.
3. To know their functions.

Procedure

1. Observe diagrams of plant tissues.
2. Observe charts or slides if available.
3. Identify meristematic and permanent tissues.
4. Note their structure and location.
5. Write their functions in a table.

Observation Table

Tissue	Structure	Function
Meristematic	Small cells that divide	Growth
Parenchyma	Thin-walled cells	Storage
Collenchyma	Thick corners	Support
Sclerenchyma	Thick, dead cells	Strength

Simple Points

1. Meristematic tissue → Growth
2. Parenchyma → Storage
3. Collenchyma → Support
4. Sclerenchyma → Strength

Conclusion

Plant tissues have different structures and functions. They help the plant to **grow, store food, get support, and stay strong.**

PROJECT 3: STUDY OF ANIMAL TISSUES

Aim: To study different animal tissues and their functions.

Objectives

1. To identify animal tissues.
2. To learn their functions.
3. To observe their structure.

Procedure

1. Observe diagrams of animal tissues.
2. Identify different tissues.
3. Observe their structure and location.
4. Write their functions in a table.

Observation Table

Tissue	Simple Structure	Function
Epithelial	Thin layer of cells	Protection
Connective	Cells with matrix	Support
Muscular	Long cells	Movement
Nervous	Branched cells	Control

Easy Points to Remember

Epithelial → Protection
Connective → Support
Muscular → Movement
Nervous → Control

Conclusion

Different animal tissues do different jobs. Together, they help our body work properly.

PROJECT 4: BLOOD TISSUE AND HEALTH

Aim

To learn how blood helps our body and how blood tests check health.

Simple Introduction

Blood is a **connective tissue**. It contains **plasma, RBCs, WBCs, and platelets**.

Blood Components

Blood Component	Main Function
RBC	Carries oxygen
WBC	Fights diseases
Platelets	Help blood clot
Plasma	Carries nutrients and wastes

Common Blood Tests

Blood Test	What It Checks
CBC	Blood cells
Blood Sugar Test	Glucose level
Platelet Count	Number of platelets
Hemoglobin Test	Hemoglobin level
WBC Count	White blood cells

Easy Points to Remember

● RBC → Oxygen

○ WBC → Protection

💧 Platelets → Clotting

💧 Plasma → Transport

Conclusion

Blood is very important for our body. It carries oxygen and nutrients, removes wastes, protects us from diseases, and helps in clotting. Blood tests help doctors check our health.

PROJECT 2: TISSUE CULTURE OF BANANA PLANTS

Aim

To learn how banana plants are grown using tissue culture.

Objectives

- To understand tissue culture.
- To learn how banana plants are grown.
- To know how tissue culture helps farmers.

What is Tissue Culture?

Tissue culture is a method of growing many new plants from a small piece of a plant in a laboratory.

Procedure

- Take a **healthy piece** of a banana plant.
- Clean** the plant piece.
- Put it in a **nutrient medium**.
- Allow **small plants to grow**.
- Move the small plants into **soil**.

Stages of Tissue Culture

Healthy plant piece



Clean the piece



Put in nutrient medium



Small plants grow



Plant in soil

Observation Table

Stage	What we see
Plant tissue	Put in nutrient medium
Callus	A group of cells develops
Plantlet	A small banana plant grows
Soil transfer	The plant grows in soil

Advantages

- Many plants can be grown quickly.
- Plants are healthy.
- Plants grow in a similar way.
- It saves time.
- It helps farmers grow more crops.

Conclusion

Tissue culture helps us grow many healthy banana plants quickly from a small piece of a plant.

10th LAB ACTIVITIES

ACTIVITY – 1 :Phototropism

Aim

To show that plants grow towards light.

Materials Required

Conical flask, water, wire mesh, germinated bean seeds, cardboard box and light.

Procedure

1. Fill the flask with water.
2. Cover the flask with wire mesh.
3. Place 2–3 germinated bean seeds on the mesh.
4. Put the flask inside a box open on one side.
5. Keep it near a window or light.
6. Wait for 2–3 days.

Observation

- The **shoot grows towards the light**.
- The **root grows away from the light**.

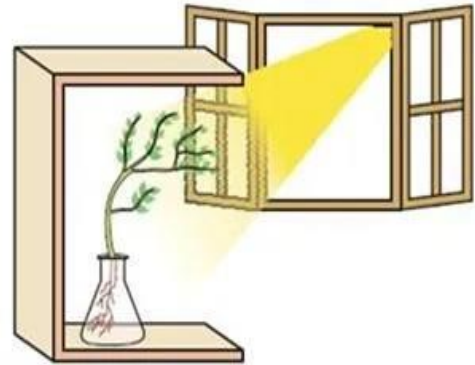
Conclusion

Plants respond to light.

Shoot → grows towards light

Root → grows away from light

👉 This growth response is called **phototropism**.



ACTIVITY – 2:Reproduction in Yeast

Aim

To observe how yeast reproduces by budding.

Materials Required

Yeast, sugar, warm water, test tube/beaker, glass slide, cover slip, stain and microscope.

Procedure

1. Mix yeast with warm water and a little sugar.
2. Keep it in a warm place for 1–2 hours.
3. Put a drop of the mixture on a glass slide.
4. Add a drop of stain.
5. Cover it with a cover slip.
6. Observe it under a microscope.

Observation

Small **bud-like structures** can be seen on yeast cells.

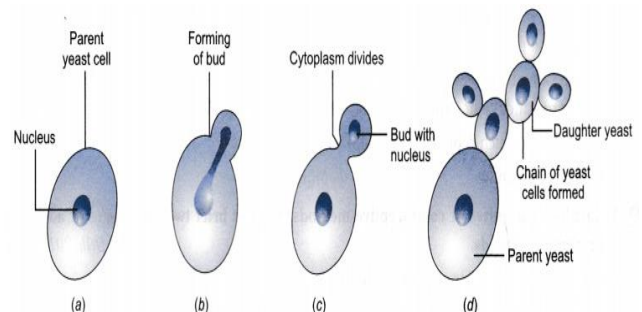
Conclusion

Yeast reproduces by forming a **small bud** on the parent cell.

This method is called **budding**.

Precautions

1. Use warm, not hot, water.
2. Handle the microscope and slide carefully.
3. Wash hands after the activity.



ACTIVITY – 3: Spore Formation in Rhizopus

Aim

To observe how Rhizopus (bread mould) grows and forms spores.

Materials Required

Bread, a little water, Petri dish or plate and magnifying glass.

Procedure

1. Sprinkle a little water on a bread slice.
2. Keep the bread in a Petri dish or covered plate.
3. Keep it in a cool, dark and moist place.
4. Observe it every day for about a week.

Observation

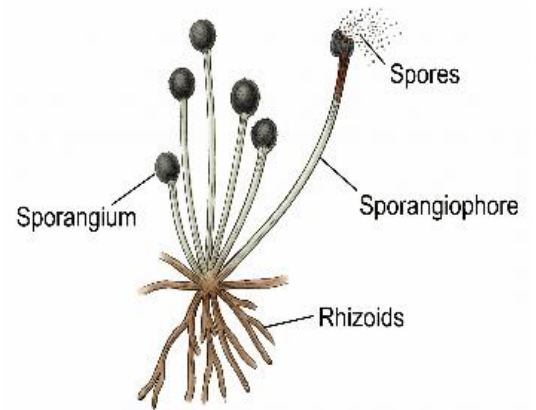
- After 1–2 days, **white cotton-like growth** appears.
- Later, **black dots** appear on the mould.
- These black dots are **spores**.

Conclusion

Rhizopus grows on moist bread and reproduces by **forming spores**.

Precautions

1. Do not touch the mould with your hands.
2. Keep the bread undisturbed.
3. Wash your hands after the activity.



ACTIVITY-4: To observe the pathway of a reflex action.

Aim

To understand how the body gives a **quick response** to a stimulus.

Requirements

1. Diagram/chart of a reflex arc
2. Biology textbook
3. Pencil and paper

Procedure

1. Observe the **reflex arc diagram**.
2. Identify the **receptor, sensory neuron, spinal cord, motor neuron, and muscle**.
3. Study the direction of the nerve message.
4. Note how the body gives a quick response.

Nociceptor Noxious heat

Detect heat Noxious heat activates a pain-sensing nociceptor in the skin.

Observation

When we touch something hot, the message travels:

Skin → Sensory neuron → Spinal cord → Motor neuron → Muscle

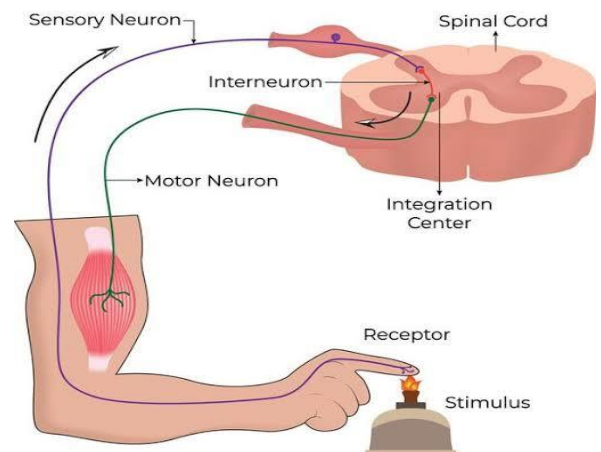
The hand moves away quickly.

Conclusion

A **reflex arc** is the pathway followed by a nerve message during a reflex action.

Reflex action → Quick and automatic response.

Reflex Action



PROJECT 1: BODY MESSENGERS – HORMONES & GLANDS**What are hormones?**

1. Hormones are chemical messages in our body.
2. They are made by special organs called glands.
3. Hormones travel through the blood and control body activities.

Gland	Where?	Main Hormone	Simple Function
Pituitary	Brain area	Growth hormone	Helps the body grow
Thyroid	Neck	Thyroxine	Controls energy use
Pancreas	Behind stomach	Insulin	Controls blood sugar
Adrenal	Above kidneys	Adrenaline	Helps the body act quickly in danger
Testes	Boys	Testosterone	Helps in male body changes
Ovaries	Girls	Estrogen, Progesterone	Helps in female body changes and menstrual cycle

Remember:  Glands → Hormones → Blood → Body action

PROJECT 2: WHAT HELPS YOU FOCUS?

Aim: To find out which conditions help us remember things better.

Activity

1. Read 30 words for 2 minutes.
2. Try this in different conditions.

Count how many words you remember.

Condition	Words Remembered
Morning	83%
Silence	73%
Music/Noise	40%
Late Night	33%

Result

1. Morning: Brain is fresh.
2. Silence: Fewer distractions.
3. Music/Noise: Makes concentration harder.
4. Late Night: We may feel tired.

Conclusion: A quiet and fresh time can help us concentrate better.

PROJECT 3: GROWING PLANTS WITHOUT SEEDS**What is vegetative propagation?**

It is a way of growing a new plant from a part of an old plant, without using seeds.

Examples

Plant	Part Used
Potato	Stem
Ginger	Stem
Rose	Stem
Bryophyllum	Leaf
Sweet potato	Root

How does it happen?

1. Potato has eyes that can grow into new plants.
2. Ginger has buds that grow into new plants.
3. A rose stem can grow roots and become a new plant.

4. Bryophyllum produces tiny plants on its leaf edges.
5. Sweet potato roots can produce new shoots.

Advantages

1. It is quick.
2. It does not need seeds.
3. New plants are usually similar to the parent plant.

PROJECT 4: HOW FLOWERS MAKE SEEDS – POLLINATION

What is pollination?

Pollination is the transfer of pollen from the anther to the stigma.

Types of Pollination

1. Self-pollination

1. Pollen moves to the stigma of the same flower or same plant.
2. Example: Pea.

2. Cross-pollination

1. Pollen moves from one plant to another plant of the same kind.
2. Example: Sunflower.

Helpers of Pollination

Insects – Bees and butterflies carry pollen.

Wind – Carries light pollen from one flower to another.

Water – Can carry pollen in some plants.

Animals – Can carry pollen on their bodies.

Remember: Anther → Pollen → Stigma → Pollination → Seeds

PROJECT 5: GROWING A PLANT FROM A CUTTING

Aim

To grow a new plant from a stem cutting.

Materials

- Money plant stem
- Jar
- Water

Procedure

1. Take a healthy money plant stem.
2. Make sure it has a node.
3. Put the lower part of the stem in water.
4. Keep it in a suitable place and observe it.

Observation

Time	Observation
Days 1–5	Stem remains green and fresh
Days 7–10	Small roots appear
Day 15	More roots develop

Conclusion

A money plant can grow a new plant from a stem cutting.

PROJECT 6: FAMILY PLANNING & HEALTH

What is contraception?

Contraception means using methods to prevent pregnancy.

Main Methods

Method	Simple Meaning
Natural methods	Using knowledge of the menstrual cycle to avoid pregnancy
Condoms	Barrier that prevents sperm from reaching an egg; also helps reduce the spread of some infections
Pills	Medicines containing hormones that can prevent ovulation
Copper-T	A device placed in the uterus by a trained health professional
Surgical methods	Permanent methods that block the pathways for sperm or eggs

Important Point

Contraception should be chosen with correct health information and advice from a qualified healthcare professional.

All the Best