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In the Name of Allah, the Most Gracious, the Most Merciful

SPECTRUM Science

TEACHING GUIDE

FIRST TERM **5**



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Spectrum
Enlightening Generations

Spectrum Science

Grade-5 Teaching Guide

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Introduction to Spectrum Science Series Book 1 to 5

Spectrum Science Series is a completely new approach to textbooks. This series focuses on doing one thing right, imparting necessary education to young learners with no frills.

The main aim of *the Science Series Grade-5* textbook is to provide a real-life hands-on experience to the young learners regarding scientific phenomena around us. For this reason, we have ensured multiple sections within a chapter to help students digest scientific knowledge and concepts, through a step-by-step process, rushing nothing.

Every chapter starts with a warm-up section, which includes the *Think* and *Explores* section. It is followed by the *Know* section, which presents new concepts. In the end, we have an *Exercise* section, which includes the *Activity Time* section to test that which students have learnt.

Think

This section rekindles the *existing repository of knowledge* and information about young children. Each *Think* activity is aligned with given SLOs, focusing on exercising the mental processing of a child. It aims at directing the students toward the subject of the chapter.

Explore

The *Explore* section asks the children to *perform* an activity. The student has to write the results of their exploration. Combined with *Think* activity, the *Explore* section aims at gearing up the young learners towards the content of the chapter.

Know

The meat of the unit lies in this section. It is carefully *constructed* to disseminate knowledge that adheres to the SLOs and that caters to the curious young minds of the readers. The structure has been ensured to maintain continuity of topics within a chapter, which leads to fun reading and a better understanding of concepts.

Activity

This section comes at the end of the chapters with a focus on *cementing* the knowledge learned by students through *practical* activity. These activities take a cue from the content of the chapter and ask the student to apply it in various ways.

The language of the book has been reviewed and proofed by our language experts, who have painstakingly tried to smooth the edges and maintain continuity within texts.

Spectrum Science Teaching Guide Grade-5

Spectrum Science Teaching Guide consists of unit-wise worksheets, solved exercises of the book, unit-wise assessment papers, a terminal assessment and lesson plans. It is designed to effectively support the teachers in student-centered teaching strategies, with simple and clear instructions.

The following key features of the lesson plans make teaching easier for teachers:

⇒ **Student Learning Outcomes (SLOs)** are carefully planned goals for what students will learn. These also define what students will know and be able to do by the end of the lesson.

⇒ **Prior Knowledge** connects students to what is being taught in class.

⇒ **Resources** are required material in the lesson. Teachers are encouraged to arrange necessary materials in advance.

⇒ **Warm-up** is an icebreaker. These are done to develop students' interest in the subject and generate engagement.

⇒ **Lesson Structure** is the central part of the lesson plan. Its goal is to ensure that learning outcomes are achieved through explanations, demonstrations, activities, class discussions, and brainstorming. Referencing the text, illustrations and pictures in the manual will make the lesson engaging and interesting. Teachers are encouraged to collect student feedback to determine if learning outcomes are being achieved.

⇒ **Conclusion** summarizes the topic and often includes an assessment of the topics covered in a particular lesson.

⇒ **Class Assignments** based on worksheets or activities. The teacher can assign it for homework

⇒ **Homework** is assigned to students during the lesson to reinforce what they have learnt.

Conclusion

We hope teachers and students will find *Spectrum Science Series Books 1-5* thoroughly beneficial. These books contain modern teaching approaches which help students to become curious learners of science.

Remember, traditional teaching styles have become obsolete now and the young minds of today want 'learning facilitators; not typical teachers. Therefore, empower students and see how students will take charge of their learning.

We wish all the teachers and students using *Spectrum Science Series Books 1-5* all the best.

Unit-1- Importance of Science

Unit Overview

The first unit 'Importance of Science' will help students to understand that science is the name of a material process of learning about the material world through observation and experimentation. Furthermore, the students will learn about the inventions of and misconceptions about science.

Model Answers

Exercise 1

Answer the following questions.

- i. Science is a study through which we get knowledge about the structure and attitude of the material world.
- ii. Science is deeply connected with our everyday lives because it provides comforts to our lives. All the electronic and non-electronic gadgets/instruments, medical advancements and different machines are the examples of scientific connection to our lives.
- iii. Science studies the physical universe which includes the components of the material world around us like atoms, plants, galaxies, ecosystems, people as well as the natural forces on these things.
- iv. Science contradicts with the existence of God which is false because science only deals with physical phenomenon and explanations. It has nothing to do with spiritual and metaphysical world.
- v. The Bait-al-Hikmah was a place of learning in the Muslim world, in the Abbasi Caliphate.

Exercise 2

Fill in the blanks with correct words.

- i. The technologies, medical advances and knowledge that improve our worldly lives every day are the result of scientific research.
- ii. The first completely synthetic plastic was made by a chemist in 1900s.
- iii. Science can only answer in terms of physical phenomena and explanations.
- iv. In the late 1700s, Edward Jenner first convincingly showed that vaccination worked.
- v. Muslim civilization always valued learning and knowledge.
- vi. If we want to spread peace all over the world, we should make progress in science and technology seeking the reward from Allah.
- vii. Scientific knowledge is not absolute; it is tentative and subject to change.

viii. We should use the scientific knowledge for the welfare and benefit and humanity.

Exercise 3

Complete the translation of the following Ayah of the Holy Quran.

"Surely, in the creation of the heavens and the earth and in the alternation of the night and day, there are science for the people of wisdom." (Sura-Al Imran: 190)

Activity:

Computer:

An English inventor named Charles Babbage designed the first computer in the 1830s. It was mechanical not electronic, because scientists did not then know how electricity worked. The designed called for more than 50,000 moving parts.

Robots:

Leonardo Da Vinci designed a humanoid robot in 1464. Da Vinci's robot was called the "mechanical knight", and it could move its arms, sit, and stand independently. The word "Robot" was first used in a play called "Rossum's Universal Robots".

Aeroplanes:

Orville and Wilbur Wright are famous for creating the first successful airplane. The first American flight pioneers, The Wright Brothers were the brains behind the first controlled and sustained human flight on December 17, 1903.

Bulb:

The first practical commercial light bulbs were created by Thomas Edison in 1879. The filament used in Thomas Edison's first practical commercial light bulb came from his observation of a bamboo fishing line while observing a total solar eclipse.

Lesson Plan 1

Subject: Science

Grade: 5

Term: 1st

Week: 1

Unit: 1

Unit Title: Importance of Science

LP: 1

Textbook Page/s: 8 – 10

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- figure out different scientific inventions.
- understand how science helps us in our daily lives.

Prior Knowledge of Students:

- They know about scientific gadgets such as smart phones, iPad, etc.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	Proceedings
10 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Take out your smart phone and show it to the students. Ask them what it is and what they know about it. Take answers randomly, and then ask them about the origin of the smart phone. Wait for the answers, it is very much likely that you will not receive any answers. After good two or three minutes explain them how it is a scientific invention.</p>
20 minutes	<p>Lesson Structure/Activities/Presentation: Write the name of the unit on the whiteboard. Tell the students they will learn about science and its inventions in today's lesson. Activity 1: Ask students to open the textbooks and look at the pictures on page no. 8, and ask randomly to the students what they see in the pictures. Ask a random student to read the text of the unit aloud at page no. 9-10.</p>

	<p>Explain them What is Science and its importance and how we use it in our daily lives, using the text book examples.</p> <p>Activity 2: Ask the students randomly about how science helps them in their lives, specially a student. What aid do they get from science, in their education lives? (Textbook page no.9-10) Ask other students to listen attentively. Talk to them that how science contribute in our daily lives. Ask the students to look around and observe in their class. They can find some scientific invention in their class.</p> <p>Differentiated Learning: Some students might find it difficult to understand the concept of Importance of Science. Call them near to the whiteboard, and draw picture of some scientific inventions and pronounce its inventor's/scientist's name. Ask them to repeat after you so that they could be understood clearly.</p>
<p>2 minutes</p>	<p>Conclusion/Review: Science is all around us.</p>
<p>6 minutes</p>	<p>Classwork/ Assessment: Ask them to list down all the scientific things they know about.</p>
<p>2 minutes</p>	<p>Homework/Assignment: Research about "What is science?" How does it help you as students in your daily lives?</p>

Lesson Plan 2

Subject: Science	Grade: 5	Term: 1st
Week: 1	Unit: 1	Unit Title: Importance of Science
LP: 2	Textbook Page/s: 11 – 12	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- recall what science is.
- know why we need science.

Prior Knowledge of Students:

- They can identify some basic scientific inventions.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	Proceedings
5 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Tell the students about some common inventions of science. Draw some picture of medicine/syringe, polyethene bags, or any machine. (car, train)</p>
24minutes	<p>Lesson Structure/Activities/Presentation: Write the name of the unit on the whiteboard. Tell the students they will learn about what does science study and the misunderstanding of the limits of science.</p> <p>Activity 1: Ask a random student to read out the textbook on page no.11 after your explanation. Walk around the classroom and guide the students where needed.</p> <p>Activity 2: Describe an atom which is the key to science, explain the students how things like a "pen" that does not really belong to science but is actually from science (referring to atom).</p> <p>Differentiated Learning:</p>

	Some students might find it hard to understand the concept of atom. So, explain them that Atoms are the basic units of matter. Everything in the universe apart from energy is made of matter therefore atoms make up everything in the universe.
04 minutes	Conclusion/Review: Tell the students that everything around us is science.
05 minutes	Classwork/ Assessment: Ask them to list down the names of the scientific things in their school.
02 minute	Homework/Assignment: Read pages 9 – 11 for quiz in the next class.

Lesson Plan 3

Subject: Science

Grade: 5

Term: 1st

Week: 1

Unit: 1

Unit Title: Importance of Science

LP: 3

Textbook Page/s: 8 – 13

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- know what does science study and misunderstanding/Misconceptions about science.
- solve the exercise of the unit.

Prior Knowledge of Students:

- They can answer the question about the importance of science in our daily life.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheets of Unit.1

Time Frame (40 minutes)	Proceedings
10 minutes	<p>Opening/Motivation/Warm-up:</p> <p>Greet students cheerfully with السلام عليكم</p> <p>[Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Write the main points of the unit on the whiteboard and repeat them all in the classroom to reinforce basic concepts.</p> <p>Discuss with them the different misconception of science in a brief 10 minutes, explain them how scientific misconceptions have hindered our daily thinking capabilities, take a short quiz from page # 9-11.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1:</p> <p>Give them a brief explanation of the whole chapter, and reinforce all the main points of the chapter on page 13 and glossary.</p> <p>Ask the students to open their textbook exercise page no. 13. Write five questions of the exercise on the whiteboard.</p> <p>Ask the students to open their notebooks and help them answer these questions.</p>

	<p>Then move towards question 2 and guide them to fill in the blanks with correct words.</p> <p>Activity 2: Distribute the worksheets and help the students solve it. Be on round and make sure no one copies each other's.</p> <p>Differentiated Learning: Walk around in the classroom. Some students might find it hard in solving exercise. Sit with them, guide and help them.</p>
1 minute	Conclusion/Review: Everything around us is a part of science.
Covered in activity#2 (10mins)	Classwork/ Assessment: Distribute the worksheet of unit 1 in the classroom and ask the students to solve it.
4 minutes	Homework/Assignment: Students will research and write a short note on the contributions of Muslims to the development of science.

Unit-2- Classification of Living Things

Unit Overview

The second unit, 'Classification of Living Things' will help students to understand about the living things, their classification/grouping/Kingdom on the basis of their similarities and differences, varieties of living things and what Allah (SWT) said in the Holy Quran in this regard.

Model Answers

Exercise 1

Answers of questions.

- i. Scientist have divided all living things/organism into five main groups. These groups are called kingdoms. Following are the five kingdoms of organism.
 - a. Kingdom Monera
 - b. Kingdom Protista
 - c. Kingdom of Fungi
 - d. Kingdom Plantae
 - e. Kingdom Animalia
- ii. Algae considered as a plant because it belongs to kingdom of Protista and they are usually found in ponds, lakes or other water bodies.
- iii. Kingdom Monera is a bacteria, a microscopic and unicellular organism. They are mostly found in air, water and the top layer of the soil.
- iv. Following are the key features of Fungi.
 - a. Fungi do not have chlorophyll; therefore, they cannot make their own food.
 - b. They absorb nutrition from living or dead organisms.
- v. Flowering plants are different from non-flowering plants due to following reasons:
 - a. Flowering plants have flowers, whereas non-flowering plants don't.
 - b. The seed of Flowering plants are enclosed inside fruit, whereas the seed of non-flowering plants are enclosed in special structures called cones.
 - c. Flowering plants are also called angiosperms, whereas non-flowering plants are also called gymnosperms.

- vi. The difference between worms and insects are as follows:

S. #	WORM	INSECTS
1.	They have long, snake-like bodies.	They have small bodies.
2.	They do not have any bones or legs.	Their body is divided into three parts: the head, thorax and the abdomen.

- vii. Biodiversity is existence of a wide variety of plants and animals in their natural environments on our Earth. The biodiversity of plants is important because they are the source of food and shelter, and the biodiversity of animals is important because they are used for food production and agriculture.
- viii. Biodiversity is being lost due to the loss of habitats, climatic changes, pollution, overuse of resources, deforestation and hunting, etc.

Exercise 2

Fill in the blanks.

- i. The scientists have classified all living things into five main groups called Kingdoms.
- ii. Algae belong to kingdom Protista.
- iii. Fungi do not have chlorophyll.
- iv. Flowering plants are also called angiosperms.
- v. Animalia is the largest kingdom.
- vi. Ants and flies are common examples of insects.

Exercise 3

Can you name the animals that have the following features?

1.	tube feet	echinoderms
2.	soft porous body	sponges
3.	hard shell on body	molluscs
4.	snake-like body	worms
5.	six jointed legs	insects

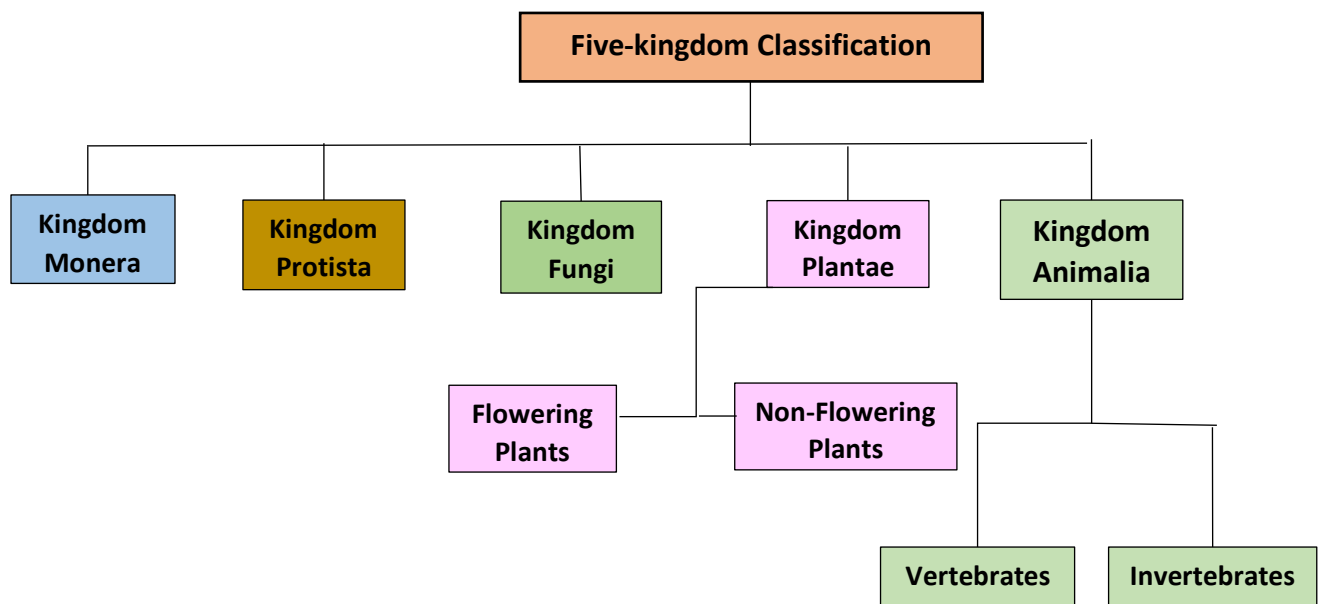
Exercise 4

Look at the pictures below. Identify these organisms and write their names.

- 1.
- 2.
- 3.
- 4.
- 5.

Exercise 5

Complete the flowchart of the five-kingdom classification.



Exercise 6

Prepare a presentation on the differences and similarities in vertebrates and invertebrates.

VERTEBRATES	INVERTEBRATES	SIMILARITIES
Vertebrates possess a backbone and an internal skeleton.	Invertebrates do not possess a backbone not an internal skeleton.	Vertebrates and invertebrates belong to the kingdom Animalia.
Invertebrates have an exoskeleton.	Invertebrates have an exoskeleton.	Both vertebrates and invertebrates show bilateral symmetry.
All vertebrates have closed circulatory systems.	Nearly all invertebrates possess an open circulatory system.	Gills are present in some vertebrates and invertebrates.
Mode of nutrition is usually heterotrophic.	Mode of nutrition includes Autotrophic, Parasitic and Heterotrophic.	Both vertebrates and invertebrates have a nervous system.
5 % of animal species are vertebrates.	95% of animal species are invertebrates.	Both vertebrates and invertebrates have a life cycle.
Mammals, fish, reptiles, amphibians, and birds are examples of Vertebrates.	Flatworms, arthropods, sponges, insects are a few examples of Invertebrates.	Both vertebrates and invertebrates composed of cells.

Exercise 7

Make a list of the ways human beings can adopt to protect biodiversity of both plants and animals.

Following are the ways human beings can adopt to protect biodiversity of both plants & animals.

- We should avoid deforestation to protect animals and plants in their natural habitats.
- We should reduce all kinds of pollutants in the environment.
- We should conserve forests and start reforestation.
- We should reduce all kinds of pollutants in the environment.
- We should avoid unnecessary burning of fossils fuels.
- We should practice recycling, reusing and reducing strategies.
- We should raise public awareness on the importance of protecting biodiversity.

Exercise 8

Discuss the Ayah number 30 of Surah Al-Anbiya of the Holy Qur'an with reference to some scientific facts.

Allah said the Holy Qur'an, "and We made every living thing out of water."

Only after advances have been made in science, we now know that cytoplasm, the basic substance of the cell, is made up of 80% water. Modern research has also revealed that most organisms consist of 50% to 90% water and that every living entity requires water for its existence.

Activity: Divide the students into three or four groups, give them task to make a fact file of living organisms from the given kingdom, on page 25, using the stickers on the one side of page, while the information on the corresponding page.

Lesson Plan 4

Subject: Science	Grade: 5	Term: 1st
Week: 2	Unit: 2	Unit Title: Classification of Living Things
LP: 4	Textbook Page/s: 15 – 16	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the difference vertebrates and invertebrates.
- explain the five main Classification of Kingdom.

Prior Knowledge of Students:

- They can differentiate between worms, insects, vertebrates and invertebrates.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker.
- Plastic toy animals (vertebrates and invertebrates)

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up:</p> <p>Greet students cheerfully with السلام عليكم</p> <p>[Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Show the students some insects, worm, vertebrates and invertebrates in the class and ask the students randomly to identify them.</p> <p>Ask the students to list down the names of any four insects they found in their house from the book page 15.</p> <p>This activity will help in improving their observation and sense of sight.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1:</p> <p>Write the name of the unit and Classification of Living Things on the whiteboard.</p> <p>Tell them they are going to learn about Living and non-living things. Ask students to open the textbook's page no.16. Read the first page of the unit aloud and explain to</p>

	<p>them first about the Living and non-living things and what Allah SWT has explained about the living things in Surah Al-Anbiya: 30.</p> <p>Talk to them that human being is also a living thing.</p> <p>Ask a random student to read out the textbook on page no.16 "Proud to Know", and explain them the cell, organism and the importance of water.</p> <p>Walk around the classroom and guide the students where needed.</p> <p>Ask another student to read "General classification of Living Things" & Kingdoms and explain it.</p> <p>Differentiated Learning: Some students might find it hard to remember the names of kingdom classification. Repeat again and again the Five-kingdom Classification and ask the students to repeat after you loudly.</p> <p>Walk around the classroom continuously.</p>
02minutes	Conclusion/Review: Tell the student that most organisms consists of 50% to 90% water & water is very important element for the existence of every living individual.
05 minutes	Classwork/ Assessment: Ask the students to write down five names of living & non-living things in their notebook.
03 minutes	Homework/Assignment: Students will make a flowchart of Five-kingdom Classification and learn it from heart.

Lesson Plan 5

Subject: Science	Grade: 5	Term: 1st
Week: 2	Unit: 2	Unit Title: Classification of Living Things
LP: 5	Textbook Page/s: 17 - 18	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- classify the five kingdoms.
- differentiate about the kingdom classification.

Prior Knowledge of Students:

- They can differentiate the vertebrates and invertebrates
- Five-kingdom Classification.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up:</p> <p>Greet students cheerfully with السلام عليكم</p> <p>[Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Write the names of some vertebrates and invertebrates and randomly ask the students to differentiate the vertebrates and invertebrates.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1:</p> <p>Write the name of the unit on the whiteboard. Recall the vertebrates/invertebrates, living and non-living things. Draw a blank flowchart of the Five-kingdom Classification on the white board and ask any student to come in front and fill the chart voluntarily or ask any student randomly to come in front and fill the chart.</p>

	<p>Activity 2: Ask students to open the textbook's page no.17. Read the first page of the unit then move to page no. 18 and read both the pages aloud. Explain to them first about all five kingdoms.</p> <p>Differentiated Learning: Some students might find it hard to understand the characteristics of different kingdoms. Sit with them, and explain through the pictures shown in the book on page 17 and 18, and ask them to repeat after you so that they can understand.</p>
01 minutes	Conclusion/Review: Tell the student that division of living and non-living things in five-kingdom classification is made due to their unique characteristics.
07minutes	Classwork/ Assessment: Ask them to write the answers to the question no. (i) on page no. 23 in their note book. Distribute worksheet and ask the students to solve it.
02 minutes	Homework/Assignment. Ask the students to find the answers of questions no. ii, iii, iv & v from the book page no. 23 and do as homework in their note book.

Lesson Plan 6

Subject: Science

Grade: 5

Term: 1st

Week: 2

Unit: 1

Unit Title: Classification of Living Things

LP: 6

Textbook Page/s: 19 - 20

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- differentiate between vertebrates & invertebrates.
- understand the Classification of invertebrates.
- understand Biodiversity and its importance.

Prior Knowledge of Students:

- They can differentiate the kingdom classification by its characteristics.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up:</p> <p>Greet students cheerfully with السلام عليكم</p> <p>[Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Draw some Flowering plants & Non-Flowering plants on the white board and ask the students randomly to identify them according to their characteristics.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1:</p> <p>Write the name of the unit on the whiteboard. Ask students to open the textbook's page no.19 and read the topic 'Vertebrates & Invertebrates' aloud and explain. Tell them that about 97% of the whole animal kingdom comprises invertebrates. (Explain them with the pictures of the invertebrates on page no. 19)</p> <p>Activity 2:</p> <p>Ask other students to read 'Classification of invertebrates' on page no. 19 and 20 aloud and explain it.</p> <p>Ask other students to listen attentively.</p>

	<p>Differentiated Learning:</p> <p>Some students might find it hard to differentiate between worm, sponge, molluscs and Echinoderms. Sit with them, point to the pictures on the text book's page and explain the difference.</p> <p>Now ask them to repeat after you so that they can memorize the names of invertebrates easily.</p>
03 minutes	Conclusion/Review: Tell the student the difference between vertebrates & invertebrates.
04 minutes	Classwork/ Assessment: Ask the students to find the answers of questions vi from text book page no. 23 and write it down in their notebooks.
03 minutes	Homework/Assignment: Students will solve the exercise no. 2 'Fill in the blanks' in their notebooks.

Lesson Plan 7

Subject: Science	Grade: 5	Term: 1st
Week: 3	Unit: 1	Unit Title: Classification of Living Things
LP: 7	Textbook Page/s: 19 - 20	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- biodiversity & its Importance.
- how to protect Biodiversity.

Prior Knowledge of Students:

- They can differentiate between vertebrates & invertebrates as well as they can classify the invertebrates.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Write some name of vertebrates and invertebrates on the white board & ask students randomly to come in front and identify them as vertebrates & invertebrates.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Review the topic Classification of Invertebrates. Ask students to open the textbook's page no.21 and read the topic 'Biodiversity, its Importance & protecting biodiversity' aloud and explain it. Talk to them why we need plants and animals, as we use them for shelter, food, food production and agriculture. Ask the students to listen carefully and walk in the class continuously.</p>

	<p>Activity 3: Read aloud 'Endangered Animals' on textbook's page no. 22 and explain those species or animal which are about to finish. Now read the 'Points to Remember' aloud on textbook's page no. 22 and explain them. Ask the students to listen attentively.</p> <p>Differentiated Learning: Some students might find it hard to understand the fact about endangered animals. Sit with them, highlight some names of endangered animals with them and tell them why they are called endangered. Now ask them to repeat after you so that they can memorize the names quickly and understand them.</p>
01 minutes	Conclusion/Review: Tell the student why we should protect biodiversity.
06 minutes	Classwork/ Assessment: Ask the students to match each organ with its sense on textbook page no. 13 question no.3.
03 minutes	Homework/Assignment: Divide students into groups of three or four students each. Then assign one endangered animal to each group and ask them to make a poster of assigned endangered animal and write brief information about it.

Unit-3- Human Organ Systems

Unit Overview

The third unit, 'Human Organ System' will help reinforce the importance of a human Organ System.

They will also be made aware about the musculoskeletal and human organ system and the structure of muscles and their working.

Model Answers

Exercise 1

Answer the following questions.

1. The musculoskeletal system provides support, shape and movement to the body.
2. Voluntary muscles are under our control, whereas involuntary muscles are not under our control.
3. The role of stomach in digestive system is to mix the food with acids, gastric juices and enzymes. Enzymes further mash the food into a soft paste and passes the food to the small intestine.
4. The role of blood vessels is to carry blood to all parts of the body.
There are three types of blood vessels
 - i. Arteries
 - ii. Veins
 - iii. Capillaries
5. The function of alveoli is to absorb oxygen from blood through capillaries and gives up carbon dioxide.
6. The function of medulla is to control all involuntary actions like breathing, heartbeat and digestion.

Exercise 2

Circle the correct answer.

- | | | | |
|------|-----------------------|-----------------------|---------------------|
| i. | a. 400 | b. 500 | c. 600 |
| ii. | a. stomach | b. mouth | c. intestine |
| iii. | a. heart | b. brain | c. lungs |
| iv. | a. cerebrum | b. cerebellum | c. medulla |
| v. | a. Respiratory system | b. circulatory system | c. digestive system |

Exercise 3

Discuss the Ayah number 56 of Surah Al-Nisa of the Holy Qur'an in relation to nerves in the human nervous system.

Ans: In the Holy Qur'an Surah Al-Nisah: 56, almighty Allah SWT associated between the sensation of pain and the skin when roasted and burnt totally, thus losing its structure and function. When sensation of pain is lost, a new fully composed and functional skin is replaced where the nerve endings. Thus, the Qur'anic scientific miracles are crystallized. Feeling of pain as perceived in medical facts are very much compatible with the statements of the Holy Qur'an, the true book of Allah Who knows everything.

Exercise 4

Explain the working of the following types of muscles.

Give at least one example of each.

Types of Muscles	Working	Examples
Skeletal Muscle	Skeletal muscles are directly attached to our bones with tendons	legs
Cardiac Muscle	Cardiac muscles are not attached to any bones.	heart

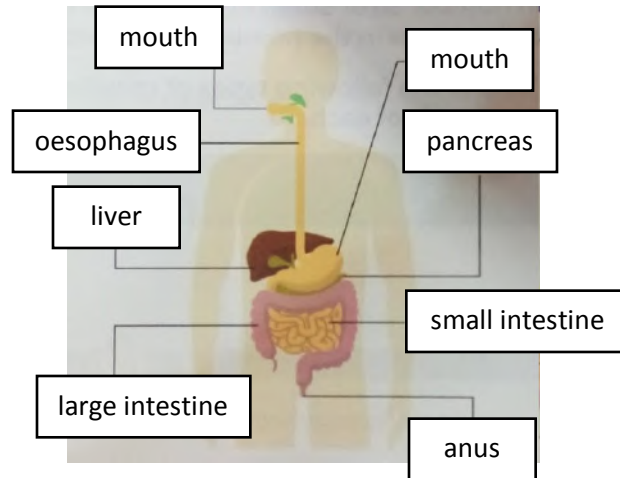
Exercise 5

Match each organ in column A with its function in column B and write the correct answer in the given spaces.

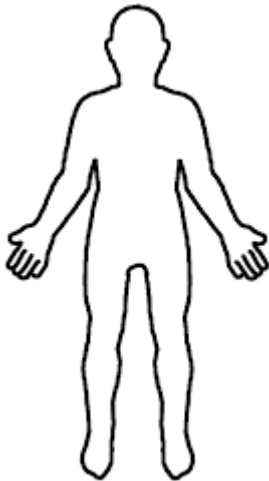
Column A	Column B
<i>brain</i>	pumps blood around the body
<i>heart</i>	digests food
<i>stomach</i>	exchange gases
<i>lungs</i>	controls all bodily functions

Exercise 6

Name the organ system and label its parts.



Activity 1: Divide the students into groups, ask each group to draw one organ system. For this student can download a blank body shape and draw one organ system in it.



Activity 2: Teacher will bring a digital blood pressure monitor and help the students understand its use for checking blood pressure. Randomly select few students and check their blood pressure and under her supervision, students will check the blood pressure of class mates using digital blood pressure monitor.

Tech Time: Every school have First Aid Box, teacher will bring it in class, under her supervision guide the students how to use first aid box to dress a wound using pyodine/dettol, cotton ointment or antiseptic powder, bandage, etc.

Lesson Plan 8

Subject: Science

Grade: 5

Term: 1st

Week: 3

Unit: 3

Unit Title: Human Organ System

LP: 8

Textbook Page/s: 26-28

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- understand the body organs, their functions and musculoskeletal system.
- explain how different body organs perform functions.

Prior Knowledge of Students:

- They can identify different body organs.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Chart of different body organs.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Draw some body organs on the white board and ask their names and about their functions randomly. Take their answers and correct them if needed. Repeat the names of the organs and their functions for better understanding of the students.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn about human organ systems. Explain to them how they can maintain a healthy life by keeping their muscles and organs strong. Brief them that daily exercise helps us maintain a healthy body while unhealthy body organs make us sick and lazy. Ask the students to open the textbooks and look at the pictures in the 'Think' section on page no. 26. Guide them to solve the activity by identify the organs and their positions in our skeleton. Help students to solve the 'Explore' section</p>

	<p>on page no. 26 and write the name of the organs that perform the functions in human body mention on the page. Discuss the Surah Al-Teen:4 on page no. 26.</p> <p>Activity 2: Ask students to open the textbook's page no.27. Read the page of the unit then move to page no. 28 and read both the pages aloud. Explain to them first about Musculoskeletal System & Types of Muscles with the help of pictures on page no. 27 and 28.</p> <p>Activity 3: Tell the students that the smile is more important than frown, because only seventeen muscles work together, whereas forty-three muscles are used in a frown. So, emphasize them to keep a smile on their face.</p> <p>Differentiated Learning: Some students might find it difficult to understand the types of muscles, their structures and their jobs. Sit with them and explain them how muscles are attached with bones, whereas cardiac muscles are not attached with bones.</p>
01 minutes	Conclusion/Review: Tell the students healthy muscles will keep them fit.
08 minutes	Classwork/ Assessment: The students will write the answers of exercise 1 question (i) and ii in their notebook.
01 minutes	Homework/Assignment: Students will solve exercise 4 at home.

Lesson Plan 09

Subject: Science

Grade: 5

Term: 1st

Week: 3

Unit: 3

Unit Title: Human Organ System

LP: 9

Textbook Page/s: 29-30

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- describe Digestive system and Circulatory systems.
- explain why regular exercise & healthy food is important for good health.

Prior Knowledge of Students:

- They can tell types of muscles and their functions.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A chart of Circulatory System + Model of open heart.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Ask the students how many of them exercise regularly. Take their answers explain to them the benefits of regular exercise.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them that a health muscles is a great blessing from Allah. So, we should take care of our muscles. Ask the students to open the textbooks on page no. 29 and randomly ask any student to read aloud about stomach, small intestine & large intestine. Explain them about the importance of their functions in our body. During reading and explanation walk around the class continuously.</p>

	<p>Activity 2: Ask other students to read aloud the Circulatory System. Appreciate students after they get a finish. Now draw heart and the network of blood vessels on board or with the help of chart explain how blood circulates in our body through arteries, veins and capillaries. Show them the picture of four chamber of heart on page no. 30 and explain them the functions and names of the chambers of heart with the help of the model of open heart. Ask them to repeat aloud the name of the chambers after you.</p> <p>Activity 3: Make a group of two students each and do 'Activity' on page no. 30. Take the pulse rate on the wrist of any student and guide them to take the pulse rate of their group mate. Count and record the number of beats per minute. Then ask the students to jump for 10 times and then take another reading of pulse rate. Tell them any physical activity increases the heart beat or pulse rate.</p> <p>Differentiated Learning: Some students might find difficult to understand the reason of increasing pulse rate after any exercise. Tell them when we exercise our heart starts to beat faster therefore pulse rate increases.</p>
02 minutes	Conclusion/Review: Tell the student the importance of exercise for health.
10 minutes	Classwork/ Assessment: Ask students to open the textbook page no 35 and write the answer of question (iii) in their notebook & distribute worksheet and ask them to solve.
	Homework/Assignment: Students will write the answer of exercise 1 questions iv in their note book.

Lesson Plan 10

Subject: Science

Grade: 5

Term: 1st

Week: 4

Unit: 3

Unit Title: Human Organ System

LP: 10

Textbook Page/s: 31-34

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- describe Respiratory System & Central Nervous System.
- explain the advantages of oxygen and disadvantages of carbon dioxide.

Prior Knowledge of Students:

- They can tell how heart pump the blood.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Chart of Respiratory System & Central Nervous System.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Draw the picture of heart chambers on the board and take a review by asking the name of the chamber to any student randomly.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Repeat the importance of proper sleep for health. Ask the students to open the textbooks on page no. 31 and randomly ask any student to read aloud the Respiratory System. Look on page 32 'Activity', and explain them how our ribcage/chest expand in Breathing In process and how the ribcage/chest contracts in Breathing out</p>

	<p>process. For this activity ask a student to come in front and tell him to inhale and exhale.</p> <p>Activity 2:</p> <p>Ask students to open the textbook on page no.32. Ask a student to read aloud the Central Nervous System, Structure and Working of the Brain and explain it. While the reading continuously walk in the class and help them pronouncing difficult words. Explain them that we are proud to know that all the information science is confirming now, Allah SWT has explained 1400 years ago in the Holy Qur'an mention on book page 33, and then read aloud the points to remember & glossary on page 34.</p> <p>Differentiated Learning:</p> <p>Some students might find it difficult to understand the working of Cerebrum, Cerebellum and Medulla. Sit with them and explain with the help of picture page 32, and show them the location of different parts of brain.</p>
02 minutes	Conclusion/Review: Tell the student the healthy habits.
05 minutes	Classwork/ Assessment: Ask the students to write the answer of Exercise no. 1 part (iii) on their notebooks.
03 minutes	Homework/Assignment: Students will solve the Exercise no. 1 question iv, v & vi in their note book at home.

Unit-4-Plant Structure

Unit Overview

The fourth unit, 'Plant Structure' will help students to understand the plant structure. The students will be made aware of the plant structure, their groups and types. The students will know that it is important for their health to grow plants. They will also understand the importance of gardening and keeping the plants in home which make the environment beautiful.

Model Answers

Exercise 1

Answer the following questions.

- i. Flowers are the most beautiful and attractive parts of the plants. Sometimes known as bloom or blossom.
- ii. Petals are different from Sepals, because petal is the inside colorful part of sepals. Insects and birds are attracted their bright colors and fragrance.
- iii. Stamens are the male reproductive organ of a rose flower. Each stamen consists of two parts: an anther and a filament.
- iv. Carpel or Pistil is the female reproductive organ of a rose flower. Each carpel or Pistil is consisting of a stigma, style and an ovary.
- v. Following are the dicot plants:

➤ Buttercups	➤ Beans
➤ Rose	➤ Peas

Exercise 2

Fill in the blanks.

- i. Insects and birds are attracted by the bright colors and fragrance of Petals.
- ii. The sepals are collectively called the calyx.
- iii. Most monocots have a fibrous root system.
- iv. Cotyledon is a seed leaf.
- v. Wheat is a monocot plant.
- vi. Allah brings out of the dead and brings the dead out of the living.

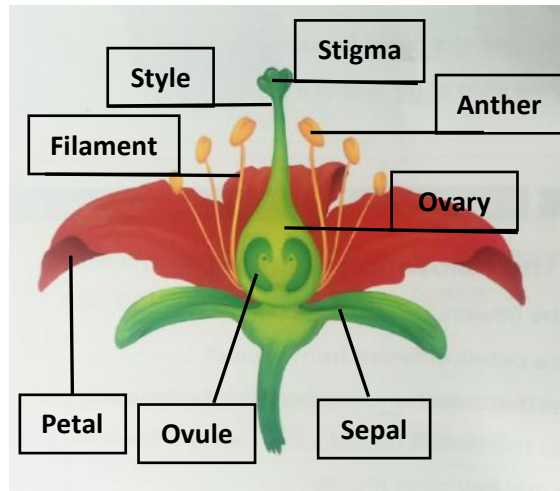
Exercise 3

Write 'T' for true and 'F' for false statement.

- i. The carpel is also called the calyx. F
- ii. The pollen grains look like yellow powder or dust. T
- iii. The floral leaves of monocots are in multiple of three. T
- iv. The ovary produces pollen grains. F
- v. Dicot plants mostly have a tap root system. T

Exercise 4

Label the parts of the rose flower.



Exercise 5

Write three differences between a monocot plant and a dicot plant. Give at least two examples of each.

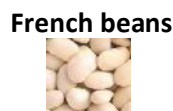
Monocot Plants	Dicot Plants
They have one cotyledon in their seeds.	They have two cotyledons in their seeds.
Their leaves have veins running parallel to each other.	They have veins on their leaves that form a branched network.
They have floral leaves which are usually arranged in groups of three or multiple of three.	They have floral leaves which are usually arranged in groups of four or five or multiple of four or five.
Examples	Examples
wheat	beans
tulip	rose

Science Lab:

Take the students to the school science lab to perform an experiment to find out the difference between a monocot seed and a dicot seed.

Objective: The students will be able to differentiate between a monocot seed and a dicot seed. You will need following items.

- The maize and French bean seeds
- Dissection box
- Lab gloves
- A magnifying glass.



Lesson Plan 11

Subject: Science

Grade: 5

Term: 1st

Week: 4

Unit: 4

Unit Title: Plant Structure

LP: 11

Textbook Page/s: 39

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the plant structure.

Prior Knowledge of Students:

- They can identify the flower, leaves and petal.

Teaching Aids/Materials/Resources:

- Textbook
- Board/Marker
- Garden or Plant nursery
- Worksheet of Unit 4.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn about the Plant Structure. Explain to them the importance of plants on earth for human being and animal, as well as explain the benefits we get from the plants in form of flowers, fruits and different herbs used in medicines. Ask the students to open the textbooks and look at the pictures on page no. 39. Let them compare pictures of flowering and non-flowering plants. Ask them about the difference in the pictures. Take answers from some random students and explain to them the difference.</p>

	<p>Activity 2:</p> <p>Take the students in the school garden if available or nearby plant nursery or garden to explore and identify flowering plants and non-flowering plants as a hand on experience and give them information about them.</p> <p>Activity 3:</p> <p>Ask them to identify and write the names of flowering plants and non-flowering plants in the textbooks in the 'Explore 'section. When they get finished, let them share their answer with other classmates.</p> <p>Differentiated Learning:</p> <p>Some students might find it difficult to understand the difference between flowering and non-flowering plants. Show them to some flowering plants pots and some non-flowering plants pots and explain the difference between them.</p>
01 minutes	Conclusion/Review: Tell the students about the importance of plants.
08 minutes	Classwork/ Assessment: Distribute the worksheets of unit.4 to the students and let them solve.
01 minutes	Homework/Assignment: Students will make a list of advantages of plants.

Lesson Plan 12

Subject: Science

Grade: 5

Term: 1st

Week: 4

Unit: 4

Unit Title: Plant Structure

LP: 12

Textbook Page/s: 40 - 41

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the structure of plant.
- groups of Flowering plants.
- types of plants.

Prior Knowledge of Students:

- They can differentiate/identify the flowering & non-flowering plants.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Pots of flowering plants having flowers in them.
- Chart of flowering & non-flowering plants.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Show the pots of plants to the students and ask a student randomly to identify the flowering plant pots and non-flowering plant pot. Show the chart and call some other student in front and ask him to identify the flowering & non-flowering plants, ask with some more students and appreciate them if they answer correctly.</p>
30 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the board. Tell them they are going to learn about the structure of a Rose plant and major group of flowering plants today. Ask the students to open textbook's page no. 40 and ask a random student to read the topic</p>

	<p>'Structure of a Rose Plant' aloud. Stop the student where necessary and explain them each part simultaneously by pointing to the picture on page 40. Draw different parts of a flower and ask them to identify each part at the end of the topic.</p> <p>Activity 2: Ask other student to turn on text's book page no. 41 and read major groups of flowering plants and explain them. Stop the student during reading and emphasize the on difficult words and ask them to repeat after you.</p> <p>Differentiated Learning: Some students might find it hard to identify the different parts of plant structure. Sit with them and explain them with the help of the picture on page no. 40 and help them to understand.</p>
01 minutes	Conclusion/Review: Tell the students that different parts of plants have different roles.
03 minutes	Classwork/ Assessment: Guide the students to answer question no.1 part (i) & (ii) and also write on their notebooks.
01 minutes	Homework/Assignment: Guidance given in the class by the teacher students will answer the question no.(iii), (iv) & (v) in the note book from home.

Lesson Plan 13

Subject: Science	Grade: 5	Term: 1st
Week: 5	Unit: 4	Unit Title: Plant Structure
LP: 13	Textbook Page/s: 42 - 44	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- identify the structural difference between Monocots and Dicots.
- solve the exercise on their own.

Prior Knowledge of Students:

- They can answer the questions related to Unit.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Onion (half into two pieces)

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Repeat the lesson's main point lesson for reinforcement and encourage students to repeat after you.</p>
20 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Exercise 2 Write the name of the unit on the whiteboard. Ask a random student to open the textbook's page no. 42 and read the topic 'Structural Difference b/w Monocots & Dicots' and explain it. During the reading walk continuously in the class.</p> <p>Activity 2: On text's book page no. 43 in activity section, show the cut onion and remove the seed coat and ask a random student to count the number of cotyledons. Now observe its veins, and ask a random student to determine if the plant is a monocot or dicot.</p> <p>Differentiated Learning: Some students might find it hard to solve the exercise. Guide and help them.</p>

02 minutes	Conclusion/Review: Tell the students the importance of Flowering plants and Non-flowering plants and their advantages.
13 minutes	Classwork/ Assessment: Ask them to write the answers of exercise 2 'Fill in the blanks' and exercise 3 'True and False' on their textbooks page no.44. Guide and help them in writing true and false.
	Homework/Assignment:

Lesson Plan 14

Subject: Science

Grade: 5

Term: 1st

Week: 5

Unit: 4

Unit Title: Plant Structure

LP: 14

Textbook Page/s: 45 - 46

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- solve the exercise on their own.

Prior Knowledge of Students:

- They can find and answer the questions related to Unit.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Science Lab
- The maize and French bean seeds
- Dissection box
- Lab gloves
- A magnifying glass.
- French Beans



Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Repeat the lesson's main point for reinforcement and encourage students to repeat after you.</p>
22 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Exercise 2 Write the name of the unit on the whiteboard. Tell them they are going to solve an exercise and will perform a practical in science lab today. Ask a random student to open the textbook's page no. 42 and read the topic 'Structural Difference b/w Monocots & Dicots' and explain it. During the reading walk continuously in the class.</p>

	<p>Activity 2: On text's book page no. 43 in 'Activity' section, show the cut onion and remove the seed coat and ask a random student to count the number of cotyledons. Now observe its veins, and ask a random student to determine if the plant is a monocot or dicot. (An onion is a monocot because the veins in the leaves are parallel and onions have fibrous roots).</p> <p>Activity 3: Take the students to the school science lab to perform an experiment to find out the difference between a monocot seed and a dicot see. Objective: The students will be able to differentiate between a monocot seed and a dicot seed. Guide the students to observe the internal structures of maize and French bean seeds using magnifying glass. Guide them to differentiate between the monocot and dicot seed. Ask and guide the students to locate the embryo and cotyledons inside both seeds.</p> <p>Differentiated Learning: Some students might find it hard to solve the exercise. Guide and help them.</p>
02 minutes	Conclusion/Review: Tell the students some characteristics of monocots and dicots seeds.
10 minutes	Classwork/ Assessment: Ask the students to draw their labelled diagrams on the textbook page no. 46.
1 minute	Homework/Assignment: Students will write down at least three observations of monocot and dicot seeds on the record sheet of textbook page no. 46 for both the seeds.

Unit-5-Reproduction in Plants

Unit Overview

The fifth unit, 'Objects in our Surroundings' will help reinforce the concept of objects found in our surroundings (School and Home). The students will be made aware about objects have different properties with respect to their shape, size, texture, weight, hardness and softness. The student will get familiar with the role of their five sense to find out all these properties of objects. They will also understand the importance using these properties of objects in their life.

Model Answers

Exercise 1

Answer the following questions.

- i. **(a) Pollination:** A process by which the pollens of a flower get transferred to the stigma of another flower called pollination.
(b) Fertilization: A process by which pollen joins the ovule through pollen tube and fertilizes it called fertilization.
- ii. There are two types of pollination; Self-pollination & Cross-pollination.
- iii. The process of reproduction mainly occurs through spores and stems. Plants tend to reproduce by spores instead of seeds, because spores are small and lightweight and therefore, they develop on the underside of the leaf. Whereas plants grow directly from stems and the stems sprout above the ground (such plants include potatoes).
- iv. Germination is when a seed requires favorable conditions to grow into a new plant. These conditions include water, light, temperature (warmth) and oxygen.
Steps:
 1. The first stage is a seed swells up when it gets water, since it makes the seed coat burst open. Further making the seed develop into a baby plant.
 2. In the second stage water breaks down its stored food that provides energy to the growing embryo.
 3. Then officially the roots start growing downwards and the young shoot upwards.
 4. The sunlight makes photosynthesis possible for the new plant.
- v. Animals and birds are one of the sources of seed dispersal. They simply eat the fruit and excrete the undigested seed far away from the parent plant. Because some seeds are sticky and some have spikes, therefore they stick to the skin of animals and feathers of birds and this is the way they get dispersed too far off places.

Exercise 2

Fill in the blanks.

- i. Ovules are the female cells of the flower.
- ii. Pollen grains are the male cells of the flower.
- iii. Some fruits such as mango and peach, have only one seed.

- iv. Some plants such as ferns, reproduced by spores.
- v. Sugar cane is an example of plants that grow from stem cuttings.
- vi. The concept of diverse pairs of plants was stated in the Holy Qur'an around fourteen centuries ago.

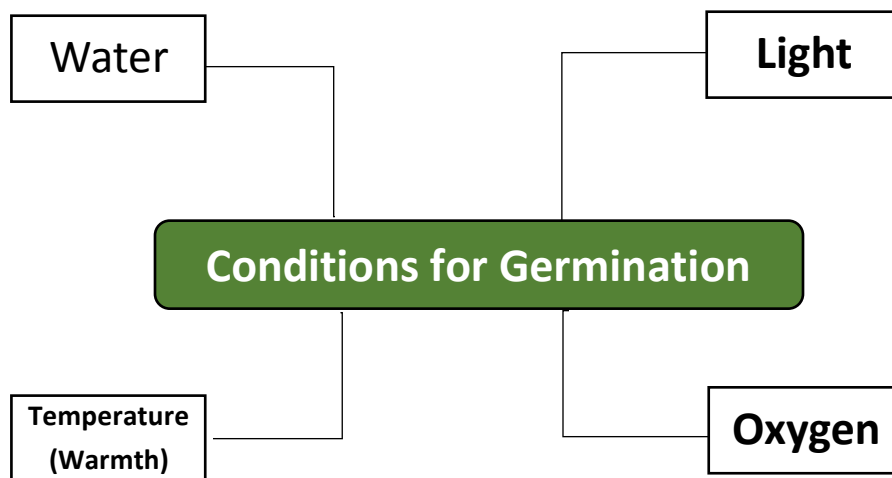
Exercise 3

Write T for a true and F for a false statement.

- i. Stamen is the female reproductive part of the flower. F
- ii. A sweet potato plant develops from buds on old stems. F
- iii. The plantlets grow along the edges of the leaves. T
- iv. The sticky seeds dispersed by water. T
- v. Dandelion seeds are carried away by wind. T

Exercise 4

Fill in the boxes to show the favorable conditions of germination.



Lesson Plan 15

Subject: Science

Grade: 5

Term: 1st

Week: 5

Unit: 05

Unit Title: Reproduction in Plants

LP: 15

Textbook Page/s: 47, 48, and 49

Duration: 40 minutes

Teacher:

School

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- describe reproduction in Flowering Plants.

Prior Knowledge of Students:

- They can identify one-seeded and many-seeded fruits.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Ask the student to open their textbook's page no. 47 and look at the 'Think' section. Let them brainstorm and identify and write one-seeded fruits and many-seeded fruits on textbook's page no.47. Take their answers.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn the 'Reproduction in Plants'. Distribute them worksheet and ask them to label. Help the students if needed.</p> <p>Activity 2: Ask the students to open their textbook's page no.48 and explain them that we are proud to know that Allah said in the Holy Qur'an fourteen centuries ago in Surah Al-Ra'd:3, "And fruit of every kind He (Allah) made in pairs, two and two."</p>

	<p>Activity 3: Randomly ask a student to read aloud the topic 'Reproduction in Flowering Plants' on page no. 48 and explain it to them. Elaborate them the process of 'Pollination' with the help of picture at the bottom of page no. 48. Ask them if they have understood the process, if not explain them again, unless they understand it.</p> <p>Activity 4: Ask other student to read aloud the topic 'Types of Pollination' and 'Reproduction through other Parts of Plants' on textbook's page no. 49 and explain it to them. Walk around in the class continuously during the reading and correct the pronunciation if delivered incorrect and ask them to repeat after you.</p> <p>Differentiated Learning: Some students might find it difficult to understand the concept of pollination & its types. Sit with them and explain them with the help of picture on page no.48.</p>
01 minute	Conclusion/Review: Tell the students about reproduction through other parts of plants.
09 minutes	Classwork/ Assessment: The students will answer the question no. (i) & (ii) of exercise 1 textbook's page no. 53 .
	Homework/Assignment:

Lesson Plan 16

Subject: Science	Grade: 5	Term: 1st
Week: 5	Unit: 05	Unit Title: Reproduction in Plants
LP: 16	Textbook Page/s: 50, 51, and 52	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to understand:

- reproduction through other parts of plants
- conditions and Stages of Germination
- dispersal of seeds.

Prior Knowledge of Students:

- They can Pollination and its types.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Chart of Germination
- Sweet Potato, ginger and sugarcane

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up:</p> <p>Greet students cheerfully with السلام عليكم</p> <p>[Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Review the previous lesson and ask some random students about the types of pollination.</p> <p>Listen to their responses and appreciate them if they answer correctly.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1:</p> <p>Write the name of the unit on the whiteboard.</p> <p>Tell them they are going to learn to complete the topic 'Reproduction through other parts of plants' and 'Condition & stages of Germination' and 'Dispersal of Seeds'.</p> <p>Ask the students to open their textbook page no.50 and read aloud the 'Stem', 'Leaves' and 'Roots'. Show them potato, sugarcane and ginger and explain them that</p>

	<p>ginger grow below the ground and remain there, sweet potato and sugar cane grow directly from stem.</p> <p>Activity 2: Tell them that seed need some favorable conditions to grow into a new plant. This process is called germination, and explain them the necessary conditions for seed germination at the bottom of textbook's page no. 50. Ask a student to read aloud the topic in textbook's page no.51 'Stages of Germination' and look at the picture of complete process of germination and explain it to them. Explain the process of germination with the help of chart if needed.</p> <p>Activity 3: Ask some other student to read aloud the topic 'Dispersal of Seeds', and explain the meaning of 'Dispersal' which is "the action or process of distributing or spreading things over a wide area". Then ask randomly a student to read aloud the different ways of dispersal from the textbook's page no. 51 and explain. During reading walk around the class and help them if found difficult in reading or pronouncing the difficult words and ask them to repeat after you.</p> <p>Differentiated Learning: Some students might find the topic of dispersal difficult. Sit with them, and explain to them with the help of the pictures given in the book on page 51 and 52.</p>
01 minute	Conclusion/Review: Tell the students about the stages of germination and different ways of dispersal of seeds.
08 minutes	Classwork/ Assessment: Help the students to answer the question (i) and (ii) of exercise 1 on textbook's page no.53 on their notebook.
01 minute	Homework/Assignment: Students will answer the question (iii), (iv) and (v) of exercise 1 on textbook's page no. 53.

Lesson Plan 17

Subject: Science	Grade: 5	Term: 1st
Week: 5	Unit: 05	Unit Title: Reproduction in Plants
LP: 17	Textbook Page/s: 50, 51, and 52	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- solve the exercises of the lesson.

Prior Knowledge of Students:

- They can describe the germination stages and dispersal of plants.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.] Review the topics and ask the students about the 'Conditions and stages of germination' and 'Different ways of dispersal of seeds' Listen to their responses and appreciate them if they answer correctly.</p>
30 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to solve the exercise 2 'Fill in the blanks' on textbook's page no. 53, exercise 3 'True and False', and exercise 4 on page no. 53 & 54 Ask the students to open their textbook page no.53 and solve exercise 2, 3 & 4 on their textbook.</p> <p>Differentiated Learning: Some students might find it difficult to solve the exercises. Sit with them and help them to find the answers and guide them how to find the answer from the book. Some students might finish their classwork earlier. Ask them to review their answers.</p>

02 minute	Conclusion/Review: Tell the students and emphasize that always review the answers before giving their copies or worksheet to the teacher.
	Classwork/ Assessment: Activity 1
03 minute	Homework/Assignment: Ask the student to Look the topic 'Activity' on page no. 54 and divide the students into four groups. Randomly assign the topics to each group to write a short note on the assigned topic and also prepare a presentation on a chart paper.

Unit 1- Importance of Science – Worksheet 1

Lesson Plan 3

Tick the pictures given below that are scientific inventions.



Unit 1- Importance of Science – Worksheet 2**Lesson Plan 3**

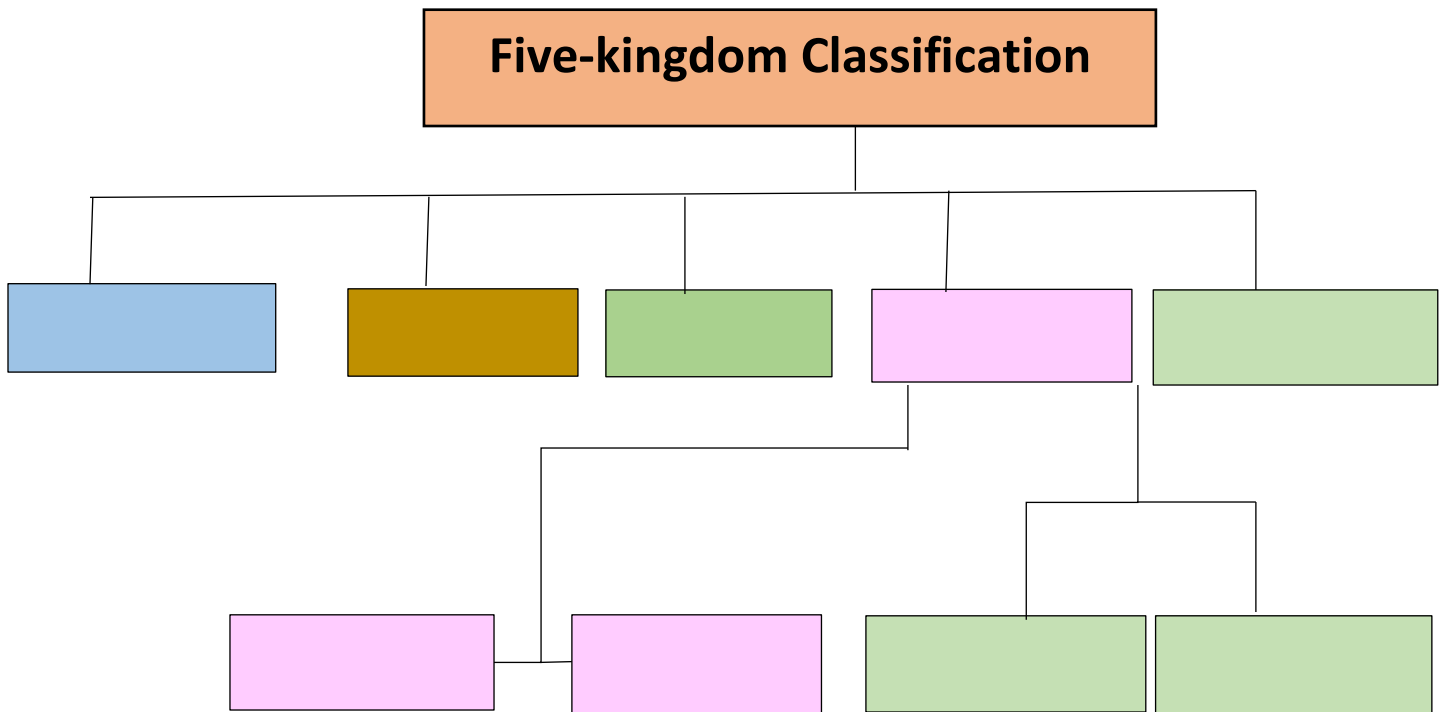
Choose the correct answer from the given options.

1. Science is the knowledge obtained from the study of:
 - a. Atoms
 - b. Solar system
 - c. Structure of physical world.
2. The first completely synthetic plastic was made by chemist in the early:
 - a. 1700
 - b. 1800
 - c. 1900
3. Biologists began developing high yield varieties of corn, wheat and rice in:
 - a. 1740
 - b. 1840
 - c. 1940
4. The subjects of Akhirah is beyond the scope of science. _____ deals with such matters.
 - a. Solar system
 - b. Religion
 - c. Science
5. Bait-al-Hikmah was a place of:
 - a. Learning
 - b. Praying
 - c. Research

Unit 2- Classification of Living Things - Worksheet

Lesson Plan 5

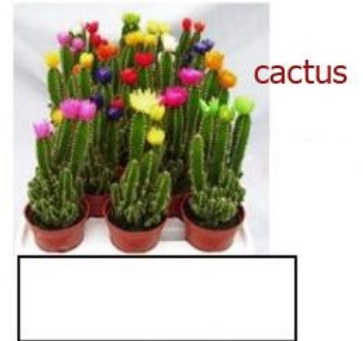
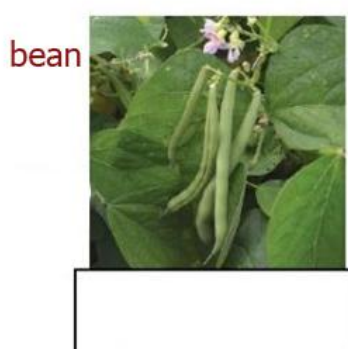
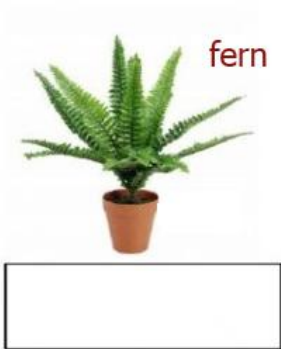
Complete the kingdom of classification.



Unit 4- Plant Structure - Worksheet

Lesson Plan 11

Write FP for Flowering Plant and NFP for Non-flowering plant in given boxes below each picture.



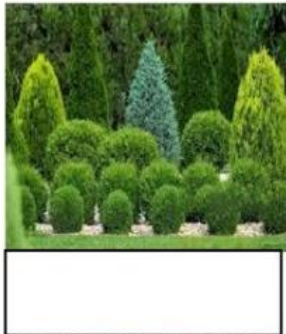
Aloe vera



snake



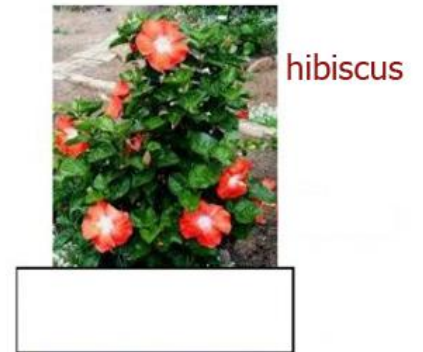
Pine tree



conifer



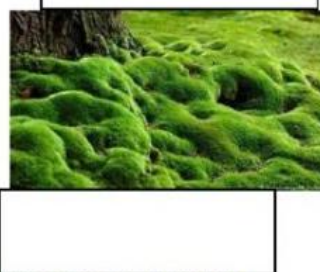
jasmine



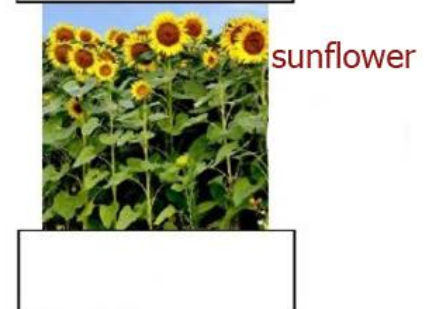
hibiscus



strawberry



moss



sunflower

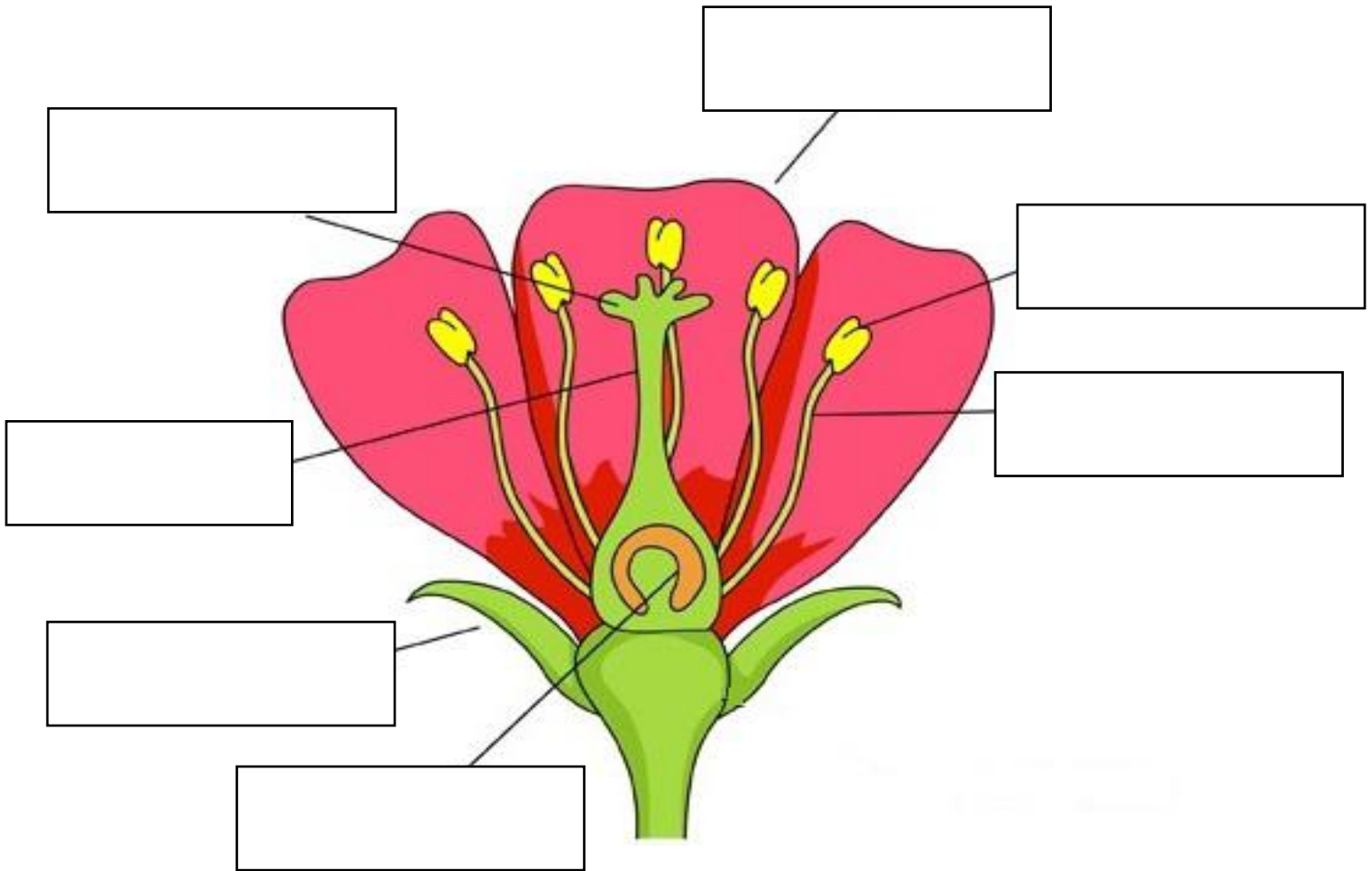
Mango tree



Unit-5 Reproduction in Plants-Worksheet

Lesson Plan 15

Label the given diagram.



Unit-Assessments**Unit-1 Importance of Science**

Name: _____

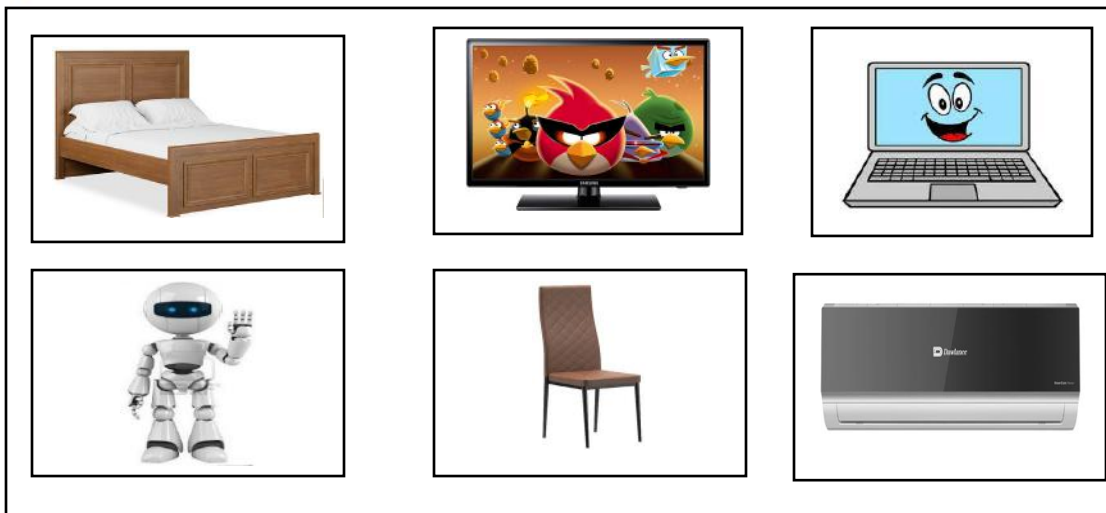
Roll No: _____

Date: _____

Time: 10 Minutes	Total Marks: /10
-------------------------	-------------------------

Fill in the blanks with correct words.**/4**

- i. The first completely synthetic plastic was made by a chemist in the early _____.
a) 1800s b) 1900s
- ii. In the late _____ Edward Jenner first convincingly showed that vaccination worked.
a) 1700s b) 1800s
- iii. The House of Wisdom shows that the _____ civilization always valued and Knowledge.
a) Muslim b) Hindu
- iv. A biologist discovered the first antibiotic in the year _____.
a) 1920s b) 1930s

Question BTick  the picture given below which are science inventions.**Question C****Answer the questions.****/2**

1. What does science study?

Answer: _____

2. What was Bait-ul-Hikmah?

Answer: _____

Unit-2 Classification of Living Things

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
------------------	------------------

Question A

Fill in the blanks with correct words.







/4

- i. All living things are generally classified into _____ main groups.
 - a) two
 - b) three
- ii. Algae belong to kingdom _____.
 - a) fungi
 - b) Protista
- iii. Kingdom plantae is classified into _____ subgroups.
 - a. two
 - b) three
- iv. Worms are soft-bodied _____.
 - b) vertebrates
 - b) invertebrates

Question B

Draw a line to match correct group.

/3

	Vertebrates	
	Invertebrates	
		

Question C

Answer the questions.

/3

1. What is kingdom Monera?

Answer: _____

2. Why are algae considered as plants?

Answer: _____

3. Name five kingdoms of organisms.

Answer: _____

Unit-3 Human Organ Systems

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
------------------	------------------

Question A

Fill in the blanks with correct words.







/4

- i. _____ system breaks down the food into tiny particles.
a) circulatory b) digestive
- ii. _____ system consists of the heart, blood and a network of blood vessels.
a) circulatory b) digestive
- iii. When we inhale, the _____ moves downward and the lungs expand with air.
a) alveoli b) diaphragm
- iv. The _____ inside the backbone.
a) Spinal cord b) brain

Question B

Match the name of the human organ system.

/3

	intestine	
	brain	
	stomach	
	heart	
	lungs	
	liver	

Question C

Answer the questions.

/3

1. What is the function of alveoli?

Answer: _____

2. What is the function of digestive system?

Answer: _____

3. Write the names of the types of muscles.

Answer: _____

Unit 4 Plant Structure

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
------------------	------------------

Question A**Write 'T' for true and 'F' for a false statement. /4**

- i. The plants are divided on the basis of the number of seeds.
- ii. Stamens are the female reproductive system.
- iii. Dicots leaves have veins running parallel to each other.
- iv. The ovary is an enlarged and hollow part of

Question B**Match the given examples with their types of plants. /3**

Monocots			Dicots		
wheat	beans	tulip	grass	rose	oats

Question C**Answer the questions. /3**

1. How are petals different from sepals?

Answer: _____

2. Describe flowers.

Answer: _____

Unit 5 Reproduction in Plants





Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
-------------------------	-------------------------

Question A**Fill in the blanks with correct words.** /3

- There are _____ types of pollination. (two, three)
- A process in which a seed needs favorable condition to grow into a new plant called _____. (fertilization, germination)
- _____ is the process by which seeds are carried away from the parent plant called. (dispersal, reproduction)

Question B**Match one-seeded and many-seeded fruits** /4

One-seeded Fruits	Many-seeded Fruits
	
	

Question C**Answer the questions.** /3

1. What is germination?

Answer: _____

2. Define the term pollination.

Answer: _____

3. Define the term fertilization.

Answer: _____

Terminal Assessment Paper**First Term****1st Term Assessment****Time: 40 Minutes****SCIENCE SERIES 5**

Name: _____

Roll No: _____

Date: _____

Section	Section-I	Section-II	Practical Activities	Viva	Total
Maximum Marks	40	10	05	05	60
Obtained Marks					

Section-I**Question 1****Fill in the blanks with correct word.****/07**

- Bait-ul-Hikmah was a place of learning in the _____ world. (Chinese, Muslim)
- _____ knowledge is not absolute; it is tentative and subject to change. (general, Scientific)
- _____ do not have chlorophyll. (algae, fungi)
- Ants and flies are common examples of _____. (echinoderms, insects)
- The sepals are collectively called the _____. (calyx, anther)
- Wheat is a _____ plant. (Dicot, monocot)
- Pollen grains are the _____ cells of the flower. (male, female)

Question 2**Write 'T' for true and 'F' for false statement.****/08**

- The sweet potato plant develops from buds on old stems.
- Dandelion seeds are carried away by wind.
- Some fruits, such as peach and mango have many seeds.
- The ovary produces pollen grains.
- The floral leaves of monocots are in multiple of three.
- Digestive system deals with breathing.
- Flowering plants are also called angiosperms.
- The term biodiversity was given by Walter G. Rosen in the year 1986.

Question 3

Enlist the names of Five main Kingdom.

/05

1. _____ 3. _____ 5. _____
 2. _____ 4. _____

Question 3

Match the column A with column B.

/10

Column A	Column B
<i>Pomegranate</i>	<i>Flowering plant</i>
<i>Butterfly</i>	<i>Cardiac muscles</i>
<i>Tulip</i>	<i>Many-seeded fruit</i>
<i>Fern</i>	<i>Scientific invention</i>
<i>Mono</i>	<i>insect</i>
<i>Heart</i>	<i>Non-Flowering plant</i>
<i>Aero plane</i>	<i>One</i>
<i>Peas</i>	<i>Skeletal Muscles</i>
<i>Limbs (arms, legs)</i>	<i>Dicots</i>
<i>Star fish</i>	<i>Invertebrates</i>

Question 4

Write the names of five vertebrates and five invertebrates.

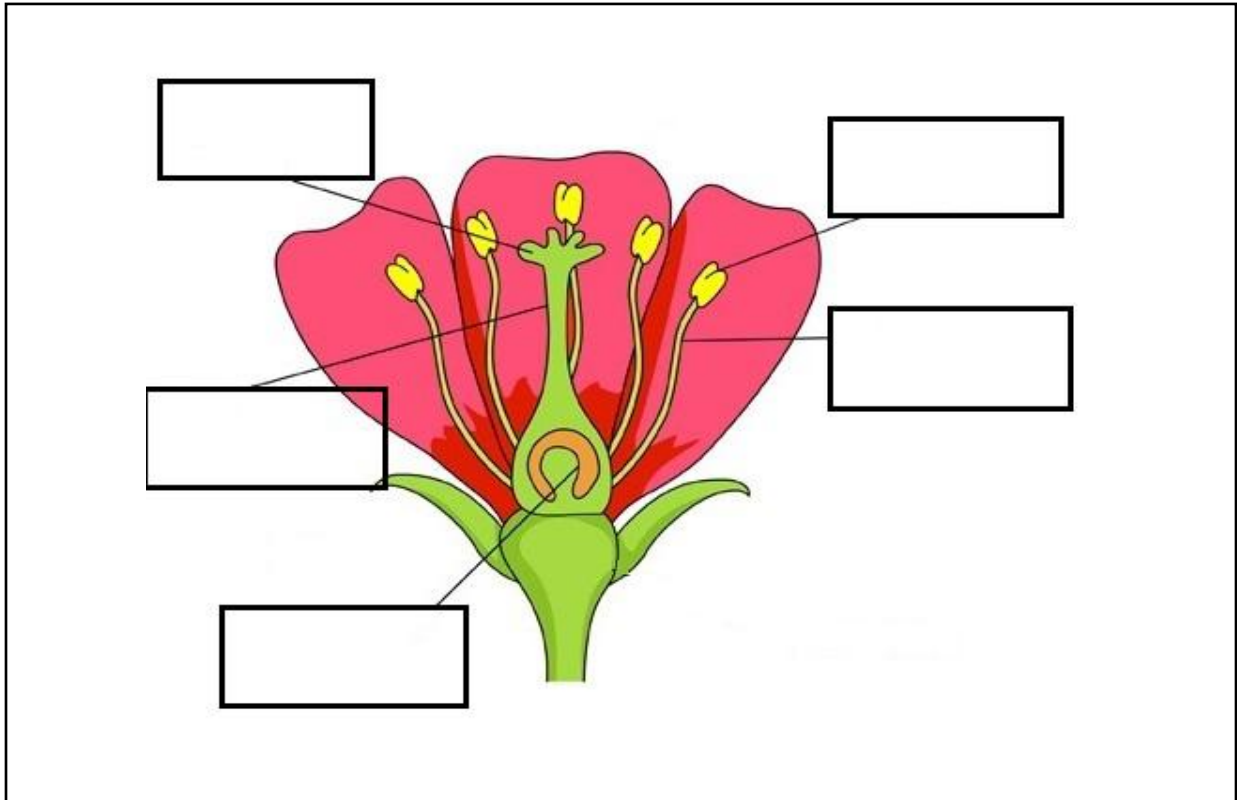
/05

- i. _____ vi. _____
 ii. _____ vii. _____
 iii. _____ viii. _____
 iv. _____ ix. _____
 v. _____ x. _____

Question 5

/05

Label the given diagram:



Section-II

Question 6

Answer the questions.

/10

1. What is the function of medulla in brain?

Answer:

2. How are petals different from sepals?

Answer:

3. Name any four dicot plants.

Answer:

4. Describe the different stages of seed germination?

Answer:

5. How do animals and birds help in seed dispersal?

Answer:

6. What are the key features of kingdom fungi?

Answer:

7. How is biodiversity being lost?

Answer:

8. How is science deeply connected with our daily lives? Give two examples.

Answer:

9. What the musculoskeletal system?

Answer:

10. What is Bait-al-Hikmah?

Answer:

Question 7

/05

What lesson do we learn from The Bait-al-Hikmah? Describe briefly.

Answer:

Question 8

/05

Write two structural differences between Monocots and Dicots.

Answer:

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allah, the Most Gracious, the Most Merciful

SPECTRUM Science

TEACHING GUIDE

SECOND TERM **5**



Prepared by:
Zeeshan Bukhari

Reviewer:
Saifullah Khalid


Spectrum
Enlightening Generations

Spectrum Science

Grade-5 Teaching Guide

Table of Contents Second Term

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4	Unit-wise Assessments	47-51
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Introduction to Spectrum Science Series Book 1 to 5

Spectrum Science Series is a completely new approach to textbooks. This series focuses on doing one thing right, imparting necessary education to young learners with no frills.

The main aim of *the Science Series Grade-5* textbook is to provide a real-life hands-on experience to the young learners regarding scientific phenomena around us. For this reason, we have ensured multiple sections within a chapter to help students digest scientific knowledge and concepts, through a step-by-step process, rushing nothing.

Every chapter starts with a warm-up section, which includes the *Think* and *Explores* section. It is followed by the *Know* section, which presents new concepts. In the end, we have an *Exercise* section, which includes the *Activity Time* section to test that which students have learnt.

Think

This section rekindles the *existing repository of knowledge* and information about young children. Each *Think* activity is aligned with given SLOs, focusing on exercising the mental processing of a child. It aims at directing the students toward the subject of the chapter.

Explore

The *Explore* section asks the children to *perform* an activity. The student has to write the results of their exploration. Combined with *Think* activity, the *Explore* section aims at gearing up the young learners towards the content of the chapter.

Know

The meat of the unit lies in this section. It is carefully *constructed* to disseminate knowledge that adheres to the SLOs and that caters to the curious young minds of the readers. The structure has been ensured to maintain continuity of topics within a chapter, which leads to fun reading and a better understanding of concepts.

Activity

This section comes at the end of the chapters with a focus on *cementing* the knowledge learned by students through *practical* activity. These activities take a cue from the content of the chapter and ask the student to apply it in various ways.

The language of the book has been reviewed and proofed by our language experts, who have painstakingly tried to smooth the edges and maintain continuity within texts.

Spectrum Science Teaching Guide Grade-5

Spectrum Science Teaching Guide consists of unit-wise worksheets, solved exercises of the book, unit-wise assessment papers, a terminal assessment and lesson plans. It is designed to effectively support the teachers in student-centered teaching strategies, with simple and clear instructions.

The following key features of the lesson plans make teaching easier for teachers:

⇒ **Student Learning Outcomes (SLOs)** are carefully planned goals for what students will learn. These also define what students will know and be able to do by the end of the lesson.

⇒ **Prior Knowledge** connects students to what is being taught in class.

⇒ **Resources** are required material in the lesson. Teachers are encouraged to arrange necessary materials in advance.

⇒ **Warm-up** is an icebreaker. These are done to develop students' interest in the subject and generate engagement.

⇒ **Lesson Structure** is the central part of the lesson plan. Its goal is to ensure that learning outcomes are achieved through explanations, demonstrations, activities, class discussions, and brainstorming. Referencing the text, illustrations and pictures in the manual will make the lesson engaging and interesting. Teachers are encouraged to collect student feedback to determine if learning outcomes are being achieved.

⇒ **Conclusion** summarizes the topic and often includes an assessment of the topics covered in a particular lesson.

⇒ **Class Assignments** based on worksheets or activities. The teacher can assign it for homework

⇒ **Homework** is assigned to students during the lesson to reinforce what they have learnt.

Conclusion

We hope teachers and students will find *Spectrum Science Series Books 1-5* thoroughly beneficial. These books contain modern teaching approaches which help students to become curious learners of science.

Remember, traditional teaching styles have become obsolete now and the young minds of today want 'learning facilitators; not typical teachers. Therefore, empower students and see how students will take charge of their learning.

We wish all the teachers and students using *Spectrum Science Series Books 1-5* all the best.

Unit-6- Introduction to Microorganisms

Unit Overview

The sixth unit 'Introduction to Microorganisms' will help students to understand about microorganisms and its main groups, common diseases caused by microorganisms. Further the students will learn about the advantages and disadvantages of microorganisms in daily life and how to prevent from diseases commonly spread by them.

Model Answers

Exercise 1

Answer the following questions.

- i. Microorganisms are extremely small living creatures that cannot be seen without a microscope. They are also known as microbes. The examples are bacteria, virus and fungi.
- ii. Fungi are multicellular organisms. They are found in different shapes and sizes. They can be microscopic as well as macroscopic.
- iii. The main advantages of microorganisms are as follows;
 - a. Some microorganisms helpful in the preparation of food.
 - b. A number of bacteria are found in the human intestine. They help in digestion of food.
 - c. Microorganisms are also used for the production of medicines and vaccines.
- iv. Disease-causing microorganisms are called pathogens. For examples viruses, bacteria and fungi.
- v. Diseases spread because of germs which pass on from an infected person to a healthy person through air, water, food animals as well as some insects.
- vi. We can protect ourselves from diseases by taking following measures;
 - a. Always wash hands well before eating and after using the toilet.
 - b. Eating uncovered food should be avoided.
 - c. Fruits and vegetables should always be washed well before eating them.
 - d. Brushing the teeth twice a day to keep your mouth and teeth clean and safe from germs.
 - e. Always cover your mouth and nose with a tissue when cough or sneeze.

Exercise 2

Fill in the blanks with correct words.

- i. Microorganisms can only be seen under a microscope.
- ii. Viruses are unicellular organisms.
- iii. Pneumonia is caused by a bacteria.
- iv. When an infected person sneezes or coughs, germs are released into the air around.
- v. Tetanus is the disease that is caused through skin.
- vi. A vaccine is a harmless from of germs to protect us from diseases.

Exercise 3

Write 'T' for a true or 'F' for a false statement.

- i. Microorganisms are also known as microbes. T
- ii. The athlete's foot is a viral disease. F
- iii. Milk sours because of bacteria. T
- iv. Malaria is caused by the bite of a male mosquito. F
- v. Some fungi are used to prepare antibiotics. T
- vi. Chickenpox is caused by polluted water. F

Exercise 4

Hadith number 5728 of Sahih Bukhari says regarding the concept of spread of diseases, "If you hear of an outbreak of plague in a land, do not enter it. And if the plague breaks out in a place while you are in it, do not leave that place."

According to today scientists affirm that healthy people who have no symptoms in the place of plague are already carrying the microbes and so they represent a real threat because they may transfer the plague to another place if they move to it.

Exercise 5

Complete the following table.

Microorganism	Features	Diseases
Bacteria	They are found in air, water and soil. They can grow and reproduce inside or outside the human body.	Cholera, pneumonia, typhoid, throat infection, food poisoning, etc.
Virus	They are made of chemicals like those found in the living bodies. They live and grow only in the living cells of humans, animals and plants.	Influenza, measles, hepatitis, chickenpox, COVID-19, etc.
Fungi	Fungi are plants without chlorophyll. They take their food from animals or other plants. Fungi are mostly harmless, but some fungi can cause diseases in humans and animals.	Athlete's foot, fungal eye infection, ringworm, etc.

Lesson Plan 18

Subject: Science	Grade: 5	Term: 2nd
Week: 7	Unit: 6	Unit Title: Introduction to Microorganisms
LP: 18	Textbook Page/s: 55 – 58	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- define and identify microorganisms and their main groups.
- differentiate them according to their structures, features and the diseases spread by them.

Prior Knowledge of Students:

- They know about common diseases.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Ask students to open the textbooks and look at the pictures on page no 55 in 'THINK' Section and ask them to identify the given picture and do according to the instructions.</p> <p>Then move on to the 'EXPLORE' Section on the bottom of the same page and ask the students to write some of the common name of diseases in the textbook. Wait for the answers, it is very much likely that you may not receive any answer. After good two or three minutes check and appreciate the correct answers and tell them some name of common diseases.</p>
22 minutes	<p>Lesson Structure/Activities/Presentation: Write the name of the unit on the whiteboard. Tell the students they will learn about Microorganisms, about their structure, features and diseases spread by them and the advantages of the microorganisms in today's lesson.</p>

	<p>Activity 1: Tell them that Microorganisms were first observed in the late 17th century by a Dutch scientist, Antonie Philips. Ask a random student to read the text of the unit aloud at page no. 56. Explain them about the Microorganisms. Walk around the classroom and guide the students where needed.</p> <p>Activity 2: After that explain them that microorganisms are classified into three main groups based on their structure and features and read aloud and explain their structure, features and diseases spread by them. Ask the students to listen attentively.</p> <p>Activity 3: Give them information about Coronavirus disease (COVID-19), which is an infectious disease caused by a newly discovered coronavirus. Which emerged in China in December 2019. Ask a random student to read the topic 'Advantages and Disadvantages of Microorganisms' on page no 57 & 58 and explain it to them. Walk around the classroom during reading and guide the students where needed.</p> <p>Differentiated Learning: Some students might find it difficult to differentiate the groups based on the features and structures of microorganisms and diseases spread by them. sit with them and explain it to them again from the book.</p>
<p>2 minutes</p>	<p>Conclusion/Review: Microorganisms have some advantages as well because they help in preparation of food, in digestion and production of medicines.</p>
<p>6 minutes</p>	<p>Classwork/ Assessment: Ask them to find the answer of Q # (i) of Exercise # 1 on page 61 and help them to find the answers and ask them to write it on their notebook.</p>
<p>2 minutes</p>	<p>Homework/Assignment: Ask them to write the answer of Q # (ii) & (iii) of Exercise # 1 on page 61 on their notebook as home assignment.</p>

Lesson Plan 19

Subject: Science	Grade: 5	Term: 2nd
Week: 7	Unit: 6	Unit Title: Introduction to Microorganisms
LP: 19	Textbook Page/s: 58 – 59	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the spread of diseases through different sources.
- describe the measures against diseases.

Prior Knowledge of Students:

- They can explain the diseases spread by them and the advantages of microorganisms.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 Minutes)	Proceedings
5 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Recall the topic 'Microorganisms' and randomly ask any student about the diseases spread by different microorganisms. Appreciate them if they answer correctly.</p>
20 minutes	<p>Lesson Structure/Activities/Presentation: Write the name of the unit on the whiteboard. Tell the students they will learn about common disadvantages, spread of diseases and the measures against diseases.</p> <p>Activity 1</p> <p>Ask a random student to read out the textbook's topic 'Common Disadvantages' on page no.58 and explain them. Ask the students to listen carefully/attentively. Walk around the classroom and guide the students where needed.</p>

	<p>Activity 2: After that topic move on to the next topic 'Spread of Diseases' and ask another student to read aloud and explain them how diseases spread through germs via air, water, food, skin and insects.</p> <p>Differentiated Learning: Some students might find it hard to understand the spread of diseases through different sources, sit and explain them through pictures on page no. 59 of textbook.</p>
03 minutes	Conclusion/Review: Tell the students that Hadith of Sahih Bukhari 5728 also give the concept of spread of diseases.
10 minutes	Classwork/ Assessment: Ask them to find the answer of Q # (iv) & (v) of Exercise # 1 on page 61 and help them to find the answers and ask them to write it on their notebook.
02 minute	Homework/Assignment: Do the exercise 2 & 3 on page no. 61 as home assignment.

Lesson Plan 20

Subject: Science	Grade: 5	Term: 2nd
Week: 7	Unit: 6	Unit Title: Introduction to Microorganisms
LP: 20	Textbook Page/s: 60 – 63	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- explain how diseases spread.

Prior Knowledge of Students:

- They know the advantages and disadvantages of microorganisms.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A microscope, glass slides, polluted water, lab gloves, mouldy bread, a rotten fruit and an antiseptic soap for Lab.

Time Frame (40 minutes)	Proceedings
10 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Recall a short review of the unit. Discuss with them the advantages and disadvantages and spread of diseases in a brief 10 minutes, take a short quiz from page # 56-59.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Ask the students to open their textbook exercise page no. 60 and read aloud the topic 'Measures against Diseases' and explain it to them how we can protect us from diseases by taking the measures mention in the topic. After that read the points to remember and glossary on page no. 60.</p> <p>Activity 2: Ask the students to do the exercise 5 on the textbook's page no. 62.</p>

	<p>Activity 3: Take the students to the Science Laboratory and conduct a practical according to the instruction given on page 62 and 63 of textbook and ask them to write their observations and answer the questions on textbook's page no. 63.</p> <p>Differentiated Learning: Walk around in the classroom. Some students might find it hard in solving exercise. Sit with them, guide and help them.</p>
1 minute	Conclusion/Review: We can protect us from diseases by taking some minor measures in our daily life.
(10mins)	Classwork/ Assessment: Covered in activity#3
4 minutes	Homework/Assignment: Students will prepare a poster in a group of four students assign by the teacher on the topics given on textbook's page no 62 in the 'ACTIVITY SECTION', poster competition.

Unit-7- Changes in the States of Matter

Unit Overview

The seventh unit, 'Changes in the States of Matter' will help students to understand the States of matter and their molecular arrangements, their changes by melting, freezing, evaporation, condensation, sublimation and deposition. Further they will understand the types of changes (i.e., physical and chemical) in states of matter.

Model Answers

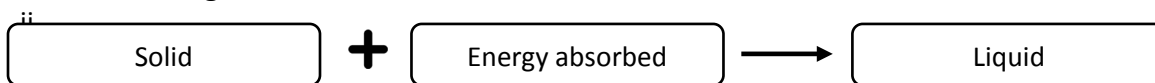
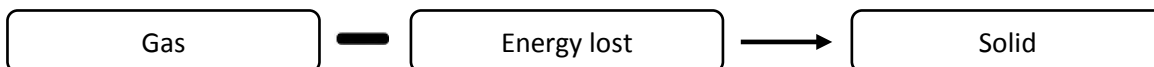
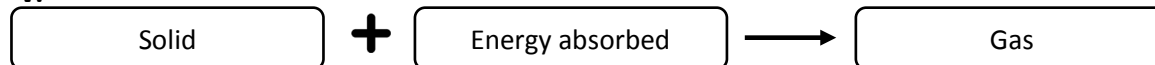
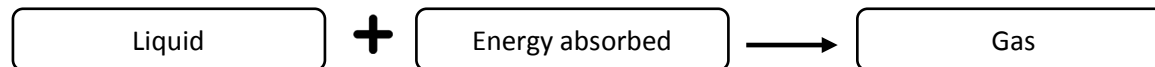
Exercise 1

Answers of questions.

- i. A matter can change its state by either heating or cooling, means change in temperature. For example; we put ice cubes in our drinks to cool it and later we notice that the ice cubes have melted in the drink because of the change in its temperature once taken out from the freezer.
- ii. **Sublimation** is the process in which a solid is changed directly to a gas without first becoming a liquid. For example, dry ice sublimates at room temperature.
Deposition is the process in which a gas changes directly to a solid without first becoming a liquid. Deposition is the reverse of the sublimation process. This process takes place at very low temperature. For example, frost is the deposition of water vapour from humid air.
- iii. **Stage of Evaporation:** The heat of the Sun causes water to evaporate from the water bodies, such as seas, oceans, lakes, etc.
Stage of Condensation: Water vapours in the air cool down and condense to form clouds and tiny droplets. These tiny droplets join together to form bigger drops. Finally, the bigger drops fall down on Earth as rain.
- iv. Melting is the process in which a solid change into liquid on heating.
Freezing is the process in which a liquid change into solid on cooling.
Precipitation is the process in which water falls from the sky in the form of rain, snow, sleet and hail.
- v. There are two types of changes in matter. Physical Changes & Chemical Changes.
A change in the appearance of matter is called a Physical Change. These changes are temporary in nature and do not produce any new substances. These changes are also called reversible changes. For example, dissolving sugar in water and changing of water into the ice are examples of physical changes in matter.
A change in the chemical composition of matter is called a Chemical Change. Chemical changes are permanent changes, and they produce a new substance. These changes are also called irreversible changes. For example, burning a piece of wood, it turns into ashes. This new substance can never be changes back into wood.

Exercise 2**Fill in the blanks.**

- i. Evaporation is the process by which a liquid change into gas.
- ii. Water falls from the sky in the form of rain, snow, sleet and hail.
- iii. A new substance is formed in a chemical change.
- iv. Dry ice is made by the process of freezing.
- v. A change in the appearance of matter is called a physical change.
- vi. Dissolving sugar in water, crushing an aluminum can and changing of water into the ice are the examples of physical changes in matter.
- vii. Allah has created everything and designed it in a perfect measure.

Exercise 3**i. Melting****iii. Deposition****iv. Sublimation****v.****vi. Evaporation****Exercise 4**

- i. freezing
- ii. evaporation, condensation
- iii. infiltration
- iv. chemical
- v. irreversible

Lesson Plan 21

Subject: Science	Grade: 5	Term: 2nd
Week: 8	Unit: 7	Unit Title: Changes in the States of Matter
LP: 21	Textbook Page/s: 64 – 66	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the difference vertebrates and invertebrates.
- explain the five main Classification of Kingdom.

Prior Knowledge of Students:

- They can differentiate between worms, insects, vertebrates and invertebrates.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Candle and a match box

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Burn the candle with the help of match stick and ask the students to observe it, after a minute question the students what do they observe, whether the candle is changing its state or not.</p> <p>Ask the students to open the textbook's page no. 64 and write the answers given in the 'Think' section of the book and help them answering the questions.</p> <p>Then move on to the 'Explore' section on the same page and help the students to complete the chart on the same page, the topic has been learned in previous class.</p> <p>This activity will help in improving their observation.</p>
	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit 'Changes in the States of Matter' on the whiteboard.</p>

25 minutes	<p>Ask students to open the textbook's page no.65. Read the topic 'Know' of the unit aloud and explain to them first about the matter and its different states and how they change their states.</p> <p>Ask a random student to read out the textbook on page no.65 'Changes in the States of Matter', and explain them. Ask the question to the students to write the answer in their textbook's page given in the 'Activity' section at the bottom on the same page. Walk around the classroom and guide the students where needed.</p> <p>Move on to the next page no. 66 and ask another student to read the next topic, and explain it to them and ask them to write the answers of the topic of 'Activity' in their textbook.</p> <p>Walk around the classroom and guide the students where needed.</p> <p>Differentiated Learning: Some students might find it hard to understand the process of changing the states of matter, sit with them and explain them with the help pictures given in the book.</p>
02minutes	Conclusion/Review: Tell the student that according to Qur'an "Allah has created everything and designed it in a perfect measure."
05 minutes	Classwork/ Assessment: Ask the students to write the answer of Q # (i) of Exercise 1 at page no. 71.
03 minutes	Homework/Assignment: Students will review/revise the page no. 65 & 66 at home.

Lesson Plan 22

Subject: Science	Grade: 5	Term: 2nd
Week: 8	Unit: 7	Unit Title: Changes in the States of Matter
LP: 21	Textbook Page/s: 67 – 68	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the changes in the states of Matter.

Prior Knowledge of Students:

- They can describe Matter.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Review the topics 'Melting, freezing & evaporation' and take a short quiz.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Open the textbook's page no. 67 and ask any student to read the topic 'Condensation & Sublimation' and explain them the process of condensation and sublimation with the help of given activity given after each topic. Walk around the classroom and guide the students where needed.</p> <p>Activity 2: Now move on to the next page and ask randomly student to read aloud the topic 'Deposition' on textbook's page no.68. Explain them, during the reading walk around the classroom and repeat the difficult words and correct their pronunciation.</p>

	Differentiated Learning: Some students might find it hard to understand the different process of changing matters. Sit with them, and explain them through the pictures shown in the book on page 67 and 68, and ask them to repeat after you so that they can understand.
01 minutes	Conclusion/Review: Explain the students the relationship between processes with the help of diagram given on the textbook's page no. 68.
07minutes	Classwork/ Assessment: Ask Distribute worksheet and ask the students to solve it.
02 minutes	Homework/Assignment. Ask the students to write the answer of Q # (ii) of Exercise 1 at page no. 71.

Lesson Plan 23

Subject: Science	Grade: 5	Term: 2nd
Week: 8	Unit: 7	Unit Title: Changes in the States of Matter
LP: 23	Textbook Page/s: 68 – 69	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- understand the Water Cycle
- explain the types of Changes in Matter.

Prior Knowledge of Students:

- They know about different processes of changes in matter.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- An aluminium can, a match box and a piece of paper.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Review the topics condensation, deposition and sublimation and take a short quiz regarding the topics.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Ask students to open the textbook's page no.68 and read the topic 'The Water Cycle' aloud and explain. Tell them that Condensation and Evaporation are the major parts of the water cycle and they are largely responsible of the constant movement of water. Walk around the classroom and guide the students where needed.</p>

	<p>Activity 2:</p> <p>Show the aluminium can to the students and apply the force of your hand to change its shape and explain them how matter changes physically.</p> <p>Now ask other student to read aloud the topic 'Types of Changes in Matter' (Physical Changes) on page no. 69 and explain it.</p> <p>Now show the paper and burn it completely with the help of match stick, and show them how it changes into ash and do not come to its previous condition.</p> <p>Now ask other student to read aloud the topic 'Types of Changes in Matter' (Chemical Changes) on page no. 69 and explain it.</p> <p>Ask other students to listen attentively.</p> <p>Differentiated Learning:</p> <p>Some students might find it hard to understand the concept of chemical changes. Sit with them and explain them with the help of match stick that after burning how it changes its state and turn into the ash.</p>
02 minutes	Conclusion/Review: Tell the student physical changes are also called reversible changes and chemical changes are also called irreversible changes.
06 minutes	Classwork/ Assessment: Ask the students to write the answer of Q # (iii) & (iv) of Exercise 1 at page no. 71. and write it down in their notebooks.
02 minutes	Homework/Assignment: Students will write the answer of Q # (v) of Exercise 1 at page no. 71 in their notebooks, and solve the exercise no. 2 'Fill in the blanks' at page no. 72 in their textbook.

Lesson Plan 24

Subject: Science

Grade: 5

Term: 2nd

Week: 9

Unit: 7

Unit Title: Changes in the States of Matter

LP: 24

Textbook Page/s: 70 – 73

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- explain the types of changes.
- solve the exercises of the book.

Prior Knowledge of Students:

- They can explain/describe the water cycle.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Electric kettle, water, power supply for practical.

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Give a brief revision of the unit and take a short verbal quiz and appreciate the students who answer correctly.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Ask the student to open the textbook's page no. 71 and review the 'Points to Remember and glossary'.</p> <p>Activity 2: Now ask the students to open the textbook's page no. 72 and solve the exercise 3 & 4 in the textbook. Walk around the class so no one could copy their answers with another student.</p> <p>Activity 3: Now take the students to the Science Laboratory and conduct the practical according to the instructions given on textbook's page no. 73 and ask them to write the answers given on textbook's page no. 73 in Science Lab section.</p>

	<p>Result: It starts to boil and bubbles are formed. The steam turned back to water (liquid) due to condensation.</p> <p>Differentiated Learning: Some students might find it hard to give the answers, help them to understand them and guide them to write the answers according to their observations.</p>
01 minutes	Conclusion/Review: Tell the student matter changes their states through different processes and there are two types of changes one is reversible and the other is irreversible.
(06 minutes)	Classwork/ Assessment: Included in the Sc. Lab
03 minutes	Homework/Assignment: Students will be done an activity given on textbook's page no. 70 at home and write their answers on the textbook. (Write a note on the diary of students that they will perform the activity under the supervision of any adult).

Unit-8- Magnets and Electromagnets

Unit Overview

The eighth unit, 'Magnets and Electromagnets' will describe the two poles of magnets. They will understand the concepts of magnetism and differentiate between hard and soft magnet material. They will also understand the magnetic field and learn about the magnetic compass and its uses.

They will also be made aware how electromagnets are made and explore different electromagnetic devices.

Model Answers

Exercise 1

Answer the following questions.

- i. Hard magnet is the one which does not lose its magnetism easily once it is magnetized. For example; steel. Whereas soft magnet is the one which can easily magnetize but they lose their magnetism easily. They are also called temporary magnets. For example; iron.
- ii. Magnetism is the power of a magnet to attracts other objects, it is invisible but a powerful force. For example; the mixture of sand in iron fillings which is not easy to separate except with the help of another magnet which can pull the iron filling to itself, separating iron from sand.
- iii. Magnetic forces get weaker at a longer distance because the distance from the magnet increases. That is because the area around the magnet within which it attracts magnetic materials is known as its magnetic field.
- iv. Magnetic compass is a device to detect magnetic field since magnetism is invisible. It main use is to find directions. Common uses are determine the direction of the Qibla or like in the ancient times magnetic compasses were used to find directions in the oceans.
- v. Electromagnets are temporary and artificial magnets because they work when electric current flows through them.
- vi. A few examples of electromagnets can be like radio speaker, an electric door lock uses an electromagnet to lock the door or large and powerful electromagnets used in magnetic cranes; often used in scrapyards to lift heavy loads.

Exercise 2

Fill in the blanks.

- i. Magnetic forces become weaker as the distance increases.
- ii. Opposite poles of different magnets attract each other whereas like poles push each other.
- iii. A magnetic object inside the magnetic field of a magnet will be attracted to it.
- iv. Hard magnetic materials are also known as permanent magnets.
- v. The strength of an electromagnets depends on the number of coils.
- vi. A radio and an electric door have electromagnet inside them.
- vii. The Earth acts like a giant magnet.

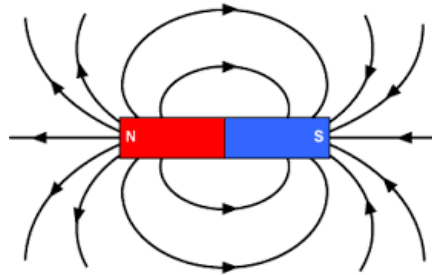
- viii. The Holy Qur'an mentioned that Allah has sent down the iron which has strong power and also has benefits for the people.

Exercise 3

- i. A magnetic compass needle always points towards the North pole of the Earth. T
- ii. Electromagnets are natural magnets. F
- iii. Soft magnetic materials do not lose their magnetism easily. F
- iv. The magnetic field can be detected by magnetic compass. T
- v. A basic electromagnet consists of four parts. F
- vi. The Earth's invisible magnetism helps animals such as birds, bats, sharks and mice to find their way around. T

Exercise 4

Draw the pattern of magnetic field lines around the bar magnet given below.



Lesson Plan 25

Subject: Science

Grade: 5

Term: 2nd

Week: 9

Unit: 8

Unit Title: Magnets and Electromagnets

LP: 25

Textbook Page/s: 74-76

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- understand the Magnets and Magnetism.
- differentiate Hard and Soft Magnets.

Prior Knowledge of Students:

- They know about magnets.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Magnets (2) and some pins (any type)

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn about Magnets, Electromagnets, Attraction and Repulsion. Ask the students to open the textbooks page 74 write the name of the shape of magnets in 'Think' section, then ask them to write two electrical home appliances that use magnets in the 'Explore' section. Help them to write the answers. Appreciate them if they answer correctly. Discuss the Surah Al-Hadeed:25 on page no. 74.</p> <p>Activity 2: Ask students to open the textbook's page no.75. Read the page of the unit aloud and explain it, then move to page no. 76 and read the pages aloud. Explain to them first about North Pole and South Pole, then explain attraction,</p>

	<p>repulsion and Magnetism. With the help of 2 magnets and pins show them the attraction and repulsion.</p> <p>Activity 3: Now turn on to page no. 76 and read aloud 'Hard and Soft Magnetic Materials' and explain it to them. Tell them that some materials can be magnetized with some difficulty, once they magnetized, they do not lose their magnetism easily and are called hard magnetic material, and they make hard magnets. Whereas some materials can be easily magnetized, but they lose their magnetism easily and are called soft magnetic materials, and they make soft magnets.</p> <p>Differentiated Learning: Some students might find it difficult to differentiate between permanent and temporary magnet. Sit with them and explain them with the help of pictures shown in the book or rub a pin on the magnet and show them the magnetism, how it attracts other pins but its temporary not a long-term magnetism.</p>
02 minutes	Conclusion/Review: Tell the students healthy muscles will keep them fit.
06 minutes	Classwork/ Assessment: The students will write the answers of exercise 1 question (i) on page no. 80 in their notebook.
02 minutes	Homework/Assignment: Students will find the answer of question (ii) of exercise 1 from page no. 80 in their notebook as home assignment.

Lesson Plan 26

Subject: Science

Grade: 5

Term: 2nd

Week: 9

Unit: 8

Unit Title: Magnets and Electromagnets

LP: 26

Textbook Page/s: 77-78

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:*At the end of this lesson, the students will be able to:*

- explain Magnetic field.
- understand Mapping a magnetic field and the use of magnetic compass.

Prior Knowledge of Students:

- Differentiate hard and soft magnetic materials.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Magnet bar and magnetic compass

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Draw some picture of home appliances like T.V., mobile phone, iron, EarPods, electric heater, gas geyser on the board, and ask students to identify the items in which magnets are used or in which magnets are not used. Appreciate them if they answer correctly.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Ask the students to open the textbooks on page no. 77 and randomly ask any student to read aloud the topic ' Magnetic Field and Mapping a Magnetic Field. During reading and explanation walk around the class continuously and correct the pronunciation where needed. With the help of magnet bar and magnetic compass show them how it works.</p>

	<p>Activity 2: Move on to the page no. 78 and ask another student to read aloud the topic 'Magnetic Compass'. Before start reading show them compass and its needle and explain them how it moves with magnetic force. During reading walk around the class and emphasize the students to focus on the reading and explain them the topic. Appreciate students after they get finish.</p> <p>Differentiated Learning: Some students might find difficult to understand the how a direction can be determined by the compass. Sit with them & show them with the help of magnet bar and compass how it works and how direction of Qibla can be determined.</p>
02 minutes	Conclusion/Review: Tell the student Charles-Augustin de Coulomb was a Frenchman who discovered the magnetic field and developed the laws of magnetic attraction and repulsion.
06 minutes	Classwork/ Assessment: Ask students to open the textbook page no 80 and write the answer of question (iii) from exercise 1 in their notebook & help them finding the answer.
02 minutes	Homework/Assignment: Students will write the answer of exercise 1 questions (iv) in their note book as home assignment.

Lesson Plan 27

Subject: Science	Grade: 5	Term: 2nd
Week: 10	Unit: 8	Unit Title: Magnets and Electromagnets
LP: 26	Textbook Page/s: 78-81	Duration: 40 minutes
Teacher:	School:	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe Electromagnets and its working.
- they will be able to solve the exercises of the unit.

Prior Knowledge of Students:

- They can describe Mapping of Magnetic Field, and the use of Magnetic Compass.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Give a short review of the topics of the unit and take a short quiz and appreciate the students if they answer correctly.</p>
15 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Ask the students to open the textbooks on page no. 78 & 79 and randomly ask any student to read aloud the topic 'Electromagnets and Working of Electromagnet', and explain them</p> <p>Activity 2: Now move on to page no. 80 and review the points to remember and glossary.</p> <p>Differentiated Learning: Some students might find it difficult to understand the working of Electromagnets and its uses. Sit with them and explain with the help of picture given on page 78 & 79.</p>

02 minutes	Conclusion/Review: Tell the student that Earth has very strong magnetic field. It is produced because of the motion of the molten iron within the core of the Earth.
16 minutes	Classwork / Assessment: Ask the students to write the answer of question (v) & (vi) from Exercise no.1 on page 80 in their note book. After that ask the students to solve the exercises 2 & 3 in their textbook's page 81.
02 minutes	Homework/Assignment: Students will draw the pattern of the magnetic field lines around the bar magnet as given in the textbook's page 81 exercise 4 & & worksheet will be solved by the students as home assignment.

Unit-9-Forces on Earth

Unit Overview

The ninth unit, 'Forces on Earth' will help students to identify different types of forces. The students will be made aware the difference of mass and weight. The students will be able to understand the difference between balanced and unbalanced forces and their effects on moving objects. They will also be able to define inertia and the law of inertia.

Model Answers

Exercise 1

Answer the following questions.

- i. **Electrostatic force** is an attractive or repulsive force that is produced by charged objects, and **Magnetic force** is an invisible of each magnet that pulls metal objects.
- ii. **Elastic Force:** The force that allows some materials to return to its original shape after being stretched or compressed.
Muscular Force: The force that is created through the use of muscles or exerted by the body to pull, push, lift, stretch or twist an object.
- iii. If the weight of an object is 2400 N on Earth, its weight on the Moon will be 400 N. This is because the Earth's gravity is six times greater than the Moon's.
- iv. The tendency of an object to stay at rest or in motion unless a force acts upon it, is called **inertia**. For example, the moving spaceship will continue to move at the same speed because of inertia.
- v. **Mass** is the total amount of matter present in an object, and it is measured in Kilogram (kg), whereas, **weight** is the force of gravity on an object, and the measuring unit for weight is Newton (N).
- vi. **Net Force:** The sum of all the forces acting on a body is called the **net force**.
Balanced Force: When the net force is zero, the forces applied on a body are said to be **balanced**.
- vii. **Unbalanced Force:** If the net force applied on a body is not zero, the forces are said to be **unbalanced**.

Exercise 2

Fill in the blanks.

- i. We need the frictional force to walk and drive vehicles.
- ii. The measuring unit of weight is newton (N).
- iii. The measuring unit of mass is kilogram (kg).
- iv. Magnetic force is used to pull magnetic objects.
- v. Weight depends upon gravitational force.

Exercise 3**Write 'T' for true and 'F' for false statement.**

- i. The weight of a body remains the same on Earth as well as on the Moon F
- ii. Mass is the total amount of matter in an object. T
- iii. Inertia is important to move or stop an object. T
- iv. Rainfall is due to the force of gravity. T
- v. Einstein was the first to introduce the concept of gravity F

Exercise 4**Identify the forces and write their names under their respective pictures.**

- i. friction
- ii. muscular
- iii. elastic

Exercise 5**Complete the translation of the following Ayah of the Holy Quran.**

- i. Allah
- ii. sea
- iii. Heavens
- iv. earth
- v. ever gracious
- vi. mankind

Lesson Plan 28

Subject: Science

Grade: 5

Term: 2nd

Week: 10

Unit: 9

Unit Title: Forces on Earth

LP: 28

Textbook Page/s: 84 - 86

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe the different types of forces.

Prior Knowledge of Students:

- They know what is force.

Teaching Aids/Materials/Resources:

- Textbook
- Board/Marker
- Magnet & pin, friction toy car, a ball and a rubber band

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn about the Forces on Earth. Ask the students to open the textbook's page # 84, in the 'Think' section ask the students to write 'G' for gravity and 'F' for friction for each picture. Tell them gravity and friction. Now in 'Explore' section ask the students to write the answer in the textbook. Help them if they find it difficult to write, and appreciate the students who answer the question.</p> <p>Activity 2: Move on to the textbooks page # 85 and ask a random student to read aloud, walk around the class during reading and correct the pronunciation of the difficult words and explain them as well.</p>

	<p>Activity 3: After completing ask them to move on to the page # 86, and ask another student to read aloud the topic 'Mass & Weight' and explain it to them.</p> <p>Differentiated Learning: Some students might find it difficult to understand the difference between different forces. Sit with them and explain them the types of forces with the help of objects you have like friction car, rubber band magnet and pin and others.</p>
01 minutes	Conclusion/Review: Explain Surah Al-Hajj: 65 from 'Proud to know' section on page 84 and tell the students that Allah is Ever Gracious and Most Merciful to mankind.
06 minutes	Classwork/ Assessment: Ask the students to write the answer of question (i) of exercise 1 on textbook's page 88 in the notebook. Help them if they find difficult to answer the question.
03 minutes	Homework/Assignment: Students will find and write the answers of question (ii) & (iii) of exercise 1 in their notebook as home assignment.

Lesson Plan 29

Subject: Science

Grade: 5

Term: 2nd

Week: 10

Unit: 9

Unit Title: Forces on Earth

LP: 29

Textbook Page/s: 86 - 90

Duration: 40 minutes

Teacher:

School:

Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe Inertia.
- differentiate Net force, Balanced and Unbalanced forces.
- solve the exercise.

Prior Knowledge of Students:

- They can differentiate/identify the different types of forces.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- A plastic comb and some small pieces of paper.

Time Frame (40 minutes)	Proceedings
03 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the board. Tell them they are going to learn about the Inertia and Net force, Balanced and Unbalanced forces today. Ask the students to open textbook's page no. 86 and ask a random student to read the topic 'Inertia' aloud. Stop the student where necessary and explain them the topic and difficult words and ask them to repeat after you.</p> <p>Activity 2: Ask other student to turn on text's book page no. 87 and read Net force, Balanced and Unbalanced force. Stop the student during reading and emphasize the on difficult words and ask them to repeat after you.</p>

	<p>Activity 3: On page # 90 an experiment is given, conduct the practical with the help of plastic comb and pieces of paper according to the given instructions.</p> <p>Differentiated Learning: Some students might find it hard to understand Inertia or Net force, Balanced or Unbalanced forces. Sit with them explain them with the help of pictures on page 87, or with the help of any object like duster or a pencil box and apply the force from the both sides or from one side to understand them the balanced or unbalanced force.</p>
01 minutes	Conclusion/Review: Tell the students that force is important for an object to start, stop or change direction and there are many forces exist in nature.
10 minutes	Classwork/ Assessment: Guide the students to answer exercise no.1 part (iii) & (iv) and write on their notebooks. Students will solve the exercises 2, 3, 4, & 5 on the textbook's page 88 & 89.
01 minutes	Homework/Assignment: Guidance given in the class by the teacher to the students and they will answer the question no.(v) & (vi) of exercise 1 in the note book from home.

Unit-10-Light and Shadow

Unit Overview

The tenth unit, 'Light and Shadow' will help students to understand that light travel in a straight line. The students will be made aware about the characteristics of a shadow. The student will get familiar with the transparent, translucent and opaque objects. They will also understand the working of a pinhole camera.

Model Answers

Exercise 1

Answer the following questions.

- i. Without Sunlight we use artificial sources of light for example; electric bulbs, headlights, torches, candles and street lights.
- ii. When the source of light is at a lower angle the shadows made are long, however when the source of light is at a higher or upper level, the shadows are relatively shorter, or the same size of the original object.
- iii. Light is a form of wave, and prefers travelling from one point to another in the form of rays, and collectively the rays form a beam.
- iv. Three things are needed for the formation of a shadow.
 - An object,
 - source of light
 - a surface.
- v. The structure of a pinhole camera: It is a small box with a pinhole at one end with a screen at the other end. The screen is made of a tracing paper. The tiny hole is made from the tip of a pen or a pin. The sharpness of the image depends upon the size of the hole. The smaller the hole the sharper the image.

Working of a pinhole camera: an object is placed in front of the pinhole camera where the light falls on it and it reflects. Some of the light is entered into the camera through the pinhole and falls on the screen. Then a small inverted image of the object is formed on the screen.

Exercise 2

Fill in the blanks.

- i. The sunlight makes things visible during the day.
- ii. Light travels in a straight line.
- iii. Wood, rock and steel are opaque materials.
- iv. Transparent materials allow light to pass through its shadow.
- v. The pinhole camera was invented by a Muslim scientist, Ibn Al-Haytham.

Exercise 3

Write T for a true and F for a false statement.

- i. Wood is a translucent material. F
- ii. A shadow is always formed on the same side to the light source. F
- iii. Opaque materials do not allow light to pass through them. T
- iv. The shadows are short in the morning and evening. F
- v. A pinhole camera has a very small hole. T
- vi. The image formed by a pinhole camera is inverted. T

Exercise 4

Complete the translation of the following Ayah of the Holy Qur'an.

- i. night
- ii. day
- iii. signs
- iv. believe

Lesson Plan 30

Subject: Science	Grade: 5	Term: 2nd
Week: 11	Unit: 10	Unit Title: Light and Shadows
LP: 30	Textbook Page/s: 91-93	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- describe how shadows are made in the absence of light
- the different kind of visuals that we see when light passes through different materials.

Prior Knowledge of Students:

- They know how light can be so bright and its absence causes darkness.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker
- Worksheet

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Ask the student to open their textbook's page no. 91 and look at the 'Think' section. Let them brainstorm and identify and write one-seeded fruits and many-seeded fruits on textbook's page no.91. Take their answers.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn the 'Light and Shadow.' Make them write down answers on the question given in the 'Explore' section in their respective text books on pg. 91.</p>

	<p>Activity 2: Ask the students to open their textbook's page no. 92, and give them a brief explanation of the topic that they are going to study. Tell them about the speed of light, and how its absence causes darkness and forms shadows.</p> <p>Activity 3: Randomly ask a student to read aloud the topic 'Lights and Shadows' on pg.92 and explain it to them. Elaborate them the process of 'Path of light' with the help of picture at the bottom of page no. 92 specifically using the term 'beam'. Ask them if they have understood the process, if not explain them again, unless they understand it.</p> <p>Activity 4: Ask other student to read aloud the topic 'light through different materials' and on textbook's page no. 93 and explain it to them. Walk around in the class continuously during the reading and correct the pronunciation if delivered incorrect and ask them to repeat after you.</p> <p>Differentiated Learning: Some students might find it difficult to understand the concept of beam as the path of light. Sit with them and explain them with the help of picture on page no.92.</p>
01 minute	Conclusion/Review: Tell the students about how light makes things look different when seen through different materials, and how it helps in building our vision.
09 minutes	Classwork/ Assessment: The students will answer the question no. (i) & (iii) of exercise 1 textbook's page no. 96 in their notebooks.
	Homework/Assignment: Students will do the reading of the topics studied in class and solve the worksheet as home assignment.

Lesson Plan 31

Subject: Science	Grade: 5	Term: 2nd
Week: 11	Unit: 10	Unit Title: Light and Shadows
LP: 31	Textbook Page/s: 94-95	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- how are shadows formed.
- different characteristics of a shadow.
- The concept of pinhole camera.

Prior Knowledge of Students:

Light passing through different materials, and how the absence of light causes shadows.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Review the previous lesson and ask some random students about light and the different materials through which light passes. Listen to their responses and appreciate them if they answer correctly.</p>
25 minutes	<p>Lesson Structure/Activities/Presentation: Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to learn to complete the topic 'Formation of a shadow,' characteristics of a shadow 'pinhole camera' and its working. Ask the students to open their textbook page no.94 and read aloud the 'formation of a shadow', and 'characteristics of a shadow' and then explain all that has been read. Dim the lights in your classroom and show them how the absence of light creates shadows. Using a torch light go near and far from the light to make them understand the role of distance in shadow formation.</p>

	<p>Activity 2: Ask another random student to read out the topic 'Pinhole camera' and 'Working of the pinhole camera.' Give the students a thorough explanation of the topic that has been read in class.</p> <p>Differentiated Learning: Some students might find the topic of the characteristics of a shadow to be difficult. Sit with them, and explain to them with the help of the pictures given in the book on page 94.</p>
01 minute	Conclusion/Review: Tell the students about the speed of light, and how shadows are formed with the help of the characteristics that it has.
08 minutes	Classwork/ Assessment: Help the students to answer the question (ii) of exercise 1 on textbook's page no.96 in their notebook.
01 minute	Homework/Assignment: Students will answer the question (iv) and (v) of exercise 1 on pg. no.96 in their notebooks.

Lesson Plan 32

Subject: Science	Grade: 5	Term: 2nd
Week: 11	Unit: 10	Unit Title: Light and Shadows
LP: 32	Textbook Page/s: 96-98	Duration: 40 minutes
Teacher:	School	Date:

Student Learning Outcomes:

At the end of this lesson, the students will be able to:

- solve the exercises of the lesson.

Prior Knowledge of Students:

- They can describe how shadows are formed in the absence of light.

Teaching Aids/Materials/Resources:

- Textbook
- Whiteboard/Marker

Time Frame (40 minutes)	Proceedings
05 minutes	<p>Opening/Motivation/Warm-up: Greet students cheerfully with السلام عليكم [Note: Always remember to say بسم الله الرحمن الرحيم out loud before you start any lesson or activity and say الحمد لله after finishing it and encourage the students to do the same, too.]</p> <p>Review the topics and ask the students about the 'Conditions and stages of germination' and 'Different ways of dispersal of seeds' Listen to their responses and appreciate them if they answer correctly.</p>
30 minutes	<p>Lesson Structure/Activities/Presentation:</p> <p>Activity 1: Write the name of the unit on the whiteboard. Tell them they are going to solve the exercise 2 'Fill in the blanks', exercise 3 'True and False', and exercise 4 on page no. 97. Ask the students to open their textbook page no.97 and solve exercise 2, 3 & 4 on their textbook.</p> <p>Differentiated Learning: Some students might find it difficult to solve the exercises. Sit with them and help them to find the answers and guide them how to find the answer from the book. Some students might finish their classwork earlier. Ask them to review their answers.</p>

02 minute	Conclusion/Review: Tell the students and emphasize that always review the answers before giving their copies or worksheet to the teacher.
	Classwork/ Assessment: Activity 1 Exercises 2, 3 and 4 in class.
03 minute	Homework/Assignment: Ask the student to Look the topic 'science lab' on page no. 98 and give them to solve it as a homework activity with their parents at home.

Unit 7- Changes in the States of Matter-Worksheet**Lesson Plan 22**

Identify the state of each material. Choose whether it is a solid, liquid or gas and write the answer in the given box.



ice



soy sauce



coffee



honey



sharpener



wind



car smoke



phone








oil

Unit 8 – Magnets and Electromagnets - Worksheet

Lesson Plan 27

Match column 'A' with column 'B'.

COLUMN A	COLUMN B
<div data-bbox="264 562 712 653" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Magnet Compass</p> </div>	
<div data-bbox="264 802 755 898" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Horse-shoe Magnet</p> </div>	
<div data-bbox="259 1066 750 1163" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Ball shaped Magnet</p> </div>	
<div data-bbox="256 1314 747 1411" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Cylindrical Magnet</p> </div>	
<div data-bbox="332 1604 659 1694" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Bar Magnet</p> </div>	

Unit 10 – Light and Shadow – Worksheet

Lesson Plan 30

Identify and match the objects as transparent, translucent and opaque.



TRANSLUCENT



TRANSPARENT



OPAQUE



nd Term)-Tg

Unit-Assessments**Unit-6 Introduction to Microorganisms**

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
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Fill in the blanks with correct words.**/4**

- i. _____ are plants without chlorophyll.
a) virus b) fungi
- ii. _____ is a Latin word meaning slimy liquid.
a) Virus b) fungi
- iii. Coronavirus disease COVID-19 emerged in China in December _____.
a) 2019 b) 2020
- iv. Influenza is caused by _____.
a) virus b) fungi

Question B**/3**Tick  for the correct statement and  for the wrong statement.

- i. Polluted water carries germs of many diseases, such as cholera and jaundice. _____
- ii. Insects also spread diseases, such as typhoid and tetanus. _____
- iii. The biological nature of viruses came from studies in 1982. _____

Question C**Answer the questions.****/3**

1. Define pathogens with an example.

Answer: _____

2. How do diseases spread?

Answer: _____

3. Define microorganisms.

Answer: _____

Unit-7 Changes in the States of Matter

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
------------------	------------------

Question A

Fill in the blanks with correct words.

/4

- _____ is the process in which solid changes into liquid on heating.
a) evaporation b) melting
- _____ is the process of water vapour turning back into liquid water.
a) evaporation b) condensation
- The process in which a gas changes directly to a solid without first becoming a liquid is called _____.
a. condensation b) deposition
- Irreversible changes are also called _____ change.
b) Physical b) chemical

Question B

Identify the process and write the answer.

/3

- | | | | | | | |
|----|-----|---|-------------|---|-------|--|
| i. | Gas | — | Energy lost | → | Solid | |
|----|-----|---|-------------|---|-------|--|
- | | | | | | | |
|-----|-----|---|-------------|---|--------|--|
| ii. | Gas | — | Energy lost | → | Liquid | |
|-----|-----|---|-------------|---|--------|--|
- | | | | | | | |
|------|--------|---|-------------|---|-------|--|
| iii. | Liquid | + | Energy lost | → | Solid | |
|------|--------|---|-------------|---|-------|--|

Question C

Answer the questions.

/3

- Define deposition process with one example.

Answer: _____

- Define the process of precipitation.

Answer: _____

- Define sublimation process with one example.

Answer: _____

Unit-8 Magnets and Electromagnets

Name: _____ Roll No: _____ Date: _____

Name: _____ Roll No: _____ Date: _____

Question A

Write 'T' for true and 'F' for a false statement.

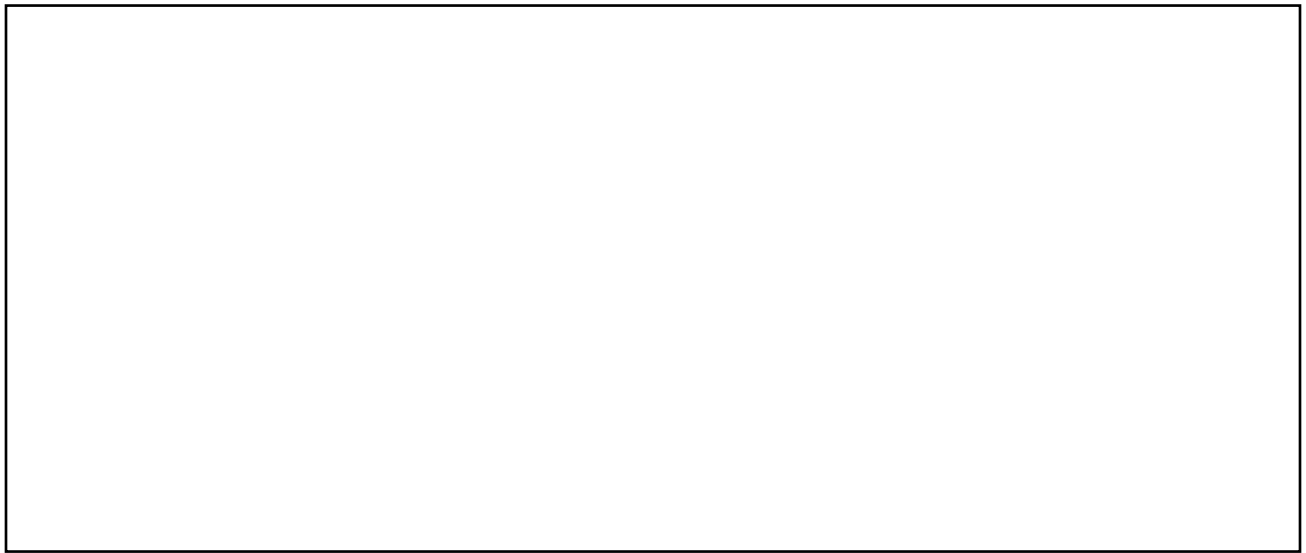
/4

- i. Mass is the total amount of matter in an object.
- ii. Weight is the force of gravity on an object.
- iii. We need elastic force to walk and drive vehicles.
- iv. Frictional force depends upon gravitational force.

Question B

Match the picture with the correct force.

/3



Question C

Answer the questions.

/3

1. Define elastic force.

Answer: _____

2. What is inertia?

Answer: _____

3. Define balance forces.

Answer: _____

Unit 10 Light and Shadow

Name: _____ Roll No: _____ Date: _____

Time: 10 Minutes	Total Marks: /10
------------------	------------------

Question A

Fill in the blanks with correct words.

/3

- _____ material do not allow light to pass through it. (translucent, opaque)
- A number of light rays make up a _____ of light. (beam, ray)
- Moon and stars are the _____ source of light. (naturel, artificial)

Question B

Tick ✓ the items which allow light to pass through them and cross ✗ the ones which do not allow the light to pass through them.

/4









Question C

Answer the questions.

/3

- Which things are needed for the formation of a shadow?

Answer: _____

- How can we see without sunlight?

Answer: _____

- "Light travel in a straight line." Justify this statement.

Answer: _____

Terminal Assessment Paper**First Term****1st Term Assessment****Time: 40 Minutes****SCIENCE SERIES 5**

Name: _____ Roll No: _____ Date: _____

Section	Section-I	Section-II	Practical Activities	Viva	Total
Maximum Marks	40	10	05	05	60
Obtained Marks					

Section-I**Question 1****Fill in the blanks with correct word.****/07**

- A Muslim Scientist _____ inverted the pinhole camera. (Charles-Augustin de Coulomb, Ibn Al-Haytham)
- _____ was the first scientist who discovered the forces of gravity. (Einstein, Isaac Newton)
- _____ force attracts everything towards the centre of the Earth. (elastic, gravitational)
- _____ was a Frenchman who discovered the magnetic field. (Charles-Augustin de Coulomb, Ibn Al-Haytham)
- Chemical changes are also called _____ change. (reversible, irreversible)
- _____ is the process in which a liquid change into vapours. (condensation, evaporation)
- The biological nature of viruses came from studies in _____. (1882,1892)

Question 2**Write 'T' for true and 'F' for false statement.****/08**

- Virus is a Latin word meaning slimy liquid or poison.
- The athlete's foot is a viral disease.
- The process in which rainwater sinks into the soil is called infiltration.
- The burning of a piece of wood is a physical change.
- Electromagnets are natural magnets.
- The magnetic field can be detected by a magnetic compass.
- Inertia is important to move or stop an object.
- Wood is a translucent material.

Question 3

Enlist three names of transparent materials and two names of opaque material. /05

1. Transparent Material.

i. _____

ii. _____

iii. _____

2. Opaque Material.











i. _____

ii. _____

Question 3

Match the column A with column B.

/10

COLUMN A	COLUMN B
         	<div data-bbox="945 802 1338 987" style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;"> <p>TRANSLUCENT MATERIAL</p> </div> <div data-bbox="945 1192 1338 1394" style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;"> <p>OPAQUE MATERIAL</p> </div> <div data-bbox="945 1556 1338 1736" style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;"> <p>TRANSPARENT MATERIAL</p> </div>

Question 4

Complete the equations for the following processes.

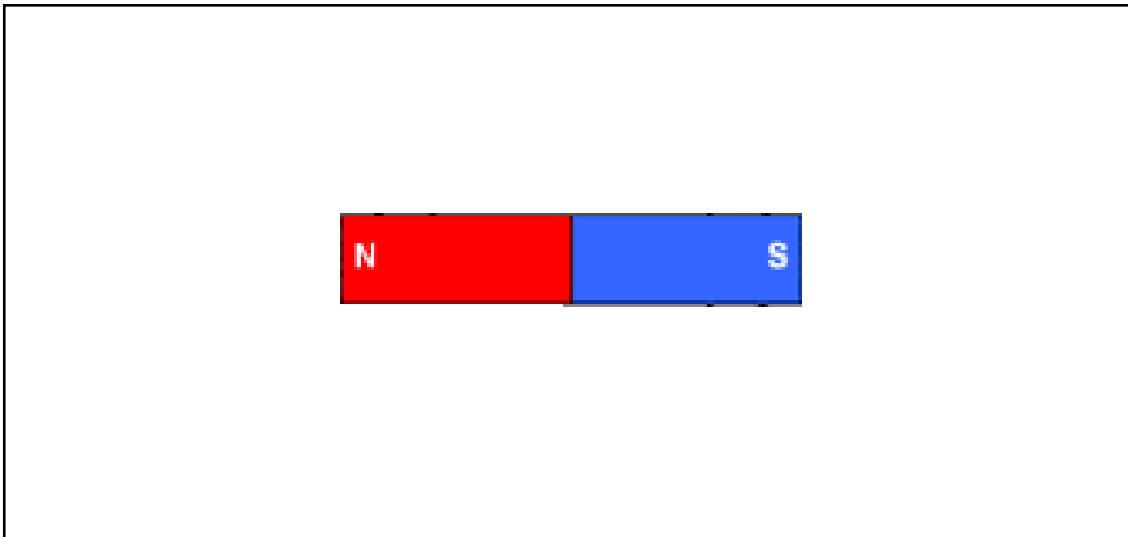
/05

- i. Melting: + Energy absorbed → Liquid
- ii. Condensation: Gas - Energy lost →
- iii. Evaporation: Liquid + Energy absorbed →
- iv. Sublimation: Solid + → Gas
- v. Freezing: - Energy lost → Solid

Question 5

/05

Draw the pattern of the magnetic field lines around the bar magnet given below.



Section-II

Question 6

Answer the questions.

/10

1. How can you differentiate between hard and soft magnetic materials? Give one examples of each.

Answer:

2. Why are electromagnets known as temporary magnets?

Answer:

3. What is the difference between mass and weight?

Answer:

4. Define an elastic force and a muscular force.

Answer:

5. How does the length of a shadow depend on the position of the source of light?

Answer:

6. Explain the structure and working of a pinhole camera.

Answer:

7. Explain the stages of evaporation and condensation in the water cycle.

Answer:

8. Discuss the types of changes in matter. Give two examples of each change.

Answer:

9. What are the main advantages of microorganisms?

Answer:

10. How do diseases spread?

Answer:

Question 7

/05

Discuss the Hadith number 5728 of Sahih Bukhari with reference to the concept of spread of diseases.

Answer:

Question 8

/05

Define the following processes:

- i. Precipitation**
- ii. Freezing**

Answer:
