

Dawood Public School
Course Outline 2017-18
General Science
Class VI

Month	Syllabus Break down	Reference Book
August	Introduction to Science	International Lower Secondary Science Book 1 Chapter 01
September	Element and Compound	International Lower Secondary Science Book 2 Chapter 03
	Plant Growth	International Lower Secondary Science Book 1 Chapter 03
October	How we see Things	International Lower Secondary Science Book 1 Chapter 09
	Habitats and Food Chains	International Lower Secondary Science Book 1 Chapter 04
November	Revision for Mid Term Exams	Worksheets
December	MID TERM EXAMS	
January	More about Dissolving	International Lower Secondary Science Book 1 Chapter 06
	Microorganisms	International Lower Secondary Science Book 1 Chapter 05
February	Forms And Uses Of Energy/Energy Conversion	Science Matters Vol B Chapter 16
	Reversible and Irreversible Changes	International Lower Secondary Science Book 1 Chapter 07
March	Physical Quantities and Measurements	International Lower Secondary Science Book 1 Chapter 02
April	Revision For Final Exams	Worksheets
May	FINAL EXAMS	

Content	Learning outcomes
<p>1.1 What is Science?</p> <p>Science is the study of nature; it helps to understand things and think logically and systematically.</p> <p>Branches of science:</p> <ul style="list-style-type: none"> • Biology • Zoology • Physics • Chemistry • Astronomy • Geology • Botany <p>Contribution of Scientists:</p> <ul style="list-style-type: none"> • Sir Isaac Newton • Mare Curie • Albert Einstein • Louis Pasteur 	<ul style="list-style-type: none"> • Define science • Define branches of science • List the different branches of Science • Explain the different aspects of science in daily life. • State the contributions of scientists in the field of sciences.
<p>1.2 Important attitudes in the study and practice of Science</p> <p>Attitudes are concerned with the way which scientific knowledge and its application is evaluated and appreciated.</p> <p>Curiosity, perseverance, open-mindedness, co-operation, integrity, scepticism and humbleness are positive attitudes.</p>	<ul style="list-style-type: none"> • Explain positive attitudes required in the study and practice of Science. • Identify the attitudes required for the scientific research.
<p>1.3 Skills and Processes</p> <p>Skills and processes are essential for the study and practice of science.</p> <p>Skills are:</p> <ul style="list-style-type: none"> • Observing • Communicating • Inferring • Making Hypotheses <p>Processes include planning and investigation involving several skills.</p>	<ul style="list-style-type: none"> • Define observation. • Define inference. • Define hypotheses. • Differentiate between observation and inference. • Write the hypotheses for observation. • Construct the planning and investigate different observations of given situations/experiments. • Identify the constant and change variable from the experiment.
<p>1.4 Safety Rules in the Laboratory</p> <p>General safety rules and precautions.</p> <p>Hazardous symbols.</p>	<ul style="list-style-type: none"> • State laboratory safety rules. • State the precautions for handling different experiments in the laboratory. • Recognize symbols of different hazardous substances. • State the proper ways of handling hazardous substances.
<p>1.5 Laboratory Apparatus</p> <p>Apparatus are used for scientific experiments in the laboratory.</p> <p>Bunsen burner is a laboratory apparatus used for heating.</p>	<ul style="list-style-type: none"> • Identify laboratory apparatus. • Describe the uses of apparatus used in the laboratories. • Identify the parts of Bunsen burner. • State the functions of each part of Bunsen burner.

<p>Parts of Bunsen burner include:</p> <ul style="list-style-type: none"> • Barrel • Collar • Base • Air hole • Gas jet • Gas tap 	<ul style="list-style-type: none"> • Define luminous flame. • Define non-luminous flame. • Differentiate between luminous and non-luminous flames.
<p>1.6 Benefits, Abuse and Limitations of Science and Technology</p> <p>Technology is the application of science.</p> <p>Science and technology can bring us great benefits.</p> <p>However abuse can cause problem and have certain limitations.</p>	<ul style="list-style-type: none"> • Define technology. • Differentiate between Science and Technology. • Describe advantages and disadvantages of various technologies that are used in daily life. • List and explain the limitations of different technologies.
<p>Keywords: science, biology, botany, zoology, chemistry, geology, astronomy, physics, perseverance, , inference, hypotheses, analyses, planning, hazardous substances, luminous flame, non-luminous flame, Bunsen burner</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Workbook activities Activity 1.1,1.2, 1.3 from International Lower Secondary Science Work book 1</p> <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will collect/show/present different objects in 10 minutes to demonstrate various branches of science. • A Jane Goodall research will be provided to students to comprehend her positive attitude towards her study. • Students will visit the chemistry lab for hands-on experience of using Bunsen burner. <p>Surf IT http://techblogbiz.blogspot.com/2006/10/10-great-scientists-of-world.html http://flamesofchemistry.blogspot.com/2013/11/benefits-abuses-and-limitations-of.html</p>	

Elements compounds and Atomic Structure (Chap No. 3 page no 52-72)

(2 weeks)

Content	Learning outcomes
<p>3.1 Atom</p> <p>Structure of an atom.</p> <p>Sub atomic particle.</p> <p>Atomic number.</p> <p>Electronic configuration.</p>	<ul style="list-style-type: none"> • Define atom. • Describe the structure of atom. • Draw the structure of atom. • State the position and charges of sub atomic particle. • Calculate electron, proton and neutron of an atom. • Define atomic number. • Learn atomic number of the first 10 elements. • Define electronic configuration. • Write electronic configuration of first 10 elements.
<p>3.2 What is an element</p> <p>Element is a substance which cannot be broken</p>	<ul style="list-style-type: none"> • Define element. • Learn symbols of first 10 elements.

<p>down into simpler substances by chemical reactions.</p> <p>Elements are broadly classified in to two groups, Metals and Non- metals.</p> <p>Elements are arranged in Periodic Table.</p> <p>Periodic Table consists of rows and columns.</p>	<ul style="list-style-type: none"> • Define metals. • Define non-metals. • Differentiate between metals and non-metals. • Describe Periodic Table. • Define periods. • Define groups. • Identify periods and groups from atomic structure.
<p>3.3 Uses of Elements</p> <p>Metals.</p> <p>Non-metals.</p>	<ul style="list-style-type: none"> • List the properties of metals. • List the properties of non-metals. • Differentiate between metals and non-metals. • State the uses of some elements.
<p>3.4 What is compound</p> <p>Compound is a pure substance consisting of two or more elements which have been chemically combined.</p> <p>Properties of compounds.</p>	<ul style="list-style-type: none"> • Define compound. • State the properties of compounds. • Recognise the number and type of elements present in a particular compound. • Recognize the composition and decomposition reaction by analysing chemical word equations. • Write chemical word equations.
<p>3.4 Formation of Compounds</p> <p>Reaction of one element with another element to produce a new compound.</p> <p>Reaction of one element with a compound to produce a new compound</p> <p>Reaction of one compound with another compound to produce new compounds.</p>	<ul style="list-style-type: none"> • State various ways of compound formation. • Identify combination and decomposition from word equation.
<p>Keywords: atom, electron, protons, neutrons, orbits/shells, atomic number, atomic mass, element, metals, non-metals, groups, periods , Periodic Table, brittle, conductor, insulator, ductile, malleable, compound, composition reaction, decomposition reaction</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Workbook activities Activity 3.1,3.2, 3.3 from International Lower Secondary Science Work book 2</p> <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will visit the Periodic Table zone at the school to have a clear understanding of classifying elements in the periodic table with reference to increasing proton number and properties • Students will investigate the properties of metals such as copper wire, cutlery, nails, paper clips, empty cold drink cans, according to their use. • Students will construct the model of compounds by using Plasticine <p>Surf IT https://www.youtube.com/watch?v=EMDrb2LqL7E https://quizlet.com/3488993/common-elements-and-their-uses-flash-cards/</p>	

Content	Learning outcomes
<p>3.1 What do plants need to grow well?</p> <p>Photosynthesis is the fundamental process by which plants manufacture carbohydrates from raw materials</p> <p>Plant adaptations for photosynthesis</p>	<ul style="list-style-type: none"> • Define photosynthesis. • State the equation (in words) for photosynthesis. • Carry out experiments to investigate the necessity for chlorophyll, light and carbon dioxide for photosynthesis. • Explain the role of roots in the absorption of water and mineral salts. • Explain the role of stomata in the exchange of gases. • Explain the position of stomata on a leaf. • Describe how starch converts into glucose. • Perform a starch test.
<p>3.2 Plants and Nutrients</p> <p>Plant get nutrients by different ways:</p> <ul style="list-style-type: none"> ➤ Air (aerponics) ➤ Water (hydroponics) ➤ Soil ➤ By attacking the other insects (insectivorous plants) <p>Soil and Soil types on the basis of texture, size of particles and presence of water and air content</p> <ul style="list-style-type: none"> ➤ Loamy ➤ Clayey ➤ Sandy <p>Fertilizers and types of fertilizers</p> <ul style="list-style-type: none"> ➤ Organic fertilizer ➤ Inorganic fertilizer 	<ul style="list-style-type: none"> • Define insectivorous plants. • Define hydroponics. • Define aerponics. • Identify and list the different types of soils. • Describe the features of each type of soil. • Explain the relationship between soil conditions and plant growth. • List the different soil conditions which may affect plant growth. • Define organic fertilizers. • Define inorganic fertilizers. • Explain the role of fertilizers in plant growth. • Differentiate between organic and inorganic fertilizers. • State how plants depend on fertilizers for getting necessary minerals.
<p>Key words: photosynthesis, chlorophyll, chloroplast, stomata, starch, variegated leaf, iodine solution, ethanol, insectivorous, hydroponics, aerponics, clayey, sandy, loamy, organic fertilizers, inorganic fertilizers.</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Workbook Activities Activity 3.1, 3.2, 3.3 from International Lower Secondary Science Work book 1</p> <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will observe the plant growth by sowing seeds in small pots. • Test leaves for starch. <p>Surf IT https://www.youtube.com/watch?v=g78utcLQrJ4 https://www.slideshare.net/rubasalah/soil-properties-gr</p>	

Content	Learning outcomes
9.1. Sources of light Luminous objects. Non-luminous objects.	<ul style="list-style-type: none"> • Define light. • Define luminous objects. • Define non-luminous objects. • Recognize that light comes from different natural and artificial sources.
9.2. Reflection of Light Law of Reflection	<ul style="list-style-type: none"> • Define reflection of light. • Identify the various materials which reflect light. • Define angle of incidence. • Define angle of reflection. • Define normal. • State the law of reflection i.e. $\angle i = \angle r$.
9.3. Can We See through all materials? Transparent objects. Translucent objects. Opaque objects.	<ul style="list-style-type: none"> • Investigate the relationships between light and material. • Define translucent material. • Define transparent material. • Define opaque material. • Identify transparent, translucent and opaque objects. • State examples of transparent, translucent and opaque objects.
9.4 Shadows Why are shadows formed? Shape of a shadow. Change in the length and position of a shadow.	<ul style="list-style-type: none"> • Explain how shadows are formed. • Explore and explain different ways of making shadows. • Plan, predict and carry out investigations for shadow formation and how changes occur through the day.
<p>Keywords: luminous, non-luminous, incident ray, reflected ray, normal ray, angle of incidence, angle of reflection, reflection, laws of reflection, transparent, translucent, opaque, shadow</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Workbook activities Activity 9.1, 9.2, 9.3A, 9.3B, 9.4, 9.5, 9.6 from International Lower Secondary Science Work book 1</p> <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will observe the variation in height, shape and direction of shadow by placing light source at different positions and by using objects of different shapes. • Students will investigate the relationships between light and material by using different objects and torch light. <p>Surf IT https://edurev.in/studytube/Study-Notes--Light--Shadows-and-Reflections--Chapter-13--Class-6-Science/4e323596-bb48-4e38-877c-9cf128384123_t</p>	

Content	Learning outcomes
<p>4.1 Habitats</p> <p>Habitat is a place where living organism find food, shelter, protection and mates. It may be as big as an ocean or as small as a rock.</p>	<ul style="list-style-type: none"> • Define habitat. • Identify different habitat.
<p>4.2 The animals and plants in a habitat are interdependent</p> <p>Animals depend on plants for food, oxygen and shelter. Whereas plants depend on animals for dispersal of seed and for carbon dioxide as a source of nutrients in soil after decomposition.</p>	<ul style="list-style-type: none"> • Describe how plants and animals are interdependent on each other. • Define pollination. • Define decomposition. • Define decomposers. • Identify decomposer in food chain.
<p>4.3 Animals and plants in a habitat are suited to their environment.</p> <p>Adaptations in low temperature.</p> <p>Adaptations for light.</p> <p>Adaptations to move in water.</p> <p>Adaptations for breathe in water.</p> <p>Adaptation to survive in desert condition.</p> <p>Adaptations for water retention in dessert.</p>	<ul style="list-style-type: none"> • Define adaptation. • Explain the importance of adaptation for survival in habitat. • Describe the adaptations required to survive in low temperature. • Describe the adaptations of animals required to get light. • Describe the adaptation of plants required to get light. • Describe the adaptations of animals required to move deep inside the water. • Describe the adaptation of animals required to breathe under water. • Describe the adaptation of plants required to survive against desert conditions. • Describe the adaptation of plants required to retain water during desert conditions.
<p>4.4 Food Chain</p> <p>Definition</p> <p>Trophic level i.e. Primary consumer, Secondary consumer, Tertiary consumer.</p> <p>Food chains.</p> <p>Food web.</p>	<ul style="list-style-type: none"> • Define food chain. • Explain how energy is transformed from one organism to another. • Define producer. • Identify producers in food chain. • Define consumer. • Identify consumers in food chain. • Define herbivores, carnivores, omnivores. • Define food web. • Describe trophic levels • Identify primary consumers in food web. • Identify secondary consumers in food web. • Identify tertiary consumers in food web. • Define prey. • Define predator. • Explain the predator/prey relationship. • Construct a food chain in a particular habitat. • Identify the number of food chain from food web.

Keywords:

habitat, pollination, dispersal of seeds, decomposers, fungi, bacteria, adaptation, clasping roots, tendrils, nocturnal animals, succulent roots, carnivore, trophic level, food chain, food web, producer, consumer, prey, predator, herbivore, omnivore, primary consumer, secondary consumer, tertiary consumer.

Types of questions

- Multiple choice questions
- Structure questions
- Short answer reasoning
- Descriptive questions

Workbook activities

Activity 4.1, 4.3, 4.4, 4.5, 9.6 from International Lower Secondary Science Work book 1

Activities/ Experiments

- Students will survey different areas of school and discover various animals present; or plants growing - a tree, a pond etc.

Surf IT

<https://www.slideshare.net/davmfoster/habitats-and-foodchains-46127088>

More about Dissolving Chap No.6, Pg No (114-123)

(2 weeks)

Content	Learning outcomes
<p>6.1 Do all solids dissolve in water?</p> <p>Solute is a substance that dissolves in a liquid. For example sugar, salt etc.</p> <p>Solvent is a substance in which another substance is dissolved to form a solution. For example water is a universal solvent.</p> <p>A solution is a mixture containing one or more dissolved substances in a liquid.</p> <p>A suspension is a substance containing one or more insoluble solids in a liquid.</p>	<ul style="list-style-type: none"> • Define solute. • Define solvent. • Define solution. • Define suspension. • Differentiate between solution and suspension.
<p>6.2 Separating an insoluble solid from water.</p> <p>Filtration is a process of separating insoluble solids from fluids.</p> <p>Insoluble solids are the substances that cannot dissolve in the solvent.</p> <p>Large particles of solid can easily be separated from water by using a sieve. The size of particles must be bigger than the pore size of sieve.</p>	<ul style="list-style-type: none"> • Define filtration. • Describe insoluble solids. • Construct a flow chart to separate insoluble particles from the solvent. • Compare the pore size of sieve and the particle size of solute during separation of insoluble particles from water.
<p>6.3 Separating a soluble solid from water.</p> <p>Evaporation is defined as a process of a liquid changing into a gas due to an increase in temperature.</p> <p>Soluble solids can be separated from water by evaporation.</p> <p>Soluble solids are the substances that can dissolve in the solvent.</p>	<ul style="list-style-type: none"> • Define evaporation. • Describe soluble solids. • Recognize different soluble and insoluble solids. • Explain how soluble particles can be separated from water.

<p>6.4 Investigating how solids can dissolve more quickly in water.</p> <p>Various factors affect the rate dissolving such as temperature, surface area, rate of stirring etc.</p> <p>These factors could be changed to enhance the rate of dissolving of solute in the solvent.</p> <p>For example sugar dissolves more quickly in warm water than in cold water.</p>	<ul style="list-style-type: none"> • State the factors effecting dissolving. • Describe the effect of change in factors on the rate of dissolving. • Explain how rate of stirring affects the rate of dissolving.
<p>Keywords: solute, solvent, solution, suspension, universal solvent, soluble, insoluble, filtration, filtrate, residue, filter paper, evaporation, evaporating dish, Bunsen burner, tripod stand, dissolving, rate, factors, stirring, temperature, surface area.</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Workbook activities Activity 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, from International Lower Secondary Science Work book 1</p> <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will dissolve different solutes (sugar, salt, chalk, sand) in water and conclude which solids dissolve and which cannot. • Students will separate tea leaves from water. • Students will perform filtration to separate sand from the mixture of water and sand. • Students will observe the rate of dissolving of salt in hot and cold water. • Students will perform evaporation by using Bunsen burner, tripod stand and evaporating dish to separate salt from salt solution. • Students will dissolve sugar in warm and cold water; using crystal and powdered sugar both. <p>Surf IT</p> <p>https://www.abpischools.org.uk/public/documents/legacy/solids-liquids-gases/morediss.pdf http://k8schoollessons.com/dissolving-more-dissolving-faster/</p>	

Microorganism Chap No.5, Pg No (93-113)

(3 weeks)

Content	Learning outcomes
<p>5.1 What is Cell?</p> <p>Cell is the basic structural and functional unit of life.</p> <p>Cell is composed of:</p> <ul style="list-style-type: none"> ➤ Cell wall ➤ Cell membrane ➤ Cytoplasm ➤ Nucleus ➤ Vacuole ➤ Chloroplast ➤ Cell can be observe by microscope ➤ Microscope is the instrument use to observe cells ➤ Parts of microscope ➤ Eye piece ➤ Stage ➤ Objective lens ➤ Focus knob 	<ul style="list-style-type: none"> • Define cell. • Describe the structure of cell. • State the function of cell wall, cell membrane, cytoplasm, nucleus, vacuole, and chloroplast. • Identify the parts of the cells. • Define microscope. • Identify the parts of microscope. • State the functions of the parts of microscope.

<p>5.2 Types of Cell</p> <p>Unicellular (single celled organism) e.g. bacteria</p> <p>Multicellular (organism composed of more than one cell) e.g. plants and animals</p> <p>A prokaryote is a unicellular organism that lacks a membrane-bound nucleus. e.g. bacteria</p> <p>A eukaryote is an organism that has true (membrane-bound) nucleus. e.g. plant and animal cells.</p> <p>Cell can be divided into animal and plant cell.</p>	<ul style="list-style-type: none"> • Define unicellular. • Define multicellular • Differentiate between unicellular and multicellular. • Define prokaryote. • Define eukaryote. • Differentiate between prokaryotes and eukaryotes. • Differentiate between animal and plant cell. • Identify the parts of animal and plant cell. • Draw animal and plant cell.
<p>5.3 What are Micro-organisms</p> <p>Microorganisms are the organism which cannot be seen by unaided eye, which may be single-celled or multicellular.</p> <p>Single cell microorganisms are bacteria, virus and fungi (i.e. yeast).</p> <p>Multicellular microorganisms are fungi (moulds, mushrooms) and algae.</p> <p>Shapes of bacteria (cocci, spirilli and bacilli)</p>	<ul style="list-style-type: none"> • Define microorganisms. • Identify microorganisms • Identify the shapes of bacteria.
<p>5.4 Diseases and its types</p> <p>Disease can be caused by germs. These are known as causative agents or pathogens.</p> <p>Vector is an organism that does not cause disease itself but which spreads infection by conveying pathogens.</p> <p>Disease can be caused by bacteria, viruses and fungi and protozoans (amoeba, plasmodium)</p> <p>Types of disease</p> <ul style="list-style-type: none"> ➤ Water-borne ➤ Food-borne ➤ Air-borne 	<ul style="list-style-type: none"> • Define causative agents/pathogens • Define vector • Describe the types of diseases <ul style="list-style-type: none"> ➤ Food- borne ➤ Water-borne ➤ Air-borne • State the examples of food-borne, water-borne and air-borne disease. • State the preventions of food-borne, water-borne and air-borne disease
<p>5.4 Diseases caused by viruses</p> <p>Diseases that are caused by viruses is known as viral diseases.</p> <p>Viral disease include:</p> <ul style="list-style-type: none"> ➤ Cold ➤ Influenza ➤ Measles ➤ Mumps ➤ Rubella ➤ Small pox ➤ Chicken pox ➤ Hepatitis ➤ Hand, foot and mouth ➤ AIDS ➤ Viral disease can be treated by antiviral medicines. <p>Vaccines can help prevent from many viral diseases.</p>	<ul style="list-style-type: none"> • Identify the bacteria disease • Describe the mode of transmission of viral diseases (of food-borne, water-borne and air-borne disease). • Describe the symptoms of: <ul style="list-style-type: none"> ➤ Cold ➤ Influenza ➤ Measles ➤ Mumps ➤ Rubella ➤ Small pox ➤ Chicken pox ➤ Hepatitis ➤ Hand, foot and mouth ➤ AIDS • Define vaccination. • Define vaccines.

<p>5.5 Diseases caused by bacteria</p> <p>Diseases that are caused by bacteria are known as bacterial diseases. Bacterial disease include:</p> <ul style="list-style-type: none"> ➤ Cholera ➤ Pneumonia ➤ Tuberculosis ➤ Typhoid ➤ Whooping cough ➤ Tooth decay/gum disease ➤ Food poisoning <p>Bacterial disease can be treated by antibiotics</p>	<ul style="list-style-type: none"> • List and identify bacterial diseases. • Describe the mode of transmission of the following types of diseases: <ul style="list-style-type: none"> ➤ Food-borne ➤ Water-borne ➤ Air-borne • Describe the symptoms of: <ul style="list-style-type: none"> ➤ Cholera ➤ Pneumonia ➤ Tuberculosis ➤ Typhoid ➤ Whooping cough ➤ Tooth decay/gum disease. • Describe the treatment/cure of bacterial diseases.
<p>5.6 Diseases caused by fungi and protozoa</p> <p>Diseases that are caused by fungi are known as fungal disease.</p> <p>Fungal diseases include Athletes Foot.</p> <p>These diseases can be treated by anti-fungal medicines and ointments.</p> <p>Protozoa cause malaria; can be transmitted by vector (anopheles mosquito).</p>	<ul style="list-style-type: none"> • List and identify fungal diseases. • Describe the symptoms of Athletes Foot. • Describe the cure for Athletes Foot. • Identify protozoan diseases. • Described the symptoms of malaria. • Describe the cure for malaria.
<p>5.7 Micro-organisms and food Spoilage</p> <p>Microorganisms are harmful as well as useful.</p> <p>Bacteria and fungi can be harmful as they cause disease and spoilage of food.</p> <p>Bacteria and fungi are helpful in the production of food and medicines.</p> <p>Bacteria and fungi play a vital role in making the environment clean and green. They are natural decomposers and convert complex food into simpler nutrients. They increase the fertility of soil and support plant growth.</p>	<ul style="list-style-type: none"> • Describe the harmful effects of microorganisms. • Describe the useful effects of microorganisms. • Define decomposition. • Define decomposers. • Describe the role of decomposers. • Describe how food storage can be handled with care to prevent food decay and food poisoning. • Describe the process of bread making.

Keywords:

cell, cytoplasm, nucleus, cell membrane, chloroplast, cell wall, vacuole, unicellular, multicellular, prokaryote, eukaryote, plant cell, animal cell, microorganisms, bacteria, fungi, viruses, diseases, vectors, food-borne, water borne, air- borne, infections, causative agent, pathogens, decomposers, vaccination.

Types of questions

- Multiple choice questions
- Structured questions
- Short answer reasoning
- Descriptive questions

Workbook activities

Activity 5.1,5.2, 5.3 from International Lower Secondary Science Work book 1

Activities/Experiments

- Students will observe slides of unicellular living organism like amoeba, euglena and paramecium and learn their distinguishing characteristics.
- Students will observe various parts of microscope and will learn how microscope helps to see microscopic slides of animal and plant cell.

Surf IT

<http://www.smartsciencepro.com/classification-microorganisms/>

<https://www.pmfias.com/diseases-caused-by-microorganisms-microbes-bacteria-viruses-protozoans-fungi/>

Reversible and Irreversible Changes (Chapter No.7 page No. 124-134)

(2 weeks)

Content	Learning outcomes
<p>7.1 Reversible and Irreversible change.</p> <p>Reversible change is a change in which final substance can be converted back into the original substance without creating new materials.</p> <p>Irreversible change is a change which cannot be reversed or is not easily reversible because new materials are formed.</p> <p>Physical changes are reversible.</p> <p>Chemical changes are irreversible.</p>	<ul style="list-style-type: none"> • Explain states of matter. • Define reversible change. • Define irreversible change. • Differentiate between reversible and irreversible changes. • Explain physical change with examples. • Explain chemical change with examples.
<p>7.2 Changes brought by heating.</p> <p>Heating or cooling can cause materials to change.</p> <p>Heat gain can bring about changes of state such as melting, boiling and evaporation.</p> <p>Heat loss or cooling can change a liquid into solid, and a gas into liquid. These are reversible changes.</p>	<ul style="list-style-type: none"> • Explain the effect of increasing and decreasing temperature on different materials. • Describe the effect of heating on different materials. • Describe how heat can cause both reversible and irreversible changes.
<p>7.3 Burning – An irreversible change brought about by heat.</p> <p>When a material burns, it combines with oxygen in the air to make new materials. Burning is an irreversible change caused by heat.</p> <p>Heating substances like sugar and eggs, cooking or baking are all irreversible changes because new materials are formed that cannot return to an original condition.</p>	<ul style="list-style-type: none"> • Recognize the reversible or irreversible change by analysing different changes caused by heating. • Illustrate the burning of different materials. (Sparkler, paper, wood and cooking gas).
<p>Keywords: reversible, irreversible, sublimation, vaporization, condensation, fusion, melting, freezing, decomposition, baking, cooking, burning, cooking gas.</p>	

Types of questions

- Multiple choice questions
- Structured questions
- Short answer reasoning
- Descriptive questions

Workbook activities

Activity 7.1, 7.2 and 7.3 from International Lower Secondary Science Work book 1

Activities/Experiments

- Some ice cubes will be left at room temperature for some time. Students will discuss the change – whether it is reversible or Irreversible.
- A piece of paper will be burned using Bunsen burner in the laboratory. Students will discuss the change.

Surf IT

https://www.youtube.com/watch?v=mFGv_d6h45U

http://www.bbc.co.uk/bitesize/ks2/science/materials/reversible_irreversible_changes/read/

<http://www.sciencekids.co.nz/gamesactivities/reversiblechanges.html>

Forms and Uses of Energy (Science Matters Volume B. Chapter No.16 Page No.2-8) (2 weeks)

Content	Learning outcomes
<p>16.1 What is energy?</p> <p>Energy is the ability to do work.</p> <p>Forms of energy</p> <p>Kinetic energy</p> <p>Potential energy</p> <p>Heat</p> <p>Sound</p> <p>Light</p> <p>Electrical</p> <p>Mechanical</p> <p>Chemical</p>	<ul style="list-style-type: none"> • Define energy • Define forms of energy. • List different forms of energy. • Identify the different forms of energy. • Describe the effects of potential and kinetic energy
<p>16.2 Energy transformation</p> <p>Energy can neither be created nor destroyed but can be transformed from one type to another.</p>	<ul style="list-style-type: none"> • Describe how energy transforms from one form to another. • Give various example of energy transformation. • Identify the energy transformation from pictures.
<p>Key words: energy, kinetic energy, potential energy, heat energy, sound energy, light energy, electrical energy, mechanical energy and chemical energy</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structured questions • Short answer reasoning • Descriptive questions <p>Activities/Experiments</p> <ul style="list-style-type: none"> • Students will observe demonstrations for objects which represent different forms of energy. • Students will be provided various flashcards of objects e.g. moving car, fan, bulb, battery etc. <p>Surf IT</p> <p>https://www.thoughtco.com/main-energy-forms-and-examples-609254</p> <p>http://study.com/academy/lesson/energy-transformation-definition-types-examples.html</p>	

Content	Learning outcomes
<p>2.1 Measurement</p> <p>Observations can be qualitative and quantitative.</p>	<ul style="list-style-type: none"> • Define qualitative observations. • Define quantitative observations. • Identify the qualitative and quantitative observations.
<p>2.2 Physical quantities and SI units</p> <p>SI unit is the quantity which can be measured and used in the mathematical equations of science and technology.</p> <p>SI units are internationally adopted.</p> <p>Instruments are used to measure physical quantities</p> <p>SI units of common physical quantities</p> <ul style="list-style-type: none"> ➤ Length (m) ➤ Mass (kg) ➤ Time (s) ➤ Temperature (K) ➤ Electric current (A) <p>Prefixes such as milli, , centi and kilo are added to an SI unit to form smaller or larger units</p>	<ul style="list-style-type: none"> • Define physical quantities. • Identify different instruments. • Define SI units. • State the SI units of physical quantities: <ul style="list-style-type: none"> ➤ Length (m) ➤ Mass (kg) ➤ Time (s) ➤ Temperature (K) ➤ Electric current (A) • Define prefixes. • Convert the prefixes of physical quantities.
<p>2.3 Measuring Length</p> <p>Length is the distance between two points. Its SI unit is metre (m).</p> <p>Lengths are measured by a measuring tape and metre ruler.</p> <p>Parallax error is an error because the eye is not placed in the correct position.</p>	<ul style="list-style-type: none"> • Define length. • State SI unit of length. • Describe the instrument used to measure lengths. • Define parallax error. • Convert given lengths from one unit to another.
<p>2.1 Measuring Area</p> <p>Area is a measure of the extent of a surface. Its SI unit is square metre (m²).</p> <p>Area of regular surfaces can be calculated by formula</p> <p>Square (l × l)</p> <p>Rectangle (l × b)</p> <p>Parallelogram (b × h)</p> <p>Trapezium ($\frac{1}{2} (a+b) \times h$)</p> <p>Triangle ($\frac{1}{2} b \times h$)</p> <p>Circle ($\pi r^2$)</p> <p>Area of irregular surfaces can be calculated by grid method</p>	<ul style="list-style-type: none"> • Define area. • State the SI unit of area. • Calculate the area of regular surfaces by using formulae. • Calculate the area of irregular surfaces by grid method.

<p>2.5 Measuring Volume</p> <p>Volume is the space occupied by a substance. The SI unit is cubic metre (m^3).</p> <p>The volume of regular objects can be calculated using formula.</p> <ul style="list-style-type: none"> ➤ Cube (a^3) ➤ Cylinder ($\pi r^2 h$) ➤ Cuboid ($l \times b \times h$) ➤ Sphere ($\frac{4}{3} \pi r^3$) ➤ Cone ($\frac{1}{3} \pi r^2 h$) <p>The volumes of liquids can be measured by cylinder, volumetric flasks, burettes, or pipettes.</p> <p>Volume of objects with irregular shapes can be measured with a displacement can and measuring cylinder.</p>	<ul style="list-style-type: none"> • Define volume. • State SI unit of volume. • Calculate the volume of regular objects by using formula. • Calculate the volumes of liquids in: <ul style="list-style-type: none"> ➤ cylinder ➤ volumetric flasks ➤ burettes ➤ pipettes • Calculate the volume of irregular object by displacement can method • Calculate the volume of irregular object by measuring cylinder.
<p>2.6 Measuring Mass</p> <p>Mass is the amount of matter in a substance. Its SI unit is kilogram (kg).</p> <p>Mass can be measured by beam balance and electronic balance.</p>	<ul style="list-style-type: none"> • Define mass. • State the SI unit of mass. • Describe the instruments used to measure mass.
<p>2.7 Measuring Time</p> <p>SI unit of time is second. Time can be measure in different unit.</p> <p>Clock, watches pendulums, mechanical and digital stopwatches are used to measure time.</p>	<ul style="list-style-type: none"> • State the SI unit of time. • Convert time from one unit to another. • Calculate time with a mechanical stopwatch and a digital stopwatch. • Calculate time with a digital stopwatch.
<p>2.8 Speed</p> <p>Speed is the distance travelled per unit time. SI unit of speed is metres/ second</p> <p>Formula of speed $\frac{\text{distance traveled}}{\text{time taken}}$</p> <p>Average speed is the total distance travelled in total time taken</p> <p>Formula of speed $\frac{\text{total distance traveled}}{\text{total time taken}}$</p>	<ul style="list-style-type: none"> • Define speed. • State the SI unit of speed. • Illustrate the formula of speed. • Calculate speed by using formula. • Define average speed. • Illustrate the formula of speed. • Calculate the average speed by using formula.
<p>2.7 Density</p> <p>Density is the mass per unit volume. Its SI unit is g/cm^3</p> <p>Formula of density $\frac{\text{mass}}{\text{volume}}$</p> <p>Objects that have high density will sink in water whereas object having low density will float.</p>	<ul style="list-style-type: none"> • Define density • State the unit of density • Illustrate the formula of density • Describe the effects of density on the object.
<p>Key words: quantitative, qualitative, physical quantities, area, mass, length, volume, time, displacement can, density, speed, average speed, measuring cylinder</p> <p>Types of questions</p> <ul style="list-style-type: none"> • Multiple choice questions • Structure questions • Short answer reasoning • Descriptive questions 	

Activities/Experiments

Demonstrate the measurement of irregular objects by measuring cylinder.
Demonstration of sinking and floating of one object into another.

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<https://www.youtube.com/watch?v=SimFy9wOMXY>

<https://www.quora.com/What-is-the-difference-between-speed-and-average-speed-Isnt-the-formula-to-calculate-them-practically-the-same>