

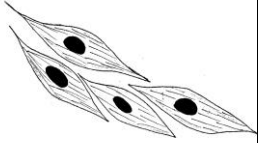
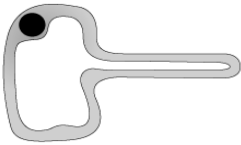
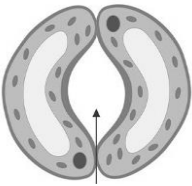
**Dawood Public School**  
**Course Outline 2020-21**  
**General Science**  
**Grade VII**

Month	Content	Reference Book
August	From cell to Organism	International Lower Secondary Science Book 2 Chapter 01
September	Diffusion and Osmosis	Science Matters Vol. B Chapter 25
	Atom, Molecule and Ion	International Lower Secondary Science Book 2 Chapter 07
October	The Particle Model of Matter	International Lower Secondary Science Book 2 Chapter 06
	Forces and their effects	International Lower Secondary Science Book 2 Chapter 04
November	Revision for Mid Term Exams	Worksheets
December	MID YEAR EXAMINATION	
January	Food and Digestion	International Lower Secondary Science Book 3 Chapter 02
	Mixtures	International Lower Secondary Science Book 3 Chapter 04
February	Classifying Plants and Animals	International Lower Secondary Science Book 2 Chapter 02
	Solution	International Lower Secondary Science Book 2 Chapter 05
March	Energy Resources	International Lower Secondary Science Book 2 Chapter 09
	Electrical Circuits	International Lower Secondary Science Book 1 Chapter 10
April	Revision For Final Exams	Worksheets
May	FINAL EXAMINATION	

Contents	Learning Objectives
<b>Cells-the building blocks of life</b> Unicellular organism Multicellular organism Microscope	<ul style="list-style-type: none"><li>• Define cell.</li><li>• Define unicellular organism.</li><li>• Define multicellular organism.</li><li>• List the name of different parts of microscope.</li><li>• Write the functions of parts of microscope.</li></ul>
<b>Plant and animal cells</b>  Cell Organelles (Structure &function) <ul style="list-style-type: none"><li>• Mitochondria</li><li>• Endoplasmic reticulum</li><li>• Golgi body</li><li>• Ribosomes</li><li>• Centrosome</li><li>• Chloroplast</li></ul>	<ul style="list-style-type: none"><li>• Describe the differences in structure between typical animal and plant cells.</li><li>• Identify the organelles of a typical cell.</li><li>• Describe the functions of cell organelle.</li></ul>
<b>Cell Division</b>	<ul style="list-style-type: none"><li>• Define cell division.</li><li>• Describe the importance of cell division in living organisms.</li></ul>
<b>Different cells for different functions</b>	<ul style="list-style-type: none"><li>• Explain the adaptation related to each function for the following cells:<ul style="list-style-type: none"><li>➤ nerve cell</li><li>➤ red blood cell</li><li>➤ sperm cell</li><li>➤ muscle cell</li><li>➤ palisade cell</li><li>➤ guard cell</li><li>➤ root hair cell</li><li>➤ xylem vessels</li></ul></li></ul>
<b>From cells to Organisms</b>  Definition of tissue Type of Animal tissues Type of Plant tissues Definition of organ and organ system	<ul style="list-style-type: none"><li>• Define tissue.</li><li>• Name and describe the four types of animal tissues.</li><li>• Name and describe three types of plant tissues.</li><li>• Define organ.</li><li>• Explain the relationship between organ, system and organism.</li><li>• List the different organ systems of the human body.</li></ul>
<b>Key words:</b> unicellular, multicellular, eyepiece, objective lens, focus knobs, vacuole, chromosomes, genes, mitosis, parent cell, daughter cell, stomata, protrusion  <b>Types of Questions:</b> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul>	

Sample Questions:

1. Identify the following cells and state at least two adaptations of each cell.

Cell	Adaptations
	
	
	

2. State at least three striking differences between animal and plant cell.

Work book Activities:

- Activity 1.1 & 1.4 from International Lower Secondary Science Work Book 2.

Activities:

- Observe prepared slides of cells under microscope.
- Construct models of a plant cell and / or an animal cell to understand cell structure.
- Flash cards to show cell organelles of a typical cell.

Laboratory Experiments:

- To learn how to use a microscope.
- To observe the slides of animal cell (muscle cell, Blood cell), plant cell and microorganisms (paramecium, amoeba, euglena).
- To prepare the slide of cheek cells and observe under the microscope.
- Identify the structures present in plant cells as seen with a simple light microscope.
- Identify the structures present in animal cells as seen with a simple light microscope.

Surf IT:

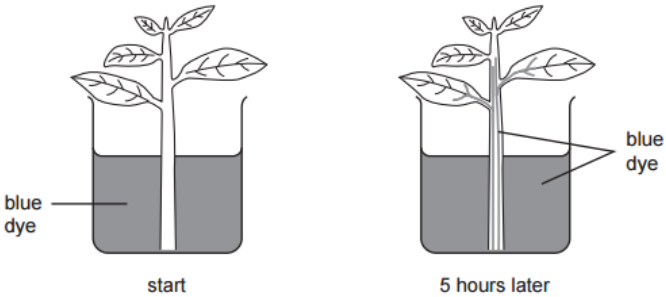
- ([http://www.biology.arizona.edu/cell\\_bio/activities/cell\\_cycle/cell\\_cycle.html](http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html))
- [www.biology-resources.com/biology-CD.html](http://www.biology-resources.com/biology-CD.html)
- [www.bbc.co.uk/learningzone/clips/parts-of-plant-and-animal-cells/10602.html](http://www.bbc.co.uk/learningzone/clips/parts-of-plant-and-animal-cells/10602.html)

September

Chapter 25: Diffusion and Osmosis (SM Vol. B)

Pages no: 135 - 151

Contents	Learning Objectives
<b>Diffusion</b>  Diffusion in non-living organisms Diffusion in living organisms	<ul style="list-style-type: none"><li>• Define diffusion.</li><li>• Describe the process of diffusion in non living system.</li><li>• Discuss how the concentration of solutes across a membrane affects their diffusion.</li><li>• Describe the importance of diffusion to living things for transporting substances.</li><li>• Explain how diffusion is involved in the</li></ul>

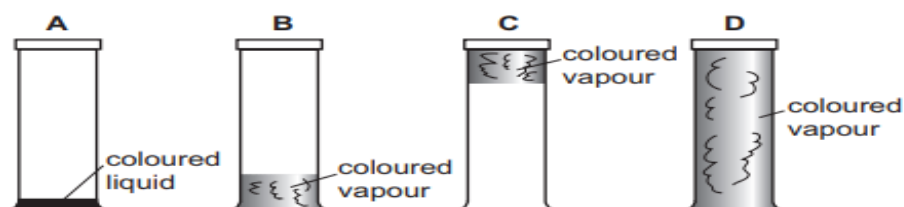
	transport system of living organisms.
<b>Osmosis</b>  Type of solutions : <ul style="list-style-type: none"><li>• Hypertonic</li><li>• Hypotonic</li><li>• Isotonic</li></ul>	<ul style="list-style-type: none"><li>• Define osmosis.</li><li>• Describe the process of osmosis.</li><li>• Define water potential.</li><li>• Define partially permeable membrane.</li><li>• Describe the importance of osmosis in the uptake of water by plants and effects on plant.</li><li>• Explain how osmosis is involved in the transport system of animals.</li><li>• Define hypertonic solution.</li><li>• Define hypotonic solution.</li><li>• Define isotonic solution.</li><li>• Explain how different types of solutions move through partially permeable membrane.</li><li>• Predict what would happen to a red blood cell that was placed in following solutions:<ul style="list-style-type: none"><li>➤ hypertonic</li><li>➤ hypotonic</li><li>➤ isotonic</li></ul></li></ul>
<b>Absorption of water and mineral salts by roots of plants</b>	<ul style="list-style-type: none"><li>• Define active transport.</li><li>• Define concentration gradient.</li><li>• Explain the movement of ions into or out of a cell through the cell membrane.</li><li>• Distinguish how does diffusion differs from active transport.</li></ul>
<b>Keywords:</b> permeable membrane, partially permeable membrane, gaseous exchange, air sacs (alveoli), blood vessel, water potential, turgor pressure, turgid, concentrated solution, dilute solution, distilled water, cell sap  <b>Types of Questions:</b> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul> <b>Sample Questions:</b> <ol style="list-style-type: none"><li>1. A piece of a plant with a transparent stem was placed in a beaker containing a blue dye and then examined 5 hours later. Explain the process which caused the stem to acquire this blue dye.<div><p>The diagram consists of two parts. The left part, labeled 'start', shows a plant stem with leaves placed in a beaker of blue dye. The right part, labeled '5 hours later', shows the same plant stem in the beaker, but the stem is now colored blue, indicating that the dye has moved up the stem. Labels 'blue dye' point to the liquid in the beakers in both parts.</p></div></li><li>2. Differentiate between diffusion and osmosis.</li></ol> <b>Activities:</b> <ul style="list-style-type: none"><li>• Students will use a simple demonstration of diffusion, for example a Potassium manganate VII crystal in a gas jar of water or a perfume bottle opened in one corner of the room.</li><li>• Students will investigate the appearance of plant cell (raisin, chick pea, potato chip) when placed</li></ul>	

<p>in:</p> <ul style="list-style-type: none"><li>➤ distilled water</li><li>➤ Concentrated salt solution</li><li>➤ dilute salt solution</li></ul> <p><b>Laboratory Experiments:</b></p> <ul style="list-style-type: none"><li>• To observe the process of diffusion using potassium permanganate.</li><li>• To observe the process of osmosis using cucumber.</li></ul> <p><b>Surf IT:</b></p> <ul style="list-style-type: none"><li>• <a href="http://www.biologyresources.com/biology-CD.html">www.biologyresources.com/biology-CD.html</a></li><li>• <a href="http://en.wikibooks.org/wiki/School_Science/Apparatus_for_demonstrating_osmosis">http://en.wikibooks.org/wiki/School_Science/Apparatus_for_demonstrating_osmosis</a></li></ul>
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Contents	Learning Objectives
<p><b>What is an atom?</b></p> <p>Definition of atom</p> <p>Structure of an atom</p> <p>Sub-atomic particles</p> <p>Atom as a neutral entity</p>	<ul style="list-style-type: none"><li>• Define atom.</li><li>• Describe the structure of an atom.</li><li>• Draw the structure of an atom.</li><li>• State the position and charges of sub-atomic particle in an atom.</li><li>• Describe atom as a ‘neutral entity’.</li></ul>
<p><b>Atomic number and mass number</b></p> <p>Definition of atomic number</p> <p>Definition of mass number</p> <p>Electronic configuration of first 20 elements</p> <p>Periodic table</p>	<ul style="list-style-type: none"><li>• Define atomic number.</li><li>• Define mass number</li><li>• Develop awareness that nucleon number is the same as mass number.</li><li>• Learn atomic number and mass number of first 20 elements.</li><li>• Define electronic configuration.</li><li>• Calculate electron, proton and neutron number of an atom.</li><li>• Define periodic table.</li><li>• Define periods.</li><li>• Define groups.</li><li>• Identify periods and groups from atomic structure of respective atoms.</li></ul>
<p><b>What is a molecule?</b></p> <p>Definition of molecule</p> <p>Molecule of an element and Molecule of a compound.</p>	<ul style="list-style-type: none"><li>• Define molecule.</li><li>• Describe the formation of molecule.</li><li>• Differentiate between molecule of an element and molecule of a compound.</li><li>• Differentiate between atom and molecule.</li></ul>
<p><b>Chemical formulae of molecular elements and compounds</b></p> <p>Definition of chemical formulae..</p> <p>Differentiate between ionic and covalent bond</p>	<ul style="list-style-type: none"><li>• Define chemical formulae.</li><li>• Identify the number and type of elements present in chemical formula of compound.</li><li>• Define ionic bond.</li><li>• Describe the formation of ionic.</li><li>• Define covalent bond.</li><li>• Differentiate between ionic and covalent bond.</li></ul>

<b>What is an Ion?</b>  Definition of an ion Formation of ions Definition of anion and cation Difference between anion and cation	<ul style="list-style-type: none"> <li>• Define ion.</li> <li>• Describe the formation of ions.</li> <li>• Define anion.</li> <li>• Define cation.</li> <li>• Differentiate between anion and cation.</li> <li>• Predict the structure of ion from given data.</li> </ul>				
<b>Keywords:</b> atom, proton, neutron, electron, periodic Table, atomic number, sub script, mass number, super script, protons, neutrons, electrons, ion, cation, anion, ionic bond, covalent bond, chemical formulae, chemical bond, molecule  <b>Type of Questions:</b> <ul style="list-style-type: none"> <li>• Multiple choice questions</li> <li>• Identification and labelling of diagrams</li> <li>• Structured questions</li> <li>• Short answer reasoning</li> <li>• Descriptive questions</li> </ul> <b>Sample Questions:</b> <ol style="list-style-type: none"> <li>During the reaction oxygen atoms is changed to oxide ions. In the boxes below draw an oxygen atom and an oxide ion, showing all of the electrons in each particle.   <table border="1"> <thead> <tr> <th>oxygen atom</th><th>oxide ion</th></tr> </thead> <tbody> <tr> <td style="height: 150px;"></td><td style="height: 150px;"></td></tr> </tbody> </table> </li> <li>An element has a mass number 32 and proton number 16.               <ol style="list-style-type: none"> <li>Draw diagrams to show the electronic structures of an atom of this element.</li> <li>Identify the element.</li> <li>Give the element's symbol and the number of the Group in which it appears.</li> </ol> </li> </ol> <b>Workbook Activities</b> <ul style="list-style-type: none"> <li>• Workbook activity 7.1 &amp; 7.2 from International Lower Secondary Science Work Book 2.</li> </ul> <b>Activities:</b> <ul style="list-style-type: none"> <li>• Try it out , pg # 145 (textbook)</li> <li>• Draw ionic structure of first twenty elements.</li> <li>• Each group of students can make a poster of the structure of a chosen element and place them accordingly on blank periodic tables.</li> </ul> <b>Laboratory Experiments:</b> <ul style="list-style-type: none"> <li>• To construct models of different atoms and molecules.</li> </ul> <b>Surf I.T:</b> <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=EMDrb2LqL7E">https://www.youtube.com/watch?v=EMDrb2LqL7E</a></li> <li>• <a href="https://www.youtube.com/watch?v=cV4jJZCIMPo">https://www.youtube.com/watch?v=cV4jJZCIMPo</a></li> </ul>		oxygen atom	oxide ion		
oxygen atom	oxide ion				

Content	Learning Objectives
<b>The particle model of Matter</b>  Brownian Motion and Diffusion	<ul style="list-style-type: none"><li>• State the Particle Model of Matter.</li><li>• Define diffusion with example.</li><li>• Define Brownian motion with example.</li></ul>
<b>Particle models for solids, liquids and gases</b>  Properties of solid, liquid and gas	<ul style="list-style-type: none"><li>• Describe the properties of solids.</li><li>• Describe the properties of liquids.</li><li>• Describe the properties of gases.</li><li>• List the similarities for:<ul style="list-style-type: none"><li>➤ solids</li><li>➤ liquids</li><li>➤ gases</li></ul></li><li>• List the differences for:<ul style="list-style-type: none"><li>➤ solids</li><li>➤ liquids</li><li>➤ gases</li></ul></li><li>• State the Kinetic Particle Theory.</li><li>• Refer to the Kinetic Particle Theory to suggest why solids are denser than gases.</li></ul>
<b>Changes in Physical States of Matter</b> <ul style="list-style-type: none"><li>• Melting</li><li>• Freezing</li><li>• Condensation</li><li>• Boiling</li><li>• Evaporation</li><li>• Sublimation</li></ul>	<ul style="list-style-type: none"><li>• Describe how matter may change its state.</li><li>• State the changes in arrangement of the particles during inter conversion of three states.</li><li>• State the energy changes in the particles during inter conversion of three states of matter.</li><li>• Predict the changes in arrangement of molecules in melting and freezing.</li><li>• Predict the changes in arrangement of molecules in boiling and condensing.</li><li>• Define evaporation.</li><li>• State the differences between boiling and evaporation.</li><li>• Define sublimation.</li><li>• Provide an example for sublimation.</li></ul>
<b>Keywords:</b> discrete, haphazard, forces of attraction, vibrate, compressibility, fluidity, sublimation, evaporation  <b>Types of Questions:</b> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul> <b>Sample Questions:</b> <ol style="list-style-type: none"><li>1. A coloured liquid vaporises easily at room temperature. Some of the liquid is placed at the bottom of a sealed gas jar. Describe the phenomenon in terms of particle model of matter.</li></ol>	



2. In terms of movement of molecules and attractive forces between them, describe what happens during melting.

**Work book Activities:**

- Activity 6.1, 6.2. 6.3 & 6.4 from International Lower Secondary Science Work Book 2.

**Activities:**

- Students will observe the diffusion of potassium permanganate in water.
- Students will observe changes of state such as: Melting of ice, butter, wax, freezing water, boiling water (kettle), salt solution.

**Laboratory Experiments:**

- To separate the mixture of sand and ammonium chloride using sublimation.

**Surf IT:**

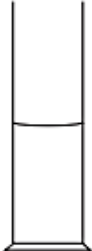

- [www.schoolscience.co.uk](http://www.schoolscience.co.uk)

**Chapter 04: Forces and its effects (ILSS Book 2)**

**Pages no: 221 – 255**

Contents	Learning Objectives
<b>What is a force?</b>  Definition of force Effects of force Identification of the type of forces	<ul style="list-style-type: none"> <li>• Define force.</li> <li>• State the S.I unit of force.</li> <li>• Describe the effect of force on:               <ul style="list-style-type: none"> <li>➤ size of an object</li> <li>➤ shape of an object</li> <li>➤ motion of an object</li> </ul> </li> <li>• Identify the following forces in the diagrams/scenarios:               <ul style="list-style-type: none"> <li>➤ gravity</li> <li>➤ up thrust</li> <li>➤ friction</li> </ul> </li> </ul>
<b>Measuring forces</b>  Use of force meter Representation of force	<ul style="list-style-type: none"> <li>• Describe the use of a force meter.</li> <li>• Represent force by an arrow in given diagrammatic scenarios.</li> </ul>
<b>Gravitational force and weight</b>  Definition of gravitational force Effects of gravity	<ul style="list-style-type: none"> <li>• Define gravitational force.</li> <li>• Explain the effect of gravity on objects.</li> <li>• Define weight.</li> <li>• State the S.I unit of weight.</li> <li>• Define mass.</li> <li>• State the S.I unit of mass.</li> <li>• Differentiate between mass and weight.</li> </ul>
<b>Up thrust and Density</b>  Definition of up-thrust Effect of up thrust on floating objects Definition of density	<ul style="list-style-type: none"> <li>• Define up-thrust.</li> <li>• Describe the effect of up-thrust on floating objects.</li> <li>• Define density.</li> </ul>



Calculation of density by using formula	<ul style="list-style-type: none"> <li>State the formula of density.</li> <li>State the S.I unit of density</li> <li>Calculate density of listed objects by using the formula.</li> </ul>
<b>Frictional force</b>  Definition of frictional force Factors affecting friction Advantages and disadvantages of friction Ways to reduce friction	<ul style="list-style-type: none"> <li>Define frictional force.</li> <li>List the factors affecting friction.</li> <li>State the advantages of friction.</li> <li>State the disadvantages of friction.</li> <li>Suggest ways to reduce friction.</li> <li>Define stopping distance.</li> <li>List the factors that affect the stopping distance of a vehicle.</li> <li>Interpret the stopping distance of a vehicle by the information given in a chart.</li> </ul>
<b>Keywords:</b> newton, force meter, spring balance, stretched, compressed, stationary, mass, weight, magnetic force, up thrust, density, cubic meter, floating, sinking, stopping distance, breaking distance, reaction distance, ball bearing, wear and tear  <b>Type of Questions:</b> <ul style="list-style-type: none"> <li>Multiple choice questions</li> <li>Identification and labelling of diagrams</li> <li>Structured questions</li> <li>Short answer reasoning</li> <li>Descriptive questions</li> </ul> <b>Sample Questions:</b> <ol style="list-style-type: none"> <li>           A measuring cylinder contains <math>80\text{ cm}^3</math> of water and has a total mass of 300g. A stone is then lowered into the cylinder. The new reading of the volume is <math>110\text{ cm}^3</math> and the total mass is 390g. What is mass of the stone?           <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p><math>80\text{ cm}^3</math></p> <p>mass = 300 g</p> </div> <div style="text-align: center;">  <p><math>110\text{ cm}^3</math></p> <p>mass = 390 g</p> </div> </div> </li> <li>Define force and state the type of forces.</li> </ol>	
<b>Workbook activities:</b> <ul style="list-style-type: none"> <li>Workbook activity 11.1 &amp; 11.2 from International Lower Secondary Science Work Book 2.</li> </ul>	
<b>Activities:</b> <ul style="list-style-type: none"> <li>Students will investigate the motion of different parachutes by changing the surface area, weight and gravity.</li> <li>Students will be shown a model of the solar system and will be explained how the planets are held in place by the gravitational pull of the Sun.</li> </ul>	
<b>Laboratory Experiments:</b> <ul style="list-style-type: none"> <li>To find density of a liquid.</li> <li>To investigate the factors which affect friction.</li> </ul>	

Surf I.T:

- <https://www.youtube.com/watch?v=z5zsC6O0yBE>
- <https://www.youtube.com/watch?v=cipDtvN6CIQ>

November:

Revision for Mid Year Examination
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December:

Mid Year Examination
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January

Chapter 01: Food and Digestion (ILSS Book 3)

Pages no: 1 - 27

Contents	Learning Objectives
<p><b>Nutrients in food</b></p> <ul style="list-style-type: none"><li>• Carbohydrates</li><li>• Proteins</li><li>• Fats (lipids)</li><li>• Vitamins</li><li>• Minerals</li><li>• Fibre</li><li>• Water</li></ul> <p><b>Energy value of Food.</b></p>	<ul style="list-style-type: none"><li>• Describe the importance of food.</li><li>• List the name of nutrients present in food.</li><li>• Describe tests for:<ul style="list-style-type: none"><li>➤ starch (iodine in potassium iodide solution)</li><li>➤ reducing sugars (Benedict’s solution)</li><li>➤ protein (Biuret test)</li><li>➤ Fats (ethanol emulsion test).</li></ul></li><li>• List the principal sources of:<ul style="list-style-type: none"><li>➤ carbohydrates</li><li>➤ fats</li><li>➤ proteins</li><li>➤ vitamins (C and D only)</li><li>➤ mineral salts (calcium and iron only)</li><li>➤ fibre (roughage)</li><li>➤ water</li></ul></li><li>• Describe the dietary importance of:<ul style="list-style-type: none"><li>➤ carbohydrates</li><li>➤ fats</li><li>➤ proteins</li><li>➤ vitamins C</li><li>➤ vitamin D</li><li>➤ mineral salts (calcium and iron only)</li><li>➤ fibre (roughage)</li><li>➤ water</li></ul></li><li>• Name the diseases and the symptoms resulting from deficiencies of:<ul style="list-style-type: none"><li>➤ vitamin C</li><li>➤ vitamin D</li><li>➤ calcium</li><li>➤ iron</li></ul></li></ul>
<p><b>A Balanced diet</b></p>	<ul style="list-style-type: none"><li>• Define balanced diet.</li><li>• Identify the constituents of a balanced diet.</li><li>• Define anorexia.</li><li>• Define malnutrition.</li><li>• State the effects of malnutrition in relation to the following conditions:<ul style="list-style-type: none"><li>➤ starvation</li><li>➤ heart disease</li></ul></li></ul>

	<ul style="list-style-type: none"><li>➤ constipation</li><li>➤ obesity</li></ul>
<b>Digestion</b>  Definition of digestion Physical digestion Chemical digestion Definition of catalyst Definition of enzymes	<ul style="list-style-type: none"><li>• Define digestion.</li><li>• Describe what is meant by digestion.</li><li>• Suggest why food must be digested.</li><li>• Define catalyst.</li><li>• Define enzymes.</li></ul>
<b>The human digestive system</b>  Definition of Peristalsis movement Definition of: <ul style="list-style-type: none"><li>• Ingestion</li><li>• Absorption</li><li>• Assimilation</li><li>• Egestion</li></ul>	<ul style="list-style-type: none"><li>• List the organs of the alimentary canal.</li><li>• Define peristalsis.</li><li>• Describe the peristalsis movement.</li><li>• Identify the epiglottis and state its function during swallowing.</li><li>• Define the following terms:<ul style="list-style-type: none"><li>➤ ingestion</li><li>➤ absorption</li><li>➤ assimilation</li><li>➤ egestion</li></ul></li><li>• Identify and label the main regions of the alimentary canal and following associated organs:<ul style="list-style-type: none"><li>➤ mouth</li><li>➤ salivary glands</li><li>➤ oesophagus(gullet)</li><li>➤ stomach</li><li>➤ small intestine: duodenum and ileum</li><li>➤ pancreas</li><li>➤ liver</li><li>➤ gall bladder</li><li>➤ large intestine: colon and rectum</li><li>➤ anus</li></ul></li><li>• Define emulsification.</li><li>• State the function of hydrochloric acid in the stomach.</li><li>• Describe the role of pancreas in the digestion.</li><li>• Describe the functions of the regions of the alimentary in relation to:<ul style="list-style-type: none"><li>➤ ingestion</li><li>➤ digestion</li><li>➤ absorption</li><li>➤ assimilation</li><li>➤ egestion</li></ul></li><li>• Describe the function of a typical amylase, protease and lipase by listing the substrates and end products.</li><li>• Describe the process of absorption that occurs in the small intestine.</li><li>• State the significance of villi in increasing the internal surface area.</li></ul>
<b>Keywords:</b> sucrose, cellulose, starch, fructose, amino acids, glycerol, fatty acids, benedict ‘s solution, biuret’s solution, ethanol, roughage, cartilage, tendon, anorexia, fatigue, churning, salivary amylase, gastric juice, proteases, hydrochloric acid, chyme, bile, emulsification, pancreatic juice, lipase, carbohydrates,	

epiglottis, villi, defecation

**Types of Questions:**

- Multiple choice questions
- Identification and labelling of diagrams
- Structured questions
- Short answer reasoning
- Descriptive questions

**Sample Questions:**

1. A student performed food tests on two types of food, F1 and F2. The results are shown in table below. Complete the table to show student's conclusion.

	observations		conclusions
	fat test	starch test	
<b>F1</b>	solution stayed clear	food went black	..... .....
<b>F2</b>	solution went cloudy	food went yellow	..... .....

2. Differentiate between digestion and absorption.

**Activities:**

- Students will perform the test for starch in food using iodine solution or
- Investigate which foods contain reducing sugars using Benedict's reagent.
- Investigate which foods contain protein using the Biuret test on a few samples.
- Students will perform the test of fats by using ethanol.

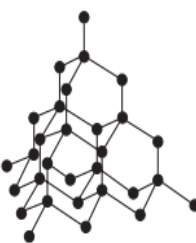
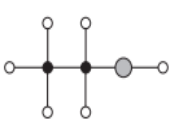


**Laboratory Experiments:**

- To perform food tests using respective food components constituting carbohydrates (glucose and starch), proteins and fats.
- To determine the nutrient content of respective food items and construct a table highlighting the advantages of that food constituent.

**Surf IT:**

- [http://www.hpb.gov.sg/hpb/default.asp?pg\\_id=1016](http://www.hpb.gov.sg/hpb/default.asp?pg_id=1016)
- [www.bbc.co.uk/learningzone/clips/a-balanced-diet/10609.html](http://www.bbc.co.uk/learningzone/clips/a-balanced-diet/10609.html)
- [www.bbc.co.uk/learningzone/clips/the-digestive-system/4180.html](http://www.bbc.co.uk/learningzone/clips/the-digestive-system/4180.html)

Content	Learning Objectives
<p><b>What is a mixture?</b></p> <p>Definition of element and compound</p> <p>Definition of mixture</p> <p>Example of mixtures</p> <ul style="list-style-type: none"><li>• Air</li><li>• Mineral water</li><li>• Alloys</li></ul> <p>General properties of mixtures</p>	<ul style="list-style-type: none"><li>• Define the following:<ul style="list-style-type: none"><li>➤ element</li><li>➤ compound</li><li>➤ mixture</li><li>➤ alloy</li></ul></li><li>• List the characteristics of the mixtures.</li><li>• Differentiate between compounds and mixtures.</li><li>• Provide some examples of alloy.</li><li>• Name the constituent gases which make up the air.</li></ul>

<p><b>Distinguishing Among Elements Compounds and Mixtures</b></p> <p>Definition of melting and boiling point</p>	<ul style="list-style-type: none"> <li>• Define melting point.</li> <li>• Define boiling point.</li> <li>• Distinguish among elements, compounds &amp; mixtures on the basis of their boiling &amp; melting point.</li> <li>• Identify the state of matter on the basis of their melting and boiling point.</li> </ul>
<p><b>Separating Mixtures</b></p> <ul style="list-style-type: none"> <li>• Filtration and its uses</li> <li>• Evaporation and its uses</li> <li>• Distillation</li> <li>• Fractional distillation</li> <li>• Paper chromatography</li> </ul>	<ul style="list-style-type: none"> <li>• Name the separation techniques to separate the components of mixtures.</li> <li>• Describe the method of filtration.</li> <li>• Describe the method of evaporation.</li> <li>• Describe how a distillation apparatus is used to separate a solution.</li> <li>• Identify where boiling, evaporation and condensation occur in distillation apparatus.</li> <li>• Differentiate between distillation and fractional distillation.</li> <li>• Describe how petroleum is separated by fractional distillation.</li> <li>• State uses of nitrogen.</li> <li>• State uses of oxygen.</li> <li>• Describe paper chromatography.</li> <li>• Suggest some application in daily life for paper chromatography.</li> </ul>
<p><b>Key words:</b>  alloy, solution, constituent, boiling point, melting point, density, electrical conductivity, residue, filtrate, distillate, crude oil, miscible, immiscible, condensation, forensic science, desalinate</p> <p><b>Types of Questions:</b></p> <ul style="list-style-type: none"> <li>• Multiple choice questions</li> <li>• Identification and labelling of diagrams</li> <li>• Structured questions</li> <li>• Short answer reasoning</li> <li>• Descriptive questions</li> </ul> <p><b>Sample Questions:</b></p> <p>1. Fig shows the structure of four substances, A, B, C and D, which contain carbon atoms.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>A</b></p>  </div> <div style="text-align: center;"> <p><b>B</b></p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> <p><b>C</b></p>  </div> <div style="text-align: center;"> <p><b>D</b></p>  </div> </div> <div style="margin-top: 10px;"> <p><b>key</b></p> <ul style="list-style-type: none"> <li>● carbon atom</li> <li>● oxygen atom</li> <li>○ hydrogen atom</li> </ul> </div> <p style="margin-top: 20px;">State which of these substances is an element. Explain your answer.</p> <p>2. Define chromatography and state its applications in daily life.</p>	

**Work book Activities:**

- Activity 4.1, 4.2, & 4.3 from International Lower Secondary Science Work Book 2.

**Activities:**

- Students will distinguish elements, compounds and mixtures by showing samples of substances with associated information e.g. name of substance, formula, can it be separated, can it be broken down into elements.
- Students will separate sand and water through filter paper.
- Students will do the separation of salt from salt and water solution.
- Students will do the separating a mixture of colour dyes using paper chromatography.

**Laboratory Experiments:**

- To separate insoluble impurities from water using filtration and separation of soluble impurity (e.g. salt) through evaporation.
- To separate a mixture of coloured dyes using chromatography.
- To make elephant toothpaste.

**Surf IT:**

- <http://science.howstuffworks.com/environmental/energy/oil-refining2.htm>
- [www.practicalchemistry.org/experiments/chromatography-of-sweets%2C194%2CEX.html](http://www.practicalchemistry.org/experiments/chromatography-of-sweets%2C194%2CEX.html)

**February**

**Chapter 02: Classifying Plants and Animals (ILSS Book 2)**

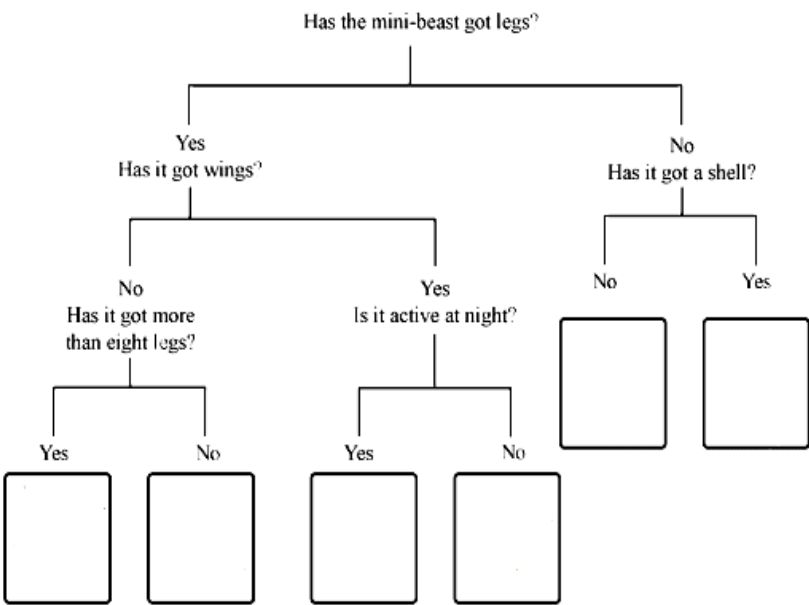
**Pages no: 27 - 51**

Content	Learning Objectives
<b>The need to classify Living Organisms</b>  Definition of classification Definition of binomial classification Importance of binomial system	<ul style="list-style-type: none"><li>• Define classification.</li><li>• Define binomial classification.</li><li>• State the importance of binomial classification.</li></ul>
<b>Why is classification of living things important?</b>  Taxonomic groups of living organisms Importance of classification	<ul style="list-style-type: none"><li>• Describe taxonomic classification.</li><li>• Sequence eight major taxonomic groups of living organisms.</li><li>• State the importance of classification of living organisms.</li></ul>
<b>Classifying plants</b>  Taxonomic classification of plants Characteristics of vascular and non-vascular plants with examples Difference between gymnosperms and angiosperms Difference between monocot and dicot plants.	<ul style="list-style-type: none"><li>• Describe the taxonomic classification of plants.</li><li>• Define non-vascular plants (bryophytes).</li><li>• List the characteristics of non-vascular plants.</li><li>• Define vascular plants (tracheophytes).</li><li>• List the characteristics of vascular plants.</li><li>• Define gymnosperms.</li><li>• Define angiosperms.</li><li>• Differentiate between gymnosperms and angiosperms.</li><li>• Describe a monocot and a dicot plant.</li><li>• Differentiate between monocot and dicot plants.</li><li>• Draw a flow chart to show classification of plants.</li></ul>

<p><b>Classifying Animals</b></p> <p>Definition of vertebrates &amp; invertebrates</p> <p>Classification of invertebrates</p> <p>Difference between warm blooded and cold blooded animals</p> <p>Classification of vertebrates</p>	<ul style="list-style-type: none"><li>• Define vertebrates.</li><li>• Define invertebrates.</li><li>• Differentiate between vertebrates and invertebrates.</li><li>• Draw a flow diagram to show classification of invertebrates.</li><li>• List the characteristics of following groups of invertebrates with jointed legs:<ul style="list-style-type: none"><li>➤ crustaceans</li><li>➤ insects</li><li>➤ arachnids</li><li>➤ centipedes</li><li>➤ millipedes</li></ul></li><li>• List the characteristics of following groups of invertebrates without jointed legs:<ul style="list-style-type: none"><li>➤ molluscs</li><li>➤ sponges</li><li>➤ annelids</li><li>➤ cnidarians</li><li>➤ echinoderms</li><li>➤ roundworms(nematodes)</li><li>➤ flatworms</li></ul></li><li>• Define warm blooded animals.</li><li>• Define cold blooded animals.</li><li>• Differentiate between warm blooded and cold blooded animals.</li><li>• List the characteristics of following groups of vertebrates:<ul style="list-style-type: none"><li>➤ fish</li><li>➤ amphibians</li><li>➤ reptiles</li><li>➤ birds</li><li>➤ mammals</li></ul></li></ul>
<p><b>Using Keys to identify and Classify Living things</b></p> <p>Dichotomous key and its importance.</p> <p>Classification of living organisms using dichotomous key.</p>	<ul style="list-style-type: none"><li>• Define dichotomous key.</li><li>• State the importance of dichotomous key.</li><li>• Demonstrate application of the steps required for the formation of dichotomous key.</li><li>• Classify given group of animals using dichotomous key.</li></ul>
<p><b>Keywords:</b></p> <p>classification, binomial classification, genus, specie, taxonomy, kingdom, phylum, class, order, family, bryophytes, tracheophytes, gymnosperms, angiosperms, monocots, dicots, vertebrates, invertebrates, arthropods, crustaceans, insects, arachnids, myriapoda, mollusca, cnidarian, echinodermata, platyhelminthes, nematode, dichotomous key</p> <p><b>Type of Questions:</b></p> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul>	

Sample Questions:

1. Picture below shows animals. Use the dichotomous key provided to identify each animal.



2. Discuss the classification of flowering plants.

Workbook Activities:

- Workbook Activity 2.1 & 2.3 from International Lower Secondary Science Work Book 2.

Activities:

- Students will collect poster/photos/living specimens of about 10 different animals e.g. earthworm, snail, different types of fish etc and will discuss their scientific names.
- Students will be given a list of different organisms and will be asked to classify them into vertebrates and invertebrates and discuss why animals are sorted in this way.

Laboratory Experiments:

- To observe the specimens of invertebrates.
- Spotting of specimens (vertebrates and invertebrates).

Surf I.T:

- <https://www.youtube.com/watch?v=UfhI2p0-TYk>
- <https://www.youtube.com/watch?v=mRidGna-V4E>

Contents	Learning Objectives
<p><b>Solutes, solvents and solutions</b></p> <p>Definition of solute and solvent</p> <p>Formation of solution</p> <p>Characteristics of solution</p> <p>Examples of the types of solution</p>	<ul style="list-style-type: none"><li>• Define the following:<ul style="list-style-type: none"><li>➤ solute</li><li>➤ solvent</li><li>➤ solution</li></ul></li><li>• Give examples for the following:<ul style="list-style-type: none"><li>➤ solute</li></ul></li></ul>



	<ul style="list-style-type: none"><li>➤ solvent</li><li>➤ solution</li><li>• Describe the formation of solution.</li><li>• List the characteristics of a solution.</li></ul>																					
<b>Characteristics of suspension</b>  Definition of suspension Characteristics of suspension Difference between solution and suspension	<ul style="list-style-type: none"><li>• Define suspension.</li><li>• Give examples of suspension.</li><li>• List the characteristics of suspension.</li><li>• Differentiate between a solution and a suspension.</li></ul>																					
<b>Uses of solvents and solutions</b>	<ul style="list-style-type: none"><li>• State the uses of solute and solvents in:<ul style="list-style-type: none"><li>➤ household</li><li>➤ agriculture</li><li>➤ medicines</li><li>➤ industries</li></ul></li></ul>																					
<b>Keywords:</b> solute, solvent, homogenous, solution, suspension, heterogeneous, hydroponics, medicinal drugs, solubility, concentrated solution, dilute solution, saturated, unsaturated, solubility curve																						
<b>Type of Questions:</b> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul>																						
<b>Sample Questions:</b> 1. Complete the table comparing solutions and suspensions with Yes and No.																						
<table><tr><th>Properties</th><th>Solution</th><th>Suspension</th></tr><tr><td>The mixture looks cloudy</td><td></td><td></td></tr><tr><td>Its total mass is equal to mass of solute and mass of solvent</td><td></td><td></td></tr><tr><td>It is heterogeneous in nature.</td><td></td><td></td></tr><tr><td>The mixture prevents light from passing through.</td><td></td><td></td></tr><tr><td>It is homogenous in nature.</td><td></td><td></td></tr><tr><td>The parts of the mixture can be separated by filtration</td><td></td><td></td></tr></table>		Properties	Solution	Suspension	The mixture looks cloudy			Its total mass is equal to mass of solute and mass of solvent			It is heterogeneous in nature.			The mixture prevents light from passing through.			It is homogenous in nature.			The parts of the mixture can be separated by filtration		
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The parts of the mixture can be separated by filtration																						
2. If we keep adding salt in water, a point will come that no more salt will dissolve and solution becomes saturated. What is meant by the term saturated? How can you differentiate a saturated solution from an un-saturated solution?																						
<b>Workbook Activities:</b> <ul style="list-style-type: none"><li>• Workbook activity (Revision worksheet 5)</li><li>• Workbook activity, solubility curve from International Lower Secondary Science Work Book 2.</li></ul>																						

**Activities:**

- Students will demonstrate why some medicinal syrups and juices are termed as suspensions.
- Students will be divided in groups where each group will present few uses of given solvent or solutions.
- Students will be taken to laboratory where they will be demonstrated different factors which affect the rate of dissolving.

**Laboratory Experiments:**

- To investigate the factors affecting solubility
- To investigate when a solute dissolves in a solvent

**Surf I.T:**

- <https://www.youtube.com/watch?v=IOsAbV9ESCs>
- [https://www.youtube.com/watch?v=hut2Qujue\\_c](https://www.youtube.com/watch?v=hut2Qujue_c)

**March**

**Chapter 09: Energy Resources (ILSS Book 2)**

**Pages no: 174 - 199**

Contents	Learning Objectives
<b>Fuels and Energy</b>  Definition of energy Forms and uses of energy Fossil fuels and their uses Luminous flame and Non-luminous flame	<ul style="list-style-type: none"><li>• Define energy.</li><li>• List different forms of energy.</li><li>• Explain the uses of different forms of energy in our daily life.</li><li>• Define fossil fuel.</li><li>• State the uses of fossil fuels.</li><li>• Differentiate between luminous and non-luminous flame.</li></ul>
<b>Fossil fuel</b>  Formation of fossil fuels	<ul style="list-style-type: none"><li>• Explain the formation of coal.</li><li>• Explain the formation of oil.</li><li>• Explain the formation of natural gas.</li></ul>
<b>Generation of Electricity</b>  Steps of generation of electricity Energy transformation	<ul style="list-style-type: none"><li>• List the steps of generation of electricity from fossil fuels.</li><li>• Explain the process of generation of electricity with respect to the function of each component of electricity generation system.</li><li>• Describe how energy is transformed at each step of generation of electricity.</li></ul>
<b>Conserving energy</b>  Definition of energy conservation Non-renewable resources and examples	<ul style="list-style-type: none"><li>• Define energy conservation.</li><li>• Define non-renewable energy resources.</li><li>• List examples of non-renewable energy resources.</li><li>• Suggest different ways of energy conservation.</li></ul>
<b>Renewable Energy Resources</b>  Renewable energy resources. Uses of renewable energy resources.	<ul style="list-style-type: none"><li>• Define renewable energy resources.</li><li>• List examples of renewable energy resources.</li><li>• State the uses of:<ul style="list-style-type: none"><li>➤ wind energy</li><li>➤ wave energy</li></ul></li></ul>

	<ul style="list-style-type: none"><li>➤ solar energy</li><li>➤ running water</li><li>➤ biomass</li><li>➤ geothermal energy</li><li>• Differentiate between renewable and non-renewable energy resources.</li></ul>
<b>How do living things use energy?</b>  Sun as the vital source of energy.	<ul style="list-style-type: none"><li>• Develop awareness that all living things depend directly or indirectly on the sun for energy.</li><li>• Describe the importance of sun as a vital source of almost all Earth’s energy resources.</li></ul>
<b>Keywords:</b> energy, fossil fuels, Bunsen burner, luminous flame, non-luminous flame, coal, crude oil, natural gas, combustion gases, steam turbine, kinetic energy, electrical energy, energy conservation, pollutants, reduce, reuse, recycle, non-renewable, renewable energy sources, biomass, geothermal resources, Joules, calories  <b>Type of Questions:</b> <ul style="list-style-type: none"><li>• Multiple choice questions</li><li>• Identification and labelling of diagrams</li><li>• Structured questions</li><li>• Short answer reasoning</li><li>• Descriptive questions</li></ul> <b>Sample Questions:</b> <ol style="list-style-type: none"><li>1. Generators are used to produce electricity in power stations. Describe how energy from a named fossil fuel is transferred to the generator in a power station.</li><li>2. Suggest three ways to conserve fossil fuels.</li></ol> <b>Workbook Activities:</b> <ul style="list-style-type: none"><li>• Workbook activity 9.1and 9.4 from International Lower Secondary Science Work Book 2.</li></ul> <b>Activities:</b> <ul style="list-style-type: none"><li>• Energy content of food, Try it out activity (pg 193).</li><li>• Construct a model of wind turbine.</li></ul> <b>Surf I.T:</b> <ul style="list-style-type: none"><li>• <a href="https://www.youtube.com/watch?v=bEeUla9EeBw">https://www.youtube.com/watch?v=bEeUla9EeBw</a></li><li>• <a href="https://www.youtube.com/watch?v=zaXBVYr9Ij0">https://www.youtube.com/watch?v=zaXBVYr9Ij0</a></li></ul>	

**Chapter 10: Electrical Circuits (ILSS Book 2)**

**Pages no: 200 - 220**

Contents	Learning Objectives
<b>What is electricity?</b>  Definition of electrical energy Conductors (allow electricity to pass through them.) Insulators (restrict the flow of current.)	<ul style="list-style-type: none"><li>• Define electrical energy.</li><li>• Differentiate between energy and electrical energy.</li><li>• Define conductors.</li><li>• Define insulators.</li><li>• Differentiate between conductors and insulators and provide examples of each.</li></ul>
<b>Electrical Circuit</b>  Definition of electric circuit	<ul style="list-style-type: none"><li>• Define electrical circuit.</li><li>• List the components of an electrical circuit.</li></ul>

Series circuit Parallel circuit Components of an electrical circuit	<ul style="list-style-type: none"><li>• State the function of ammeter in a circuit.</li><li>• State the role of voltmeter in an electrical circuit.</li><li>• Label and arrange the components in series and parallel circuit.</li></ul>
<b>Electric Current</b>  Definition of electric current S.I unit of electric current Role of ammeter	<ul style="list-style-type: none"><li>• Define electric current.</li><li>• State the S.I unit of electric current.</li><li>• Explain the flow of current across the electrical circuit.</li><li>• Illustrate the position of ammeter in a circuit.</li></ul>
<b>A Cell or Battery as a source of Electrical Energy</b>  Role of battery in an electrical circuit	<ul style="list-style-type: none"><li>• Describe the function of battery in a circuit.</li></ul>
<b>Potential Difference(V)</b>  Definition of potential difference S.I unit of voltage Voltmeter as an instrument to measure potential difference	<ul style="list-style-type: none"><li>• Define potential difference.</li><li>• State the S.I unit of potential difference.</li><li>• State the role of voltmeter.</li></ul>
<b>Ohm’s Law</b>  Ohm's law states that the current through a conductor between two points is directly proportional to the voltage across the two points.	<ul style="list-style-type: none"><li>• State Ohm’s law.</li><li>• Interpret the relationship between voltage (V), current (I) and resistance (R) in an electrical circuit.</li><li>• Predict the current, voltage, or resistance in a circuit branch.</li></ul>
<b>Electrical Resistance</b>  Definition of resistance Fixed resistor Variable resistor Application of resistors	<ul style="list-style-type: none"><li>• Define resistance.</li><li>• State the S.I unit of resistance.</li><li>• Discuss the relationship between resistance and current.</li><li>• Apply formula to predict the total resistance in a series circuit.</li><li>• Apply formula to predict total resistance in a parallel circuit.</li><li>• Describe the function of fixed resistor.</li><li>• Describe the function of variable resistor.</li><li>• Suggest appropriate applications of variable resistor in daily life.</li></ul>
<b>Fuse and its function</b>  Definition of fuse Role of fuse in safety of an electrical appliance	<ul style="list-style-type: none"><li>• Define fuse.</li><li>• Predict the consequences of not having a fuse in an electrical appliance.</li></ul>
<b>Three main wires in an Electric Plug (*extension)</b>  Role of different types of wires in an electric plug:	<ul style="list-style-type: none"><li>• Name the types of wires in an electric plug.</li><li>• Describe the role of the following wires:<ul style="list-style-type: none"><li>➤ live</li><li>➤ neutral</li></ul></li></ul>

<ul style="list-style-type: none"><li>live</li><li>neutral</li><li>earth wire</li></ul>	<ul style="list-style-type: none"><li>➤ earth wire</li><li>Identify and label the wires present in an electric plug.</li></ul>
<b>Using Electricity Safely</b>  Precautionary measures taken to use electricity safely	<ul style="list-style-type: none"><li>List the important precautionary measures taken in case of any electrical hazard.</li><li>Discuss the importance of using electricity safely.</li></ul>
<p><b>Keywords:</b> electrical energy, conductors, insulators, electrical circuit, series circuit, parallel circuit, ammeter, voltmeter, electric current, ammeter, ampere, battery, cell, voltage (potential difference), resistance, resistors, variable resistor, fixed resistor, Ohm, fuse, live wire, neutral wire, earth wire</p> <p><b>Type of Questions:</b></p> <ul style="list-style-type: none"><li>Multiple choice questions</li><li>Identification and labelling of diagrams</li><li>Structured questions</li><li>Short answer reasoning</li><li>Descriptive questions</li></ul> <p><b>Sample Questions:</b></p> <p>1. Two resistors of resistance <math>10\ \Omega</math> and <math>50\ \Omega</math> are connected in parallel. A cell is connected across the resistors as shown in the figure below.</p> <div data-bbox="667 1239 933 1489"><p>The diagram shows a rectangular circuit. At the top, a cell is represented by two parallel lines of unequal length. Two vertical wires descend from the cell's terminals. These wires connect to two horizontal wires that are parallel to each other. Between these two horizontal wires, two resistors are connected in parallel. The top resistor is labeled '50 Ω' and the bottom resistor is labeled '10 Ω'. The circuit is completed by two vertical wires on the right side that connect the two horizontal wires back to the cell.</p></div> <p>Calculate the total resistance of the circuit.</p> <p>2. What is meant by a series and a parallel circuit? Write at least two differences between them.</p> <p><b>Workbook Activities:</b></p> <ul style="list-style-type: none"><li>Workbook activity 10.2 and 10.4 from International Lower Secondary Science Work Book 2.</li></ul> <p><b>Activities:</b></p> <ul style="list-style-type: none"><li>Students will observe and list the common insulators used in daily life which protect from an electric shock.</li><li>Students will make a simple series electric circuit with switch, bulb and battery.</li><li>Students will make a simple parallel circuit by including a second bulb.</li><li>Students will identify from a variety of circuit diagrams to categorize parallel or series circuits.</li><li>Practice Ohm's law numerical.</li><li>Students will test the role of variable resistor to dim / brighten a bulb.</li><li>Students will study the effect of rheostat across the current in a circuit.</li><li>Students will be given a scenario to suggest precautionary measures to be taken in such electrical shock.</li></ul> <p><b>Laboratory Experiments:</b></p> <ul style="list-style-type: none"><li>To comprehend the arrangement of ammeter in a series circuit.</li></ul>	

**Surf IT:**

- <https://www.youtube.com/watch?v=O8GgRIIB1Yc>
- <https://www.youtube.com/watch?v=aLSnHRJ3JoA>

**April**

<b>Revision for Final Examination</b>
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**May**

<b>Final Examination</b>
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