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BIOLOGY FORM 1 SCHEMES OF WORK – TERM 1

LESSON	TOPIC	SUB - TOPIC	OBJECTIVES	LEARNING/ TEACHING ACTIVITIES	LEARNING/ TEACHING RESOURCES	REFERENCES	REMARKS
1	INTRODUCTION TO BIOLOGY	Definition of Biology	By the end of the lesson, the learner should be able to: 1) Define Biology 2) List the branches of Biology	• Define Biology • Linking biology with the science that students learnt in primary	• Charts on various disciplines	• Comprehensive secondary Biology students Bk. 1 page 1 • Teachers bk. 1 pages 1-4 • KLB secondary Biology • Students book Page 1 • Golden tips Biology Page 1	
2	INTRODUCTION TO BIOLOGY	Importance of Biology Characteristics of organisms	By the end of the lesson, the learner should be able to: 1. Explain the importance of Biology 2. State and explain some of the characteristics of organisms	• Explain the importance of Biology • Naming common Characteristics of organisms.	• Organisms in the school compound • Charts on the characteristics of organisms.	• Comprehensive secondary Biology students Bk. 1 page 1-2 • Teachers bk. 1 pages 1-4 • KLB secondary Biology • Students book Page 1-2 • Golden tips Biology Page 1 • KLB teachers book 1 pages 14-16	
3-4	INTRODUCTION TO BIOLOGY	Characteristics of organisms External features of plants and animals	By the end of the lesson, the learner should be able to: 1. State and explain some of the general characteristics of organisms 2. Explain the	• Discussion on the other general characteristics of organisms • Collecting, observing and recording external	• Organisms in the school compound • Charts on external features of plants and animals	• Comprehensive secondary Biology students Bk. 1 page 2-3 • Teachers bk. 1 pages 1-4 • KLB secondary Biology • Students book	

			external features of plants and animals 3. Write down the difference between plants and animals	features of plants and animals.		Page 2-6 • Golden tips Biology Page 1-2 • KLB teachers book 1 pages 14-16 • Gateway secondary Biology pages 1-3	
1	CLASSIFICATION 1	Definition Use of magnifying lens	By the end of the lesson, the learner should be able to: 1. Define classification 2. Use the magnifying lens to observe the external features of plants/ animals	• Define classification • Drawing of a magnifying lens • Using magnifying lens to observe the external features of plants and animals • Discussion on how to calculate magnification	• Magnifying lens • Different specimen of plants and animals • Rulers with measurement in mm • Chart on external features of plants and animals	• Comprehensive secondary Biology students Bk. 1 page 5 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 8 • Golden tips Biology Page 3-5 • KLB teachers book 1 pages 14-16 • Gateway secondary Biology pages 5-12	
2	CLASSIFICATION 1	Observation of features of organisms Plant leaf forms	By the end of the lesson, the learner should be able to: 1. Record observations of the main external features of plant leaf form 2. Draw different types of leaf forms	• Observing, recording the main external features of the leaf forms of plants	• Different types of leaves • Chart on different types of leaves	• Comprehensive secondary Biology students Bk. 1 page 6-8 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 8-10 • Golden tips Biology Page 4-5	

						• KLB teachers book 1 pages 17-20	
3-4	CLASSIFICATION 1	External features of plants and animals	By the end of the lesson, the learner should be able to: 1. Observe, record and draw the main external features of plants 2. Observe record and draw the main external features of animals	• Observing, recording and drawing the main external features of plants • Observing, recording and drawing the main external features of animals	• Different types of stems and roots • Different types of small animals • Chart on features of plants and animals	• Comprehensive secondary Biology students Bk. 1 page 8-12 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 10-14 • Golden tips Biology Page 3	
1-2	CLASSIFICATION 1	Necessity and significance of classification Major units of classification	By the end of the lesson, the learner should be able to: 1. State the necessity and significance of classification 2. Name the major units of classification 3. Name the five kingdoms of living things	• Discussion on the necessity and significance of classification	• Charts on classification • Charts with the five kingdoms and examples in each case.	• Comprehensive secondary Biology students Bk. 1 page 12-13 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 14-15 • Golden tips Biology Page 6-12 • KLB teachers book 1 pages 17-20 • Gateway secondary Biology pages 5-12	
3-4	CLASSIFICATION 1	Taxonomic units in plants and animal kingdom	By the end of the lesson, the learner should be able to: 1. List the taxonomic units in plant and animal	• Naming taxonomic units in plants and animal kingdoms • Classification	• Charts on Classification of maize and human beings	• Comprehensive secondary Biology students Bk. 1 page 13-14 • Teachers bk. 1 pages 5-10	

			kingdoms 2. Classify maize and human beings	of maize and human beings		• KLB secondary Biology • Students book Page 14 • Golden tips Biology Page 6-12 • KLB teachers book 1 pages 17-20 • Gateway secondary Biology pages 5-12	
1-2	CLASSIFICATION 1	Binomial nomenclature in naming organisms	By the end of the lesson, the learner should be able to: 1. Define Binomial nomenclature 2. State the principles of Binomial nomenclature In naming organisms	• Defining Binomial nomenclature on the principles of Binomial nomenclature • Classification of given organisms using generic and specific names	Charts on Binomial nomenclature	• Comprehensive secondary Biology students Bk. 1 page 14 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 15-16 • Golden tips Biology Page 6 • KLB teachers book 1 pages 17-20 • Gateway secondary Biology pages 5-12	
3-4	CLASSIFICATION 1	Collection of plants and animals	By the end of the lesson, the learner should be able to: 1. Use collecting nets, cutting instructions instruments and hand lens 2. Preserve the collected specimen	• Collecting plants and animals • Preserving Collecting plants and animals collected	• Specimen bottle • Sweep nets • Cotton wool • Forceps • chloroform	• Comprehensive secondary Biology students Bk. 1 page 14-16 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 9	

						• Golden tips Biology Page 6-12	
1-2	CLASSIFICATION 1	Grouping of organisms according to their similarities	By the end of the lesson, the learner should be able to: 1. Observe and group collected and preserved specimen according to their similarities	• Observing and grouping animals according to their similarities • Observing and grouping plants according to their similarities	• Collected and preserved specimen • Hand lens	• Comprehensive secondary Biology students Bk. 1 page 15 • Teachers bk. 1 pages 5-10 • KLB secondary Biology • Students book Page 15-16 • Golden tips Biology Page 7-9 • KLB teachers book 1 pages 17-20	
3-4	THE CELL	Introduction to light microscope	By the end of the lesson, the learner should be able to: 1. Define a cell 2. Draw and label the light microscope	• Description of a cell • Drawing and labeling the light microscope	• Light microscope • Diagram of light microscope	• Comprehensive secondary Biology students Bk. 1 page 17 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 18 • Golden tips Biology Page 15-16 • KLB teachers book 1 pages 23-25	
1-2	THE CELL	Parts of the light microscope and their functions Calculation of magnification using light	By the end of the lesson, the learner should be able to: 1. Identify parts of the light microscope and state their functions 2. Describe how to	• Discussion on parts of a light microscope • Caring for the light microscope • Demonstration on how to	• Light microscope • Chart of light microscope	• Comprehensive secondary Biology students Bk. 1 page 20 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book	

		microscope	care for a light microscope 3. Describe how a light microscope is used.	use the light microscope • Prepared slides		Page 21 • Golden tips Biology Page 17-18 • KLB teachers book 1 pages 23-25	
3-4	THE CELL	Plant and animal cells as seen under a light microscope Calculation of magnification using light microscope	By the end of the lesson, the learner should be able to: 1. Draw and label plant and animal cells as seen under a light microscope 2. Calculate the magnification of objects as seen under a light microscope	• Drawing and labeling of plant and animal cells as seen under a light microscope • Demonstration on how to calculate magnification of objects as seen under a light microscope	• Charts of plants and animal cells as seen under a light microscope • Microscope	• Comprehensive secondary Biology students Bk. 1 page 20 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 18-20 • Golden tips Biology Page 15-17 • KLB teachers book 1 pages 23-25 • Gateway secondary biology pages 26-32	
1-2	THE CELL	Using the light microscope with prepared slides	By the end of the lesson, the learner should be able to: 1. Observe a prepared slide under a light microscope 2. Prepare temporary slide of onion epidermis and observe it under a light microscope	• Permanent slides of animal and plant cells • Light microscope • Microscope slide • Cover slip • scalpel • Distilled water • Iodine solution • Onion bulb • Droppers • Pointed	• Observing prepared slides of plant and animal cells • Preparing and mounting onion epidermal cells	• Comprehensive secondary Biology students Bk. 1 page 33 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 22 • Golden tips Biology Page 16 • KLB teachers book 1 pages 23-25 • Gateway secondary	

				forceps • Glass rod • Mounted needle • Blotting paper		biology pages 26-32 • Longman biology page 31-32	
3-4	THE CELL	Cell structure as seen under the electron microscope	By the end of the lesson, the learner should be able to: 1. Draw and label plant and animal cells as seen under electron microscope	• Drawing and labeling plant and animal cells as seen under an electron microscope	• Diagrams of plant and animal cells as seen under electron microscope	• Comprehensive secondary Biology students Bk. 1 page 19-20 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 23 • Golden tips Biology Page 18 • KLB teachers book 1 pages 23-25 • Gateway secondary biology pages 26-32	
1	THE CELL	Physiology of the cell Cell wall Cell membrane cytoplasm	By the end of the lesson, the learner should be able to: • Describe the structure and function of the cell • Cell wall • Cell membrane • cytoplasm	• discussion on the functions of cell components - cell wall - cell membrane - cytoplasm • drawing and labeling these parts of the cell	• chart on plant and animal cells as seen under electron microscope	• Comprehensive secondary Biology students Bk. 1 page 23-24 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 24-26 • Golden tips Biology Page 18-19 • KLB teachers book 1 pages 23-25	

						• Gateway secondary biology pages 26-32	
2	THE CELL	Cell organelles Estimating the size of a cell	By the end of the lesson, the learner should be able to: • Describe the structure and function of the cell organelles • Estimate the size of a cell as seen in the field of view of a microscope	• discussion on the functions of cell organelles • Drawing and labeling the cell and organelles • Explain how to estimate the size of onion epidermal cells • Estimating the size of onion epidermal cells	• chart on various cell organelles • cover slip • iodine solution • distilled water • scalpel • two droppers • pointed scalpel • mounting needle • filter paper • transparent ruler with mm markings • onion bulb	• Comprehensive secondary Biology students Bk. 1 page 24-33 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 27-28 • Golden tips Biology Page 15-20 • KLB teachers book 1 pages 23-25 • Gateway secondary biology pages 27-32 • Longman biology pages 30-31	
3-4	THE CELL	Comparison between plant and animal cells Cell specialization - Tissues - Organs - Organ systems	By the end of the lesson, the learner should be able to: • Write down the differences between plants and animal cells • Write down similarities between plant and animal cells • List down specialized plant and animal cells • State the	• Distinguishing between plant and animal cells • Naming specialized cells and their functions • Drawing specialized cells • Explaining modification of cells to their	• Table summarizing the differences between plant and animal cells • Charts on similarities between plant and animal cells • Charts on various specialized cells	• Comprehensive secondary Biology students Bk. 1 page 22-32 • Teachers bk. 1 pages 11-19 • KLB secondary Biology • Students book Page 26-31 • Golden tips Biology Page 17-20 • KLB teachers book 1 pages	

			modifications and functions of specialized cells • Define tissues, organs and organ systems • Give examples of tissues organs and organ systems	functions	• Chart on plant and animal tissues	23-25 • Gateway secondary biology pages 26-32 • Longman biology pages 32 • Fly higher series pages 6-7	
REVISION AND EXAMINATION							

BIOLOGY FORM 1 SCHEMES OF WORK – TERM 2							
LESSON	**TOPIC**	**SUB - TOPIC**	**OBJECTIVES**	**LEARNING/ TEACHING ACTIVITIES**	**LEARNING/ TEACHING RESOURCES**	**REFERENCES**	**REMARKS**
1-2	CELL PHSIOLOGY	Cell physiology Properties of the cell membrane	By the end of the lesson, the learner should be able to: • Define the term cell physiology	• Defining the term cell physiology • Describing the structure of the cell membrane	• Charts on the structure of the cell membrane	• Comprehensive secondary Biology students Bk. 1 page 37-38 • Teachers bk. 1	

			• Describe the structure and properties of cell membrane	and its properties		pages 20-30 • KLB secondary Biology • Students book Page 32-33 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 32-36	
2	CELL PHSIOLOGY	Diffusion	By the end of the lesson, the learner should be able to: • Define diffusion	•Defining diffusion •Discussion on diffusion in liquids, gasses and solids	• Charts on distribution of molecules during distribution	• Comprehensive secondary Biology students Bk. 1 page 38 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 33 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 32-36	
3-4	CELL PHSIOLOGY	Diffusion	By the end of the lesson, the learner should be able to: Carry out experiments to demonstrate • diffusion in liquids • diffusion in gasses	•Carrying out experiments on diffusion in liquids and gasses •Discussions of results from experiments	• Beaker • Potassium permanganate crystals • Cold water • Glass tube • Strong smelling perfume	• Comprehensive secondary Biology students Bk. 1 page 38-39 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 33-34 • KLB teachers book 1 pages 28-32	

						• Gateway secondary biology pages 32-36 • Golden tips biology pages 23-24	
1	CELL PHSIOLOGY	Factors affecting Diffusion	By the end of the lesson, the learner should be able to: • Explain the factors affecting diffusion • Explain the role of diffusion in living things	•Discussing the factors affecting diffusion •Discussing the role of diffusion in living things	• Charts on factors affecting diffusion	• Comprehensive secondary Biology students Bk. 1 page 39 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 35-36 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 32-36 • Golden tips biology pages 24 • Longman biology page 36	
2	CELL PHSIOLOGY	Osmosis	By the end of the lesson, the learner should be able to: • Define osmosis • Describe movement of water molecules across semi-permeable membrane	•Defining osmosis •Describing osmosis across a semi - permeable membrane	• Diagram on movement of water molecules across a semi - permeable membrane	• Comprehensive secondary Biology students Bk. 1 page 40 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 36-38 • KLB teachers book 1 pages	

						28-32 • Gateway secondary biology pages 33-36 • Golden tips biology pages 24-25 • Longman biology page 37	
3-4	CELL PHSIOLOGY	Osmosis (practical lesson)	By the end of the lesson, the learner should be able to: • demonstrate osmosis by using a Viking tubing • carry out an experiment on osmosis using Irish potatoes	• carry out an experiment on osmosis using a Viking tubing • carry out an experiment on osmosis using Irish potatoes • Discussion on results of both experiments	• Viking tubing • Thread • Tap water • Sucrose solution • Irish potatoes • Scalpel • Cork borer • Transparent ruler • Distilled water • 20% sucrose solution • Two petri-dishes • Tissue paper	• Comprehensive secondary Biology students Bk. 1 page 46 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 37-39 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 34-36 • Golden tips biology pages 24-25 • High flyer series pages 10-11	
1-2	CELL PHSIOLOGY	Terms used in the study of Osmosis	By the end of the lesson, the learner should be able to: define and describe the terms used in the study of osmosis such as: • Osmotic pressure	• Defining terms used in the study of osmosis • Discussion on the terms used in the study of osmosis	• Charts on turgid cells and plasmolysed cells	• Comprehensive secondary Biology students Bk. 1 page 42 • Teachers bk. 1 pages 20-30 • KLB secondary Biology	

			• Osmotic potential • Isotonic solution • Hypertonic solution • Hypotonic solution • Turgor pressure • Hemolysis • Wall pressure • Plasmolysis • Deplasmolysis			• Students book Page 37-39 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 33-36 • Golden tips biology pages 24-26 • High flyer series pages 37	
3-4	CELL PHSIOLOGY	Osmosis in plant cells	By the end of the lesson, the learner should be able to carry out an experiment on selective permeability of membrane	• carry out an experiment on selective permeability of membranes and movement of water in Irish potatoes	• Scalpel • Ruler • Means of heating • 3 Irish potatoes • 3 petri-dishes • Viking tubing • 20% starch solution • Iodine solution • $50cm^3$ beaker • thread	• Comprehensive secondary Biology students Bk. 1 page 47 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 40-42 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 34-36 • Golden tips biology pages 26 • Longman biology pages 37-38 • High flyer series pages 10	
1	CELL PHSIOLOGY	Factors affecting Osmosis	By the end of the lesson, the learner should be able to	• Discussion on factors affecting	• Charts on factors affecting osmosis and	• Comprehensive secondary Biology	

		Role of osmosis in organisms	• State factors affecting osmosis • Explain the role of osmosis in organisms • Explain the factors affecting osmosis	osmosis • Discussion on the role of osmosis in organisms	role of osmosis in organisms	students Bk. 1 page 40-41 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 43-44 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 33 • Golden tips biology pages 27 • Longman biology pages 37 • High flyer series pages 10	
2	CELL PHSIOLOGY	Water relations in plant cells	By the end of the lesson, the learner should be able to • Describe what happens when a plant cell is placed in a hypertonic, hypotonic or isotonic solution	• Discussion on how plant cells behave in hypertonic, hypotonic or isotonic solutions	• Charts on water movement in and out of plant cells	• Comprehensive secondary Biology students Bk. 1 page 42-43 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 40-42 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 34-36 • Golden tips biology pages 25-26	

	3-4	CELL PHSIOLOGY	Plasmolysis in onion bulb cells	By the end of the lesson, the learner should be able to • Carry out an experiment to show plasmolysis in epidermal cells of an onion bulb	• Carry out an experiment to show plasmolysis in epidermal cells from an onion bulb • Discussion of results of the experiment on movement of water in and out of the cells	• Distilled water • Two microscope slides • Two cover slips • 10% sucrose solution • Forceps • Dropper • Light microscope • Onion bulb • scalpel	• Comprehensive secondary Biology students Bk. 1 page 46 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 42 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 34-36 • Golden tips biology pages 26 • Longman Biology page 37 • High Flyer page 10	
	1	CELL PHSIOLOGY	Water relations in animals	By the end of the lesson, the learner should be able to • Describe osmosis of animal cells in a hypertonic solution	• Discussion on osmosis in animal cells when placed in hypertonic or hypotonic solution	• Charts on cremated animal cell and haemolyzed animal cell	• Comprehensive secondary Biology students Bk. 1 page 44 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 40 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 34-36	

						• Golden tips biology pages 25-26 • Longman Biology page 37	
2	CELL PHSIOLOGY	Active transport	By the end of the lesson, the learner should be able to • List down factors affecting active transport • Define active transport • Define the role of active transport in living things	• Discussion on active transport factors affecting active transport and its role in organisms	• Charts on factors affecting active transport and role of active transport	• Comprehensive secondary Biology students Bk. 1 page 41-42 • Teachers bk. 1 pages 20-30 • KLB secondary Biology • Students book Page 44 • KLB teachers book 1 pages 28-32 • Gateway secondary biology pages 35-36 • Golden tips biology pages 27-28 • Longman Biology page 36 • High flyer series pages 10-11	
3 and 4	NUTRITION IN PLANTS	Meaning importance and types of nutrition External structure of a leaf	By the end of the lesson, the learner should be able to • Define nutrition • Write down the importance of nutrition • List down the modes of feeding in organisms	• Discussion on definition of nutrition, importance and modes of feeding • Drawing and labeling the external structure of a leaf	• Green leaves • Chart on the external structure of a leaf	• Comprehensive secondary Biology students Bk. 1 page 51 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 48-49	

			• Draw and label the external structure of a leaf	• Observing the external parts of a leaf		• KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 46-47 • Golden tips biology pages 31 • Longman Biology page 40	
1	NUTRITION IN PLANTS	internal structure of a leaf	By the end of the lesson, the learner should be able to • Draw and label the internal structure of the leaf	• Drawing and labeling the internal structure of the leaf	• Chart on the internal structure of the leaf	• Comprehensive secondary Biology students Bk. 1 page 51-52 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 50 • KLB teachers book 1 pages 47-48 • Gateway secondary biology pages 46-47 • Golden tips biology pages 32 • Longman Biology page 41	
2	NUTRITION IN PLANTS	Parts of a leaf and their functions	By the end of the lesson, the learner should be able to • Name the parts of a leaf • State the functions of the	• Discussion on the functions of the different parts of a leaf	• Chart on the internal and external structure of the leaf	• Comprehensive secondary Biology students Bk. 1 page 52-53 • Teachers bk. 1 pages 31-44	

			parts of a leaf			• KLB secondary Biology • Students book Page 50-51 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 47-48 • Golden tips biology pages 33 • Longman Biology page 41	
3 and 4	NUTRITION IN PLANTS	photosynthesis	By the end of the lesson, the learner should be able to • Define photosynthesis • Draw and label the chloroplast • Describe the process of photosynthesis	Discussion on photosynthesis , the structure of the chloroplasts and the stages involved in photosynthesis	• Chart on the stages of photosynthesis	• Comprehensive secondary Biology students Bk. 1 page 54-55 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 53-54 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 48-49 • Golden tips biology pages 33-34	
1-2	NUTRITION IN PLANTS	Importance of photosynthesis and factors affecting photosynthesis	By the end of the lesson, the learner should be able to • List down the importance of photosynthesis	• Discussion on the importance of photosynthesis • Discussion	• Chart on the factors influencing photosynthesis	• Comprehensive secondary Biology students Bk. 1 page 55-56 • Teachers bk. 1	

			• Explain some of the factors influencing photosynthesis	factors influencing photosynthesis		pages 31-44 • KLB secondary Biology • Students book Page 55-59	
3-4	NUTRITION IN PLANTS	Factors affecting photosynthesis (continued)	By the end of the lesson, the learner should be able to • Explain the factors affecting photosynthesis	• Discussion on factors influencing photosynthesis	• Variegated leaves • Charts on factors influencing photosynthesis	• Comprehensive secondary Biology students Bk. 1 page 56-57 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 55-59 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 48-49 • Golden tips biology pages 34	
1-2	NUTRITION IN PLANTS	Adaptation of the leaf to photosynthesis	By the end of the lesson, the learner should be able to • Explain how the leaf is adapted to the process of photosynthesis	• Discussion on adaptations of the leaf to photosynthesis	• Green leaves • Chart showing internal structure of a leaf	• Comprehensive secondary Biology students Bk. 1 page 52-53 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 51-52 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 47	

						• Golden tips biology pages 32-33	
3-4	NUTRITION IN PLANTS	Factors influencing photosynthesis (practical lessons)	By the end of the lesson, the learner should be able to • Test the presence of starch in a green leaf • Investigate whether chlorophyll is necessary for photosynthesis • Investigate whether light is necessary for photosynthesis	• Carrying out experiments on • -presence of starch in a leaf • -factors influencing photosynthesis in plants	• Green leaves • Boiling tube • Means of heating • Methylated spirit • Iodine solution • Dropper • White tile • Pair of forceps • Variegated leaf • Aluminum foil on carbon paper	• Comprehensive secondary Biology students Bk. 1 page 64-66 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 55-59 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 48-49 • Golden tips biology pages 35-36 • Longman biology 42	
1-2	NUTRITION IN PLANTS	Factors influencing photosynthesis (practical lessons)	By the end of the lesson, the learner should be able to carry out an experiment to investigate whether • Carbon (IV) oxide is necessary for photosynthesis • Oxygen is produced during photosynthesis	• carry out an experiment to investigate whether Carbon (IV) oxide is necessary for photosynthesis and whether Oxygen is produced during photosynthesis	• Potted plant • Heat source • Boiling tubes • Two conical flasks • Potassium hydroxide • Materials for testing for starch in a leaf • Test tubes • 500cm^3 beaker • Funnel • Pod weed • Sodium hydrogen Carbonate Wooden splint	• Comprehensive secondary Biology students Bk. 1 page 66-67 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 15-59 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 48-49	

					• leaf	• Golden tips biology pages 35-36 • Longman biology 42	
3	CONTINUOUS ASSESMENT TEST	Work covered since previous test	By the end of the lesson, the learner should be able • To answer the questions asked	• Learner to answer the given questions • Teacher to supervise test	• Question paper • Marking scheme	• Work covered since previous test	
4	NUTRITION IN PLANTS	Chemicals of life carbohydrates	By the end of the lesson, the learner should be able to • Define Chemicals of life • List down types of carbohydrates • Write down properties and functions of monosaccharaides	• Defining Chemicals of life • Discussion on 1. Types of chemicals of life 2. Types of carbohydrates 3. Properties of monosaccharaides	• Samples of sources of carbohydrates, proteins, lipids and glucose	• Comprehensive secondary Biology students Bk. 1 page 57-58 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 59-60 • KLB teachers book 1 pages 37-55 • Gateway secondary biology pages 49-50	
1	NUTRITION IN PLANTS	disaccharides	By the end of the lesson, the learner should be able to • Define disaccharides • List properties and functions of disaccharides • Define hydrolysis and condensation	• Defining disaccharides • Discussion on properties and functions of disaccharides	• Charts on condensation and hydrolysis of disaccharides	• Comprehensive secondary Biology students Bk. 1 page 58 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 60-61 • KLB teachers book 1 pages	

						37-55 • Gateway secondary biology page 50	
2	NUTRITION IN PLANTS	Polysaccharides lipids	By the end of the lesson, the learner should be able to • Define polysaccharides and lipids • Write down the properties of polysaccharides and lipids	• Defining polysaccharides and lipids • Discussion on properties and functions of polysaccharides and lipids	• Charts on properties of polysaccharides • Charts on properties of lipids	• Comprehensive secondary Biology students Bk. 1 page 58-61 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 61-64 • KLB teachers book 1 pages 37-55 • Gateway secondary biology page 50-52 • Golden tips biology pages 37-40	
3-4	NUTRITION IN PLANTS	Food tests	By the end of the lesson, the learner should be able to carry out tests on • Starch • Reducing sugars • Non-reducing sugar • Lipids • Proteins • Vitamin c	• Demonstration of experiments on food tests • Carry out experiments on food tests • Discussion on results obtained from experiments	• Food test reagents and apparatus • Benedicts solution • Dilute HCL • 0.5% copper sulphate • 10% sodium hydroxide • DCPIP • Iodine solution	• Comprehensive secondary Biology students Bk. 1 page 67-68 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 61-64 • KLB teachers book 1 pages 37-55 • Gateway secondary biology page 51-52	

						• Golden tips biology pages 39-40 • Longman biology page 43	
1	NUTRITION IN PLANTS	proteins	By the end of the lesson, the learner should be able to • Write down the properties and functions of proteins • Distinguish between carbohydrates, proteins and lipids	• Discussion on functions of proteins • Distinguishing between carbohydrates, proteins and lipids	• Charts on the properties of proteins • Charts on a comparison between carbohydrates, proteins and lipids	• Comprehensive secondary Biology students Bk. 1 page 60-61 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 65-67 • KLB teachers book 1 pages 37-55 • Gateway secondary biology page 50-51 • Golden tips biology pages 38-39 • Longman biology page 43	
2	NUTRITION IN PLANTS	enzymes	By the end of the lesson, the learner should be able to • Define enzymes • Write down the properties and functions of enzymes • Know the naming of the enzymes and their substrates • Explain the	• Discussion on properties and functions of enzymes	• Charts on the properties enzymes	• Comprehensive secondary Biology students Bk. 1 page 62-64 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 67-69 • KLB teachers book 1 pages 37-55	

			importance of enzymes			• Gateway secondary biology page 52-53 • Golden tips biology pages 42	
3-4	NUTRITION IN PLANTS	Factors affecting enzymes	By the end of the lesson, the learner should be able to carry out an experiment on • Effect of temperature on enzymes • Effects of enzyme concentration on the rate of a reaction • Effect of PH on enzyme activities	• Carrying out an experiment on factors affecting enzymes	• Materials and apparatus for various experiments • Soaked beans • Hydrogen peroxide • Test tube (5) • Test tube rack • Water bath • Thermometer • Measuring cylinder • Watch • 10% starch solution • 0.1% and o.2% diastase • White tiles • Egg albumens • Distilled water • 2m HCL • 2m sodium hydrogen carbonate	• Comprehensive secondary Biology students Bk. 1 page 68-69 • Teachers bk. 1 pages 31-44 • KLB secondary Biology • Students book Page 67-69 • KLB teachers book 1 pages 37-55 • Gateway secondary biology page 53-55 • Golden tips biology pages 40-41 • Longman biology pages 43-44 • High flyer series pages 15-16	
REVISION AND END OF TERM EXAMS							

BIOLOGY FORM 1 SCHEMES OF WORK – TERM 3							
LESSON	**TOPIC**	**SUB - TOPIC**	**OBJECTIVES**	**LEARNING/ TEACHING ACTIVITIES**	**LEARNING/ TEACHING RESOURCES**	**REFERENCES**	**REMARKS**
1	NUTRITION IN ANIMALS	Definition of heterotrophism Modes of heterotrophic nutrition	By the end of the lesson, the learner should be able to • Define hetetrophism • List down the different modes of heterotrophism and describe them	• Defining the term heterotrophism • Discussion on modes of heterotrophism	• Chart on modes of heterotrophism	• Comprehensive secondary Biology students Bk. 1 page 73 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 72 • KLB teachers book 1 pages 37-55 • Gateway secondary biology page	
2	NUTRITION IN ANIMALS	Dentition Types of teeth	By the end of the lesson, the learner should be able to • Define dentition • Draw and label different types of teeth • Describe the structure of a tooth	• Defining the term dentition • Identifying and drawing different types of teeth	• Different types of teeth • Chart on different types of teeth	• Comprehensive secondary Biology students Bk. 1 page 74 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 73-76	

						• KLB teachers book 1 pages 37-55	
3-4	NUTRITION IN ANIMALS	Adaptations of teeth to their functions	By the end of the lesson, the learner should be able to: 1. Identify different types of teeth 2. Describe the adaptations of the teeth to their functions	• Discussions on the adaptations of teeth to their functions	• Different types of teeth • Chart on different types of teeth	• Comprehensive secondary Biology students Bk. 1 page 75 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 75 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 56-58 • Gold tips biology page 43	
1	NUTRITION IN ANIMALS	Dental formulae	By the end of the lesson, the learner should be able to: • Define dental formulae • Describe and write down the dental formulae of herbivore carnivore and omnivore	• Defining the term dental formulae • Discussion on the dental formulae of herbivores, carnivores, omnivores	• Jaws of herbivore and carnivore • Model of human skeleton with teeth on the jaws (artificial teeth) • Chart on various dental formulae	• Comprehensive secondary Biology students Bk. 1 page 75-77 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 73-75 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 56-58 • Gold tips biology page 43-44	
2	NUTRITION	Dental	By the end of the	• Discussion on	• Jaws of	• Comprehensive	

	IN ANIMALS	adaptations of herbivores, carnivores, omnivores	lesson, the learner should be able to: • Write down the definition of herbivores, carnivores and omnivores • Explain the adaptations of dental formulae in various groups of animals, to their mode of feeding	dental adaptation of herbivores and omnivores	• herbivore and carnivore • Model of human skeleton with teeth on the jaws (artificial teeth)	• secondary Biology students Bk. 1 page 77 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 73-75 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 56-58 • Gold tips biology page 42-43	
3-4	NUTRITION IN ANIMALS	Internal structure of different types of teeth Functions of the internal structure of a tooth Common dental diseases	By the end of the lesson, the learner should be able to: • Draw and label the internal structure of different types of teeth • Write down the functions of the different parts of the internal structure of teeth • Name and discuss common dental diseases	• Drawing of internal structure of different types of teeth • Discussion on the functions of various parts of the teeth • Discussion on common dental diseases	• Jaws of herbivores and carnivores • Model of human skeleton with teeth on the jaws (artificial teeth) • Chart on teeth with some dental diseases	• Comprehensive secondary Biology students Bk. 1 page 77-78 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 75-76 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 56-57 • Gold tips biology page 44 • Longman biology page 46	
1	NUTRITION IN ANIMALS	Adaptation to the modes of feeding in	By the end of the lesson, the learner should be able to:	• Discussion on adaptation of herbivores to	• Chart on the jaws of herbivores	• Comprehensive secondary Biology students	

		herbivores	• Write down the adaptations of herbivores to their mode of feeding	their modes of feeding	• Chart on the molars from the jaws of a herbivore • Jaws of a herbivore	Bk. 1 page 76 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 73-74 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 55-56 • Gold tips biology page 43 • Longman biology page 45	
2	NUTRITION IN ANIMALS	carnivores	By the end of the lesson, the learner should be able to: • Write down the adaptations of carnivores to their modes of feeding	• Discussion on adaptation of carnivores to their modes of feeding	• Chart on the jaws of a carnivores animal • Chart on the different teeth from the jaws of a carnivore • Jaws of a carnivore	• Comprehensive secondary Biology students Bk. 1 page 77 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 74 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 56 • Gold tips biology page 43 • Longman biology page 45	
3-4	NUTRITION IN ANIMALS	Digestive system of a rabbit	By the end of the lesson, the learner should be able to: • Identify various organs	• Dissecting a rabbit assisted by a few students (students to	• Live rabbit • Gloves • Chloroform • Dissection kit • Cotton wool	• Comprehensive secondary Biology students Bk. 1 page 90-91	

			associated with the digestive system of a rabbit	wear gloves)	• Dissecting board	• Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 85-86 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 58-59 • Gold tips biology page • Longman biology page	
1	NUTRITION IN ANIMALS	Human Digestive system	By the end of the lesson, the learner should be able to: • Draw and label parts of the human digestive system	• Drawing and labeling the human digestive system • Discussion on the parts of the human digestive system	• Chart on the human digestive system	• Comprehensive secondary Biology students Bk. 1 page 79 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 78-82 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages • Gold tips biology page • Longman biology page	
2	CONTINOUS ASSESSMENT TEST	Topic covered so far	By the end of the lesson, the learner should be able to: • Answer all the questions asked	• Learners to answer all the questions asked • Teacher to supervise the students while	• Question paper • Marking scheme	• Comprehensive secondary Biology students Bk. 1 page 73-80 • Teachers bk. 1 pages 45-55	

				they do the test		• Gateway secondary Biology pages 64-83	
3-4	NUTRITION IN ANIMALS	Human Digestive system	By the end of the lesson, the learner should be able to: • Describe the regions of the alimentary canal of human digestive system • Explain the functions of the human digestive system	• Discussion on various regions of the human alimentary canal • Discussion on some of the human digestive system	• Chart on the human digestive system	• Comprehensive secondary Biology students Bk. 1 page 80-81 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 78-82 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 58-60 • Gold tips biology page 45-47 • Longman biology page	
1	NUTRITION IN ANIMALS	Human Digestive system	By the end of the lesson, the learner should be able to: • Describe the various regions of the human alimentary canal and their functions	• Discussion on other parts of the human alimentary canal	• Chart on the human digestive system	• Comprehensive secondary Biology students Bk. 1 page 81 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 78-82 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 58-60	

						• Gold tips biology page 45-47 • Longman biology page	
2	NUTRITION IN ANIMALS	Adaptation of the Ileum to its functions	By the end of the lesson, the learner should be able to: • Describe how the ileum is adapted to its function	• Discussion on how the ileum is adapted to its functions • Drawing of the intestinal villi	• Chart on the intestinal villi	• Comprehensive secondary Biology students Bk. 1 page 83 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 83-84 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 61 • Gold tips biology page • Longman biology page	
3-4	NUTRITION IN ANIMALS	Food content in alimentary canal of a herbivore Breakdown of starch by diastase enzyme	By the end of the lesson, the learner should be able to: • Analyze the food content in the alimentary canal of a herbivore • Carry out an experiment on the breakdown of starch by diastase enzymes	• Dissecting a rabbit to obtain food content from the ileum • Carry out analysis on food content of the ileum	• Dead rabbit/rat • Dissecting board and kit • Cotton wool • Benedicts solution • Dilute HCL • Sodium hydrogen carbonate • 1% diastase enzyme • Starch, test tube • Iodine solution • Means of	• Comprehensive secondary Biology students Bk. 1 page 90-91 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 85-86 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 49-50	

					heating • Test tube holder • Dropper • Measuring cylinder • Water bath • White tile • Boiled diastase	• Gold tips biology page 40-42 • Longman KCSE revision 48 • Longman biology page 47- 48 • High flyer series pages 14-15	
1-2	NUTRITION IN ANIMALS	More adaptation of ileum to its function	By the end of the lesson, the learner should be able to: • Describe how the ileum is farther adapted to its functions	• Discussion on further adaptation of ileum to its function	• Chart on intestinal villi	• Comprehensive secondary Biology students Bk. 1 page 82 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 81-82 • Gateway secondary Biology pages 61	
3-4	NUTRITION IN ANIMALS	Products of digestion Food assimilation	By the end of the lesson, the learner should be able to: • Explain the end products of the digestion of various food • Explain the function of the colon • Explain the process of assimilation of food substances	• Discussion on the products of digestion and assimilation of food • Discussion on the functions of colon	• Chart on the products of digestion	• Comprehensive secondary Biology students Bk. 1 page 82 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 84 • Golden tips biology page 49 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 61-62	
1-	NUTRITION	Chemical	By the end of the	• Discussion on	• Chart	• Comprehensive	

2	IN ANIMALS	digestion in alimentary canal	lesson, the learner should be able to: • Write down the summary of chemical digestion in alimentary canal	chemical digestion In alimentary canal	showing summary of chemical digestion in alimentary canal	secondary Biology students Bk. 1 page 82-83 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 80-81 • KLB teachers book 1 pages 37-55 • Golden tips biology page 48	
3-4	NUTRITION IN ANIMALS	Importance of vitamins in human nutrition	By the end of the lesson, the learner should be able to: • Write down the importance of vitamins in human nutrition • Write down the sources of vitamins • State deficiency diseases of various vitamins	• Discussion on the importance of vitamins, their sources and deficiency diseases • Test for vitamin C	• Materials and procedure required	• Comprehensive secondary Biology students Bk. 1 page 83-92 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 85-86 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 61-62 • Golden tips biology page 49	
1-2	NUTRITION IN ANIMALS	Continuous assessment test	By the end of the lesson, the learner should be able to • Answer the questions	• Learner to answer the questions asked • Teacher to supervise the students as they do the test	• Question papers • Marking schemes	• Comprehensive secondary Biology students Bk. 1 page 73-86 • Teachers bk. 1 pages 45-55 • KLB secondary Biology	

						• Students book Page 89-92 • KLB teachers book 1 pages 52-55	
3-4	NUTRITION IN ANIMALS	Importance of mineral salts in human nutrition, their sources and deficiency diseases	By the end of the lesson, the learner should be able to: • Write down the importance of mineral salts in human nutrition • State the source of mineral salts • State the deficiency diseases of mineral salts	• Discussion on importance of mineral salts in humans, their sources and deficiency diseases	• Chart showing mineral salts, their sources and deficiency diseases	• Comprehensive secondary Biology students Bk. 1 page 84 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 86-87 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 63	
1-2	NUTRITION IN ANIMALS	Role of water and roughage in nutrition	By the end of the lesson, the learner should be able to: • Write down the role of roughage in nutrition • Write down the role of water in nutrition	• Discussion on the role of water and roughage in nutrition	• Sample of sources of roughage	• Comprehensive secondary Biology students Bk. 1 page 86-87 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 84 • KLB teachers book 1 pages 37-55 • Gateway secondary Biology pages 61	
3-4	NUTRITION IN ANIMALS	Factors determining energy requirements	By the end of the lesson, the learner should be able to • Discuss factors	• Discussion on the factors determining energy	• Chart showing factors that determine	• Comprehensive secondary Biology students Bk. 1 page 87-	

		in humans	which determine energy requirements in human beings	requirements in human beings	energy requirements in human beings	88 • Teachers bk. 1 pages 45-55 • KLB secondary Biology • Students book Page 88-89 • KLB teachers book 1 pages 37-55	
1-4	NUTRITION IN ANIMALS	Factors determining energy requirements in human beings (group activity)	By the end of the lesson, the learner should be able to • Participate in group discussions and present findings on factors that determine energy requirements in human beings	• Group discussions coordinated by the teacher • Group presentations by preventatives members	• Research material obtained by students	• Comprehensive secondary Biology students Bk. 1 page 87-88 • Teachers bk. 1 pages 48-55 • KLB secondary Biology • Students book Page 88-89 • KLB teachers book 1 pages 37-55 Gateway secondary Biology pages 63-64	
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