

SCHEME OF WORK FORM TWO BIOLOGY TERM ONE 2011

2	1	Structure and functions of the stem.	To describe structural organization of stems. To state primary functions of the stem.	Observing permanent stem slides under a microscope. Detailed discussion.		K.L.B. BOOK 2 Page 5			
WK NO	L/ NO	TOPIC/ SUBTOPIC	LESSON / SPECIFIC OBJECTIVES	TEACHING / LEARNING ACTIVITIES	MATERIALS / RESOURCES	REFERENCES		REMARKS	
12	1	TRANSPORT IN PLANTS AND ANIMALS Introduction.	To draw and label transverse sections of stems. Define transport.	Drawing and labeling transverse sections of stems. Q/A and discussion; Discuss transport in simple	Wall charts - Internal structure of the stem.	K.L.B. BOOK 2 Pages 5- 7 K.L.B. BOOK 2 Page 1			
3,4		Transport in plants Absorption of water and mineral salts. Transport in simple plants.	To explain processes through which water and mineral salts move through the plants. Describe transport in simple plants.	Discussion and plants e.g. <i>Impatiens</i> and <i>Impatiens</i> .	Wall charts - Root hairs.	K.L.B. BOOK 2 Pages 7 - 9			
3	1	2 Significance and types of the root. Transpiration.	To explain structure of transpiration. To state and explain types of transpiration. State primary functions of roots.	Probing questions. Discussion - to examine a piece of a taproot. Explanation. Drawing and labeling diagram of the taproot. Discussion of adaptation of the root hairs to their functions.	Wall charts - Taproot, Internal pea seedlings. Petri-dish Razor blade.	K.L.B. BOOK 2 Pages 9-10, 12-2			
	2	Factors affecting rate of transpiration.	To state and explain factors affecting transpiration.	Q/A: the root hairs to their functions. Explanation.		K.L.B. BOOK 2 Pages 12- 14			
3,	3,4	The Xylem tissue in the root.	To describe the internal structure of xylem in a root to state its functions.	Q/A: Drawing and labeling diagrams of sections of the xylem and root hairs for transport. Explanation. Drawing diagrams of monocotyledonous and dicotyledonous roots. Discuss functions of the labeled parts.	Wall charts - Permanent slides of xylem tissue. microscope, wallchart.	K.L.B. BOOK 2 Pages 10, 12-4			
4		Forces involved in transport of water and mineral salts.	To explain the forces involved in transport of water and mineral salts.						

4	1	Rates of transpiration on leaf surfaces.	To describe simple experiments to show rates of transpiration on leaf surfaces.	Class experiments: Transpiration on both sides of a broad leaf. Making observations on colour changes of cobalt II Chloride paper.	Cobalt II Chloride paper Forceps. Potometer.	<i>K.L.B. BOOK 2 Pages 14 - 16</i>	
	2	Rates of transpiration on leaf surfaces.	To describe simple experiments to show rates of transpiration on leaf surfaces.	Discuss above observations. Draw graphs to show rates of transpiration on leaf surfaces. Answer questions.		<i>K.L.B. BOOK 2 Page 18</i>	
	3,4	Translocation of organic compounds.	To define translocation. To describe the structure of phloem tissue.	Q/A: To review photosynthesis. Discussion and explanations of structure of phloem tissue. Drawing and labeling phloem tissue.	Chart - phloem tissue.	<i>K.L.B. BOOK 2 Page 17</i>	
5	1	Transport in Animals.				<i>K.L.B. BOOK 2 Pages 18 - 19</i>	
	2	Open and closed circulatory systems. Open circulatory system in insects.	To differentiate between open and closed circulatory systems. To discuss open circulatory system in insects.	Exposition and discussion. Drawing and labeling diagrams.	Charts- Circulatory systems.		

	3,4	Single and double circulatory systems.	To differentiate between single and double circulatory systems.	Exposition and discussion. Tracing the path followed by blood from a point and back to the same point.	Chart- Mammalian double circulation system.	<i>K.L.B. BOOK 2 Pages 18-20</i>		
6	1	The mammalian heart – external structure.	To describe the external structure of the heart.	Exposition; Identifying compartments of the heart.	Model of a heart.	<i>K.L.B. BOOK 2 Pages 21 - 22</i>		
	2	Internal structure of mammalian heart.	Draw compartments of the heart and label major parts.	Drawing and labeling a diagram of a mammalian heart.	Model of a heart, wallcharts.	<i>K.L.B. BOOK 2 Pages 22 -23</i>		
	3,4	Pumping mechanism of the heart.	To differentiate between systolic and diastolic heart movements.	Discussion and Explanations. Experiment- To investigate pulse rate at the wrist.	Stopwatches.	<i>K.L.B. BOOK 2 Pages 23 - 24</i>		
7	1	Pulse rate.	Explain the origin of pulse. Explain effect of exercise on pulse rate.	Record number of pulses before and after an exercise. Brief discussion.	Stopwatches.	<i>K.L.B. BOOK 2 Pages 30 - 31</i>		
	2	Structure of arteries.	To describe the structure of arteries.	Discussion Drawing and labeling internal structure of an artery.	Chart- cross-section of an artery. Chart- circulatory system.	<i>K.L.B. BOOK 2 Page 25</i>		
	3	Major arteries.	To identify major arteries in the circulatory system.					
	4	C.A.T.						

8	1	Veins.	To describe the structure of veins. To explain the need for valves in veins. To state differences between veins and arteries.	Drawing and labeling diagram of an artery. Discussion and explanations.	Chart-cross-sections of major blood vessels in the body.	<i>K.L.B. BOOK 2 Pages 27-29</i>	
	2	Capillaries.	To describe the structure of capillaries. To explain the role of capillaries in transport	Discussion and explanations.		<i>K.L.B. BOOK 2 Pages 25-26</i>	
	3,4	Diseases and defects of the circulatory system.	To discuss various diseases and defects of the circulatory system.	Discussion of various diseases and defects of the circulatory system. Suggest methods of prevention and control.		<i>K.L.B. BOOK 2 Pages 31 - 32</i>	
9	1	Composition of blood.	To state the constituents of blood plasma.	Detailed discussion and explanations.		<i>K.L.B. BOOK 2 Pages 32 - 33</i>	
	2	The plasma.	To identify functions of plasma.				
	3,4	Red blood cells.	To state the functions of red blood cells. To explain the functions of haemoglobin in r.b.c.	Detailed discussion and explanations.	Wall charts.	<i>K.L.B. BOOK 2 Pages 33 - 34</i>	

10	1	White blood cells.	To describe the structure of white blood cells. To state functions of white blood cells.	Detailed discussion and explanations.		<i>K.L.B. BOOK 2 Pages 34 - 35</i>	
	2	Platelets.	To describe the structure of platelets. To state functions of platelets.	Detailed discussion and explanations.		<i>K.L.B. BOOK 2 Page 35</i>	
	3,4	Blood clotting.	To describe the blood clotting process. To explain importance of blood clotting.	Exposition of new concepts. Detailed discussion.	Blood smear, microscope.	<i>K.L.B. BOOK 2 Page 36</i>	
11	1, 2	Blood groups, Antigens and antibodies.	To identify the four blood groups. To identify compatible blood groups.	Completing a table of blood groups and the corresponding antigens and antibodies present.	Chart- blood groups, antigens and antibodies.	<i>K.L.B. BOOK 2 Pages</i>	
	3,4	Blood transfusion.	To define blood transfusion. To identify compatible blood groups. To identify the universal donor and universal recipient.	Q/A: Identifying compatible blood groups. Open discussion. Completing a table of compatible blood groups.	<i>Blood transfusion resource person.</i>	<i>K.L.B. BOOK 2 Pages 30 - 31</i>	
12, 13		END OF TERM ONE EXAMINATIONS					

SCHEME OF WORK FORM TWO BIOLOGY TERM TWO 2011

WK NO	L/ NO	TOPIC/ SUBTOPIC	LESSON / SPECIFIC OBJECTIVES	TEACHING / LEARNING ACTIVITIES	MATERIALS / RESOURCES	REFERENCES	REMARKS
1	1	The Rhesus factor.	To describe the Rhesus factor and its significance.	Review blood groups, antigens and antibodies. Exposition, discussion and explanations.		<i>K.L.B. BOOK 2 Page 38</i>	
	2	Lymph.	To describe formation and functions of lymph.	Exposition, discussion and explanations.	Chart- the lymphatic system.	<i>K.L.B. BOOK 2 Pages 38 - 40</i>	
	3,4	Immune responses.	To differentiate between natural and acquired immunity. To explain the role of vaccines in immune responses.	Detailed explanations and open discussion. To explain the role of vaccination / immunization. Open discussion on HIV / AIDS.	Chart- Diseases that children are immunized against; Resource person.	<i>K.L.B. BOOK 2 Pages 40 - 41</i>	
2	1	Allergic reactions.	To define an allergic reaction. To identify ways in which allergy presents itself. To explain cause of allergic reactions.	Q/A: Manifestations of allergy. Exposition and brief explanations.		<i>K.L.B. BOOK 2 Page 43</i>	

	2	Organ transplant.	To identify organs that are normally transplanted.	Q/A: Organs transplanted. Superficial discussion. Topic review.		<i>K.L.B. BOOK 2 Page 43</i>	
	3,4	GASEOUS EXCHANGE Introduction. Gaseous exchange in plants.	To explain importance of gaseous exchange. To describe gaseous exchange in plants.	Discussion Explanations Q/A: Products of respiration. Detailed discussion.		<i>K.L.B. BOOK 2 P. 48</i>	
3	1,2	Release of CO ₂ by plants.	To describe an experiment to show release of CO ₂ by plants.	Class experiments including control experiments. Explain the observations made.	Bicarbonate indicator, boiling tubes, Aluminum foil.	<i>K.L.B. BOOK 2 P. 49</i>	
	3,4	Release of O ₂ by plants.	To describe an experiment to show release of O ₂ by plants.	Teacher demonstration: Test for the gas evolved. Discuss observations.	Gas jar, Glass funnel, Water plant, Beaker.	<i>K.L.B. BOOK 2 P. 49</i>	
4	1	Stomata.	To describe the structure and explain the functions of stomata.	Detailed discussion. Drawing diagrams.		<i>K.L.B. BOOK 2 P. 51</i>	
	2	Opening & closing of stomata.	To describe and explain the mechanism of opening & closing of stomata.	Detailed discussion.		<i>K.L.B. BOOK 2 P. 51</i>	

	3,4	Stomata and habitats of plants.	To relate plant habitats and the no. of stomata. To explain the variation between number of stomata on the upper and lower face.	Observe number of stomata of prepared slides of hydrophytes and xerophytes. Discuss the observations.	Prepared slides of hydrophytes and xerophytes.	<i>K.L.B. BOOK 2</i> P. 51	
5	1	Lenticels.	To describe and explain the mechanism of lenticels.	Detailed discussion.		<i>K.L.B. BOOK 2</i> P. 52	
	2	Respiratory surfaces in animals.	To define a respiratory surface. To state characteristics of respiratory surfaces. To identify the environment or medium of operation of respiratory surfaces.	Teacher exposes meaning of a respiratory surface. Discuss at length, giving examples of organisms that have a given respiratory surface.		<i>K.L.B. BOOK 2</i> P. 53	
	3,4	Gaseous exchange in protozoa.	To describe the mechanism of gaseous exchange in an amoeba.	Q/A: Review diffusion, structure of an amoeba. Discuss briefly gaseous exchange in and out of amoeba.		<i>K.L.B. BOOK 2</i> P. 53	
6	1,2	Gaseous exchange in insects.	To describe the mechanism of gaseous exchange in insects	Drawing tracheal system of a grasshopper. Discuss at length the structure of the tracheal system. Detailed discussion.		<i>K.L.B. BOOK 2</i> PP. 53, 54	

	3,4	Breathing in insects.	To describe the breathing mechanism in an insect.	Observe breathing movements of live specimens of grasshoppers, locusts or cockroaches.	Live specimens of insects, Hand lenses, Boiling tubes.	<i>K.L.B. BOOK 2</i> P. 56	
7	1	Number, position and shape of spiracles of insects.	To give an account of the number, position and shape of spiracles of insects.	Observing and counting spiracles on the abdomen of an insect.	Live specimens of insects, Hand lenses, Boiling tubes.	<i>K.L.B. BOOK 2</i> P. 56	
	2	Number, position and shape of spiracles of insects.	To give an account of the number, position and shape of spiracles of insects.	Drawing the abdomen and showing the position and shape of spiracles, and giving reasons thereof.	Live specimens of insects.	<i>K.L.B. BOOK 2</i> P. 56	
	3,4	Gaseous exchange in a bony fish.	To describe the structure of gills of a bony fish. To explain how a gill is adapted to function as a respiratory surface. To explain the mechanism of gaseous exchange in gills.	Drawing and labeling a gill of a fish; stating the function of each part; and stating how it is adapted to its functions. Detailed discussion.	A gill of a fish.	<i>K.L.B. BOOK 2</i> PP. 56-57	
8	1,2	C.A.T. & MID TERM BREAK					
	3,4	Gaseous exchange in amphibians.	To explain the mechanism of gaseous exchange in a frog.	Q/A: Various methods of gaseous exchange in a frog. Discuss gaseous exchange through the mouth, lungs and skin of a frog.		<i>K.L.B. BOOK 2</i> P. 58	

9	1,2	Gaseous exchange in mammals.	To list down parts of the tracheal system in man. To describe the function of the parts of a system respiratory.	Discuss at length man's respiratory system.	Wall chart-Respiratory system in man.	<i>K.L.B. BOOK 2</i> P. 59	
	3,4	The structure of the lungs.	To explain adaptations of the lungs to their functions.	Drawing labeled diagrams coupled with explanations.	Wall charts-Structure of lungs.	<i>K.L.B. BOOK 2</i> P. 60-1	
10	1	Inhalation.	To describe the process of inhalation in man.	Showing movements of ribs during inhalation. Explain the inhalation mechanism.	Chart / model of a rib cage.	<i>K.L.B. BOOK 2</i> PP. 61-62	
	2	Exhalation.	To describe the process of exhalation in man.	Showing movements of ribs during exhalation. Explain the exhalation mechanism.	Chart / model of a rib cage.	<i>K.L.B. BOOK 2</i> PP. 61-62	
	3,4	Thoracic cavity model.	To identify similarities between a model thoracic cavity and an actual thoracic cavity.	Teacher presents a model thoracic cavity. Q/A: Comparing parts of the model cavity and the actual rib cage.	Thoracic cavity model.	<i>K.L.B. BOOK 2</i> PP. 61-63	
11	1	Gaseous exchange in an alveolus.	To describe gaseous exchange in an alveolus. To explain regulation of breathing in man.	Discussion and explanations.		<i>K.L.B. BOOK 2</i> P. 64	

	2	Rate of breathing in man.	To state and explain briefly factors affecting the rate of inhalation / exhalation processes.	Discussion and explanations.		<i>K.L.B. BOOK 2</i> P. 63	
	3,4	Intercostal muscles.	To explain the function of intercostal muscles during the breathing system.	Detailed discussion. Counting number of inhalations before and after an exercise blow.	Lime water, rib cage model.	<i>K.L.B. BOOK 2</i> P. 66	
12	1,2	Inhaled and exhaled air.	To test for CO ₂ in the air we inhale/ exhale.	Observe colour changes of lime water, and make deductions. Brief discussion.	Lime water.	<i>K.L.B. BOOK 2</i> P. 67	
	3,4	Diseases of the respiratory system.	To state the causes, symptoms and prevention of respiratory diseases.	Discuss cause, symptoms and prevention of whooping cough TB, bronchitis, etc.	<i>Resource person.</i>	<i>K.L.B. BOOK 2</i> PP. 67-70	
13, 14		<i>END OF TERM TWO EXAMINATIONS</i>					

SCHEME OF WORK FORM TWO BIOLOGY TERM THREE 2011

WK NO	L/ NO	TOPIC/ SUBTOPIC	LESSON / SPECIFIC OBJECTIVES	TEACHING / LEARNING ACTIVITIES	MATERIALS / RESOURCES	REFERENC ES	REMARKS
1	1	RESPIRATION Introduction – Definition and importance of respiration.	By the end of the lesson, the learner should be able: To define respiration. To explain significance of respiration.	Q/A: Definition Brief discussion of significance of respiration.		<i>K.L.B. BK 2</i> PP. 73-74	

	2	Burning food.	To describe an experiment investigating the gas given off when food is burnt.	Teacher demonstration: Burning a food sample. Testing for the gas evolved during combustion.		<i>K.L.B. BK 2</i> PP. 73-74	
	3,4	The mitochondrion.	To state functions of mitochondrion in respiration.	Drawing structure of the mitochondrion. Explain function of the mitochondrion.	Wall charts- The mitochondrion	<i>K.L.B. BK 2</i> P. 74	
2	1	Aerobic respiration.	To explain phases of aerobic respiration. To state difference between aerobic and anaerobic respiration.	Detailed discussion. Writing down equations of food breakdown.		<i>K.L.B. BK 2</i> PP.74-76	
	2	Anaerobic respiration.	To describe anaerobic respiration.	Observe set up experiments. Detailed discussion punctuated with probing questions:	Glucose Yeast Thermometer	<i>K.L.B. BK 2</i> P.77	
	3	Oxygen "debt".	To explain the term "oxygen debt". To explain the effect of "oxygen debt" on the amount of energy released during respiration.	Probing questions. Detailed discussion.		<i>K.L.B. BK 2</i> P.78	
	4	Applications of anaerobic respiration.	To explain applications of anaerobic respiration.	Q/A: Products of fermentation process. Listing down various applications of anaerobic respiration.		<i>K.L.B. BK 2</i> P. 79	
3	1	Respiratory substrates & respiratory quotient.	To identify respiratory substrates in the body. To define respiratory quotient. To calculate R.Q.	Brief discussion/ explanations. Exposition of definition and its significance. Problem solving.		<i>K.L.B. BK 2</i> P. 79	

	2	Rate of respiration.	To state and explain factors affecting rate of respiration.	Detailed discussion and explanations.		<i>K.L.B. BK 2</i> PP. 80-81	
	3,4	EXCRETION AND HOMEOSTASIS Introduction- Definition and importance of homeostasis and excretion.	To define homeostasis and excretion. To explain necessity of excretion in plants and animals.	Q/A: Definitions of digestion, ingestion and egestion, secretion and excretion. Discuss importance of excretion in plants and animals.		<i>K.L.B. BK 2</i> PP. 83-84	
4	1	Excretion in plants.	To name plants excretory products. To state uses of excretory products of plants.	Probing questions. Exposition of new terms. Discuss uses and abuses of plant excretory products.	Some plants excretory products.	<i>K.L.B. BK 2</i> PP. 83-84	
	2	Excretion and homeostasis in unicellular organisms.	Describe excretion and homeostasis in an amoeba and a paramecium.	Q/A: Review diffusion, structure of an amoeba. Discuss excretion and homeostasis in an amoeba and a paramecium.		<i>K.L.B. BK 2</i> PP. 84-85	
4	3,4	Excretion and homeostasis in animals.	To identify excretory organs in various animals.	Exposition and discussion. Observe drawings of various animals showing excretory organs.	Specimens of platyhelminthes, annelida, insects.	<i>K.L.B. BK 2</i> P. 85	
5	1,2	The mammalian skin.	State functions of the mammalian skin as an excretory organ.	Draw and label the structure of the mammalian skin. Detailed discussion.	Wall chart- The mammalian skin.	<i>K.L.B. BK 2</i> PP.85-86	

	3,4	The mammalian skin.	Draw and label the structure of the mammalian skin. To describe functions of parts of the mammalian skin.		Permanent slides of mammalian skin.	<i>K.L.B. BK 2</i> PP. 86-87	
6	1	The lungs.	To explain the role of lungs as excretory organs.	Exposition and discussion.	Chart/ model- Mammalian lungs.	<i>K.L.B. BK 2</i> P. 87	
	2	C.A.T.					
	3,4	The kidneys structure.	To describe the external structure of kidney. To describe the internal structure of the kidney.	Observe external features of a kidney. Observe internal drawing and labeling of the kidney.	Wall-Charts— internal organs of a kidney.	<i>K.L.B. BK 2</i> PP. 89-90	
7	1,2	The nephron.	Describe features of the nephron.	Discuss features of the nephron. Draw structure of the nephron. Label the diagram.	Chart—Kidney nephron.		
	3,4	Urine formation.	To explain formation of urine.	Detailed discussion.		<i>K.L.B. BK 2</i> PP. 90-91	
8	1	The loop of Henle.	To explain the function of the loop of Henle; and how it's adapted to its function. To discuss the role of ADH in determination of concentration of urine.	Discussion and explanations. Probing questions.	Chart- The nephron.	<i>K.L.B. BK 2</i> PP. 91-92	

	2	Kidney diseases and disorders.	To name kidney diseases and disorders and state methods of prevention and / treatment.	Discussion and Explanations.		<i>K.L.B. BK 2</i> P. 92	
	3	The Liver.	To draw and label a diagram of the liver.	Drawing and labeling diagram of the liver.	Chart- Structure of the liver	<i>K.L.B. BK 2</i> PP. 93-94	
	4	Deamination.	To explain the function of the liver in deamination.	Probing questions. Discussion		<i>K.L.B. BK 2</i> P. 95	
9	1	Other functions of the liver.	To state and explain other functions of the liver.	Probing questions. Discussion		<i>K.L.B. BK 2</i> PP. 95-96	
	2	Liver disorders.	To name and discuss kidney disorders. To identify methods of preventing and treating these disorders.	Exposition and discussion.		<i>K.L.B. BK 2</i> PP. 96-97	
	3	Homeostasis.	To define the concepts of internal environment and homeostasis.	Exposition and discussion.		<i>K.L.B. BK 2</i> PP. 97-98	

	4	The feedback mechanism.	To differentiate between positive and negative feedback and state their roles in maintaining the desirable point.	Schematic representation of feedbacks. Exposition and discussion.	Chart-Schematic diagram of feedback mechanism	<i>K.L.B. BK 2</i> PP. 97-98	
10	1	The hypothalamus.	To explain the role of hypothalamus in thermoregulation.	Exposition and detailed discussion.		<i>K.L.B. BK 2</i> P. 98	
	2	The skin and thermoregulation.	To explain the function of the skin in thermoregulation.	Exposition and discussion.		<i>K.L.B. BK 2</i> P. 98	
	3,4	Blood vessels and their functions in thermo-regulation.	To explain the adaptation of blood vessels and their function in thermo-regulation.	Exposition and discussion. Drawing schematic diagrams.		<i>K.L.B. BK 2</i> PP. 98- 99	
11	1	Homeostatic behavioral activities.	To state and explain various homeostatic behavioral activities.	Discussion on control of body temperature. Probing questions.		<i>K.L.B. BK 2</i> P. 99	
	2	Osmoregulation.	To describe water and salts balance in the body.	Detailed discussion.		<i>K.L.B. BK 2</i> PP. 100-101	

	3	Blood sugar.	To discuss effects of insufficient/ excess sugar in the blood. To explain regulation of blood sugar.	Detailed discussion. Detailed discussion.		<i>K.L.B. BK 2</i> PP. 101-2	
	4	Diabetes.	To distinguish diabetes mellitus from diabetes insipidus. To identify simple symptoms of diabetes mellitus and diabetes insipidus.	Detailed discussion. Probing questions. Topic review.		<i>K.L.B. BK 2</i> P. 103	
12, 13	<i>END OF YEAR EXAMINATIONS</i>						