SCHEMES OF WORK 2022

BIOLOGY FORM 2

TERM 1-3

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SCHEME OF WORK FORM TWO BIOLOGY TERM ONE 2022

WK NO	***L/ NO***	***TOPIC/ SUBTOPIC***	***LESSON / SPECIFIC OBJECTIVES***	***TEACHING / LEARNING ACTIVITIES***	***MATERIALS / RESOURCES***	***REFERENCES***	***REMARKS***
1	1	**TRANSPORT IN PLANTS AND ANIMALS** Introduction. **Transport in plants** Transport in simple plants.	***By the end of the lesson, the learner should be able to:*** Define transport. Explain importance of transport in plants and animals. Describe transport in simple plants.	Q/A and discussion; Discuss transport in simple animals and plants e.g. mosses.		*K.L.B. BOOK 2 Page 1*	
	2	External structure of the root.	Relate the external structure of the root to its function. State primary functions of roots.	Class experiment- to examine a piece of a taproot. Drawing and labeling a diagram of the taproot. Discussion of adaptation of the root hairs to their functions. Q/A: Functions of roots.	Tap root, bean / pea seedlings. Petri-dish Razor blade.	*K.L.B. BOOK 2 Pages 1-2*	
	3,4	Internal structure of the root.	Relate the internal structure of a root to its functions.	Drawing and labeling diagrams of sections of roots and root hairs for monocotyledon and dicotyledonous roots. Discuss functions of the labeled parts.	Permanent slides of roots, microscope, wallchart.	*K.L.B. BOOK 2 Pages 2-4*	
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*	

	2	Internal structure of the stem.	To draw and label internal stem structures.	Drawing and labeling transverse sections of stems.	Wall charts - Internal structure of the stem.	*K.L.B. BOOK 2 Pages 5- 7*	
	3,4	Absorption of water and mineral salts.	To explain processes through which water and mineral salts move through plants.	Discussion and Explanations.	Wall charts – Root hairs.	*K.L.B. BOOK 2 Pages 7 - 9*	
3	1	Significance and types of Transpiration.	To explain significance of transpiration. To state and explain types of transpiration.	Probing questions, Discussion, Explanations.	Wall charts – Internal structure of a leaf.	*K.L.B. BOOK 2 Pages 9-10, 12*	
	2	Factors affecting rate of transpiration.	To state and explain factors affecting transpiration.	Q/A: Discussion Explanations.		*K.L.B. BOOK 2 Pages 12- 14*	
	3-4	The Xylem tissue. Forces involved in transport of water and mineral salts.	To describe the structure of xylem tissue. To explain the forces involved in transport of water and mineral salts.	Q/A: Discussion Explanations Drawing diagrams.	Wall charts- The xylem tissue.	*K.L.B. BOOK 2 Pages 10-12*	
4	1	Rates of transpiration on leaf surfaces.	To describe simple experiments to show 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. Discuss above observations. Draw graphs to show rates of transpiration on leaf surfaces. Answer questions.	Cobalt II Chloride paper Forceps. Potometer.	*K.L.B. BOOK 2 Pages 14 - 18*	

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	2	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.	*K.L.B. BOOK 2 Page 17*	
	3-4	**Transport in Animals.** 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.	*K.L.B. BOOK 2 Pages 18 - 19*	
5	1-4	***MID TERM BREAK***					
6	1	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.	*K.L.B. BOOK 2 Pages 18-20*	
	2	The mammalian heart – external structure & internal structure	To describe the external structure of the heart. Draw compartments of the heart and label major parts.	Exposition; Identifying compartments of the heart. Drawing and labeling a diagram of a mammalian heart.	Model of a heart.	*K.L.B. BOOK 2 Pages 21 - 23*	
	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.	*K.L.B. BOOK 2 Pages 23 - 24*	

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7	1	Pulse rate. Structure of arteries. Major arteries.	Explain the origin of pulse. Explain effect of exercise on pulse rate. To describe the structure of arteries. To identify major arteries in the circulatory system.	Record number of pulses before and after an exercise. Brief discussion. Discussion Drawing and labeling internal structure of an artery.	Stopwatches. Chart- cross-section of an artery. Chart- circulatory system.	*K.L.B. BOOK 2 Pages 30 – 31,25*	
	2	Veins. Capillaries.	To describe the structure of veins. To explain the need for valves in veins. To state differences between veins and arteries. To describe the structure of capillaries. To explain the role of capillaries in transport	Drawing and labeling diagram of an artery. Discussion and explanations.	Chart- cross-sections of major blood vessels in the body.	*K.L.B. BOOK 2 Pages 25-29*	
	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.		*K.L.B. BOOK 2 Pages 31 - 32*	

8	1	**Composition of blood.** The plasma. Red blood cells.	To state the constituents of blood plasma. To identify functions of plasma. To state the functions of red blood cells. To explain the functions of haemoglobin in r.b.c.	Detailed discussion and explanations.	Wall charts.	*K.L.B. BOOK 2 Pages 32 - 34*	
	2	White blood cells. Platelets. Blood clotting.	To describe the structure of white blood cells,platelets To state functions of white blood cells,platelets. To describe the blood clotting process. To explain importance of blood clotting.	Detailed discussion and explanations.		*K.L.B. BOOK 2 Pages 34 - 36*	
	3-4	Blood groups, Antigens and antibodies. Blood transfusion.	To identify the four blood groups. To identify compatible blood groups. To define blood transfusion. To identify compatible blood groups. To identify the universal donor and universal recipient.	Completing a table of blood groups and the corresponding antigens and antibodies present. Q/A: Identifying compatible blood groups. Open discussion. Completing a table of compatible blood groups.	Chart-blood groups, antigens and antibodies. *Blood transfusion resource person.*	*K.L.B. BOOK 29-31 Pages*	
9-10		***END OF TERM ONE EXAMINATIONS***					

SCHEME OF WORK FORM TWO BIOLOGY TERM TWO 2022

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.		*K.L.B. BOOK 2 Page 38*	
	2	Lymph.	To describe formation and functions of lymph.	Exposition, discussion and explanations.	Chart- the lymphatic system.	*K.L.B. BOOK 2 Pages 38 - 40*	
	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.	*K.L.B. BOOK 2 Pages 40 - 41*	
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.		*K.L.B. BOOK 2 Page 43*	
	2	Organ transplant.	To identify organs that are normally transplanted.	Q/A: Organs transplanted. Superficial discussion. Topic review.		*K.L.B. BOOK 2 Page 43*	

	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.		*K.L.B. BOOK 2* P. 48	
3	1	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.	*K.L.B. BOOK 2* P. 49	
	2	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.	*K.L.B. BOOK 2* P. 49	
	3,4	Stomata.	To describe the structure and explain the functions of stomata.	Detailed discussion. Drawing diagrams.		*K.L.B. BOOK 2* P. 51	
4	1	Opening & closing of stomata.	To describe and explain the mechanism of opening & closing of stomata.	Detailed discussion.		*K.L.B. BOOK 2* P. 51	
	2	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.	*K.L.B. BOOK 2* P. 51	
	3,4	Lenticels.	To describe and explain the mechanism of lenticels.	Detailed discussion.		*K.L.B. BOOK 2* P. 52	

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5	1	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.		*K.L.B. BOOK 2* P. 53	
	2	Gaseous exchange in protozoa. Gaseous exchange in insects.	To describe the mechanism of gaseous exchange in an amoeba. To describe the mechanism of gaseous exchange in insects	Q/A: Review diffusion, structure of an amoeba. Discuss briefly gaseous exchange in and out of amoeba. Drawing tracheal system of a grasshopper. Discuss at length the structure of the tracheal system. Detailed discussion.		*K.L.B. BOOK 2* P. 53,54	
	3-4	***MID TERM BREAK***					
6	1	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.	*K.L.B. BOOK 2* 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.	Observing and counting spiracles on the abdomen of an insect.	Live specimens of insects, Hand lenses, Boiling tubes.	*K.L.B. BOOK 2* P. 56	
	3	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.	*K.L.B. BOOK 2* PP. 56-57	

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	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.		*K.L.B. BOOK 2* P. 58	
7	1	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.	*K.L.B. BOOK 2* P. 59	
	2	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.	*K.L.B. BOOK 2* P. 60-1	
	3,4	Inhalation & Exhalation.	To describe the process of inhalation & Exhalation in man.	Showing movements of ribs during inhalation & Exhalation. Explain the inhalation mechanism.	Chart / model of a rib cage.	*K.L.B. BOOK 2* PP. 61-62	
8	1	Thoracic cavity model. Gaseous exchange in an alveolus.	To identify similarities between a model thoracic cavity and an actual thoracic cavity. To describe gaseous exchange in an alveolus. To explain regulation of breathing in man.	Teacher presents a model thoracic cavity. Q/A: Comparing parts of the model cavity and the actual rib cage. Discussion and explanations.	Thoracic cavity model.	*K.L.B. BOOK 2* PP. 61-64	

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	2	Rate of breathing in man. Intercostal muscles.	To state and explain briefly factors affecting the rate of inhalation / exhalation processes. To explain the function of intercostal muscles during the breathing system.	Discussion and explanations. Detailed discussion. Counting number of inhalations before and after an exercise blow.		*K.L.B. BOOK 2* P. 63,66	
	3.4	Inhaled and exhaled air. Diseases of the respiratory system.	To test for CO_2 in the air we inhale/ exhale. To state the causes, symptoms and prevention of respiratory diseases.	Observe colour changes of lime water, and make deductions. Brief discussion. Discuss cause, symptoms and prevention of whooping cough TB, bronchitis, etc.	Lime water.	*K.L.B. BOOK 2* P. 67-70	
9-10		**END TERM EXAMS**					

SCHEME OF WORK FORM TWO BIOLOGY TERM THREE 2022

WK NO	***L/NO***	***TOPIC/ SUBTOPIC***	***LESSON / SPECIFIC OBJECTIVES***	***TEACHING / LEARNING ACTIVITIES***	***MATERIALS / RESOURCES***	***REFERENCES***	***REMARKS***
1	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.		*K.L.B. BK 2* PP.74-76	
	2	Anaerobic respiration.	To describe anaerobic respiration.	Observe set up experiments. Detailed discussion punctuated with probing questions:	Glucose Yeast Thermometer	*K.L.B. BK 2* 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.		*K.L.B. BK 2* 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.		*K.L.B. BK 2* P. 79	
2	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.		*K.L.B. BK 2* P. 79	
	2	Rate of respiration.	To state and explain factors affecting rate of respiration.	Detailed discussion and explanations.		*K.L.B. BK 2* PP. 80-81	

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	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.		*K.L.B. BK 2* PP. 83-84	
3	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.	*K.L.B. BK 2* 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.		*K.L.B. BK 2* PP. 84-85	
	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 platyhelmin-thes, annelida, insects.	*K.L.B. BK 2* P. 85	
4	1	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.	*K.L.B. BK 2* PP.85-86	
	2	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.	*K.L.B. BK 2* PP. 86-87	

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	3, 4	The lungs.	To explain the role of lungs as excretory organs.	Exposition and discussion.	Chart/ model- Mammalian lungs.	*K.L.B. BK 2* P. 87	
5	1	The kidneys structure &The nephron..	To describe the external structure of kidney. To describe the internal structure of the kidney. Describe features of the nephron.	Observe external features of a kidney. Observe internal drawing and labeling of the kidney. Discuss features of the nephron. Draw structure of the nephron. Label the diagram.	Wall-Charts— internal organs of a kidney. Chart— Kidney nephron.	*K.L.B. BK 2* PP. 89-90	
	2	Urine formation. The loop of Henle.	To explain formation of urine. 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.	Detailed discussion.	Chart- The nephron.	*K.L.B. BK 2* PP. 90-92	
	3, 4	Kidney diseases and disorders.	To name kidney diseases and disorders and state methods of prevention and / treatment.	Discussion and Explanations.		*K.L.B. BK 2* P. 92	
6	1	The Liver & Deamination .	To draw and label a diagram of the liver. To explain the function of the liver in deamination.	Drawing and labeling diagram of the liver. Probing questions. Discussion	Chart- Structure of the liver	*K.L.B. BK 2* PP. 93-95	
	2	Other functions of the liver &Liver disorders	To state and explain other functions of the liver. To name and discuss kidney disorders. To identify methods of preventing and treating these disorders.	Probing questions. Discussion		*K.L.B. BK 2* PP. 95-97	

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	3, 4	Homeostasis. The feedback mechanism. The feedback mechanism.	To define the concepts of internal environment and homeostasis. To differentiate between positive and negative feedback and state their roles in maintaining the desirable point.	Exposition and discussion. Schematic representation of feedbacks. Exposition and discussion.	Chart- Schematic diagram of feedback mechanism	*K.L.B. BK 2* PP. 97-98	
7	1	The hypothalamus. The skin and thermoregulation.	To explain the role of hypothalamus in thermoregulation. To explain the function of the skin in thermoregulation.	Exposition and detailed discussion.		*K.L.B. BK 2* P. 98	
	2	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.		*K.L.B. BK 2* PP. 98- 99	
	3, 4	Homeostatic behavioral activities. Osmoregulation. Blood sugar. Diabetes.	To state and explain various homeostatic behavioral activities. To describe water and salts balance in the body. To discuss effects of insufficient/ excess sugar in the blood. To explain regulation of blood sugar. To distinguish diabetes mellitus from diabetes inspidus. To identify simple symptoms of diabetes mellitus and diabetes inspidus.	Discussion on control of body temperature. Probing questions. Detailed discussion.		*K.L.B. BK 2* P. 99-103	
8-9	*END OF YEAR EXAMINATIONS*						

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