

SRI LANKAN SCHOOL - MUSCAT		SCHEME OF WORK		ACADEMIC YEAR 2016 / 2017	
CLASS : YEAR 10			SUBJECT: Biology		TEACHER : Tharindu Galappaththi
Month	No.of Periods	Unit No.	TOPIC / DETAILS	INTENDED LEARNING OUTCOMES	Remarks
September					
1st Term					
Week 1, 2	4 +1	1	Life processes	Understand that living organisms share its characteristics	
		1.1 1.2 1.2.1 1.2.2 1.2.3, 1.3	Cell Structure, Enzymes	Recognising the cell structures describe cell structures, Describe the functions of the nucleus, cytoplasm, cell membrane, cell wall, chloroplast and vacuole. Compare the structures of plant and animal cells. Understand the role of enzymes as biological catalysts in metabolic reactions. Understand how the functioning of enzymes can be affected by changes in temperature, including changes due to change in active site. Understand how the functioning of enzymes can be affected by changes in active site caused by changes in pH. Describe experiments to investigate how enzyme activity can be affected by changes in temperature.	
Week 3		Eid Holidays			
Week 4	4	1.4 1.4.1 1.4.2 1.4.3	How the cells get energy	Understand that the process of respiration releases energy in living organisms. Describe the differences between aerobic and anaerobic respiration. Write the word equation and the balanced chemical symbol equation for aerobic respiration in living organisms. Write the word equation for anaerobic respiration in plants and in animals. Describe experiments to investigate the evolution of carbon dioxide and heat from respiring seeds or other suitable living organisms.	
Week 5	4	1.5 1.5.1 1.5.2	Movement of substances	Understand definitions of diffusion, osmosis and active transport. Understand that movement of substances into and out of cells can be by diffusion, osmosis and active transport	
		1.6 1.6.1	Levels of organisations	Describe the levels of organisation within organisms: organelles, cells, tissues, organs and systems.	
October					
October					
Week 6	4	2	The variety of Living Organisms	Describe the common features shared by organisms within the following main groups: plants, animals, fungi, bacteria, protoctists and viruses.	
		2.1 2.2		Recall the term 'pathogen' and know that pathogens may be fungi, bacteria, protoctists or viruses.	
		3	Breathing and Gas Exchange	Understand the role of diffusion in gas exchange	
		3.1 3.2 3.2.1		Describe the structure of the thorax, including the ribs, intercostal muscles, diaphragm, trachea, bronchi, bronchioles, alveoli and pleural membranes	

Week 7	4	3.2.2	Gas Exchange	Understand the role of the intercostal muscles and the diaphragm in the diaphragm in ventilation. Explain how alveoli are adapted for gas exchange by diffusion between air in the lungs and blood in capillaries.
Week 8	4	3.3	Biological consequences of smoking	Understand the biological consequences of smoking in relation to the lungs and the circulatory system, including coronary heart disease. Describe experiments to investigate the effect of exercise on breathing in humans.
Week 9	4	4	Food and Digestion	Identify the chemical elements present in carbohydrates, proteins and lipids (fats and oils). Describe the structure of carbohydrates, proteins and lipids as large molecules made up from smaller basic units: starch and glycogen from simple sugar; protein from amino acids; lipid from fatty acids and glycerol. Describe the tests for glucose and starch.
		4.1	Biological molecules	
		4.1.1		
		4.1.2		
			Assessment 2	
November				
Week 10	4	4.1.2 4.1.3 4.1.4 4.2	Sources and functions of nutrients	Understand that a balanced diet should include appropriate proportions of carbohydrate, protein, lipid, vitamins, minerals, water and dietary fibre. Identify sources and describe functions of carbohydrate, protein, lipid (fats and oils), vitamins A, C and D, and the mineral ions calcium and iron, water and dietary fibre as components of the diet.
Week 11	4	4.3 4.3.1 4.3.2 4.2.3 4.2.4	Structure of alimentary canal	Describe the structures of the human alimentary canal. Understand the processes of ingestion, digestion, absorption, assimilation and egestion. Explain how and why food is moved through the gut by peristalsis. Understand the role of digestive enzymes. Understand that bile is produced by the liver and stored in the gall bladder, and understand the role of bile in neutralising stomach acid and emulsifying lipids.
Week 12	4	4.2.5 5 5.1 5.1.1	Blood and Circulation Need of a transport system	Describe the structure of a villus and explain how this helps absorption of the products of digestion in the small intestine. Describe an experiment to investigate the energy content in a food sample. Understand why simple, unicellular organisms can rely on diffusion for movement of substances in and out of the cell. Understand the need for a transport system in multicellular organisms.
Week 13	4	5.2	Blood	Describe the composition of the blood: red blood cells, white blood cells, platelets and plasma. Understand the role of plasma in the transport of carbon dioxide, digested food, urea, hormones and heat energy. Explain how adaptations of red blood cells, including shape, structure and the presence of haemoglobin, make them suitable for the transport of oxygen. Describe the structure of arteries, veins and capillaries and understand their roles.
		5.2.1		
December				
Week 14	Revision			
Week 15	1st Term End Exams			
Week 16	1st Term End Exams			
Week 17	Assessment and Report work			

Week 17	December Vacation				
Week 18	December Vacation				
January	School Reopens - 2nd Term				
Week 19	Vacation				
Week 20	4	5.3.1 5.3.2 5.3.3 5.3.4		Describe how the immune system responds to disease using white blood cells, illustrated by phagocytes ingesting pathogens and lymphocytes releasing antibodies specific to the Pathogen. Describe that vaccination results in the manufacture of memory cells. Explain how the heart rate changes during exercise and under the influence of adrenaline.	
Week 21	4	6 6.1 6.2	Coordination	Understand that central nervous system consists of the brain and spinal cord and is linked to sense organs by nerves. Understand how the organisms are able to respond to changes in their environment. Understand that a coordinated response requires a stimulus, a receptor and an effector.	
Week 22	4	6.3		Describe the role of neurotransmitters, events take place in synapsis. Describe the structure and functioning of a simple reflex arc.	
			Assessment 4		
February					
Week 23	4	6.4 7 7.1	Chemical Coordination	Understand the Structure and the function of the eye Describe the process of the eye in focusing near and distant objects Describe glands and hormones Describe the differences between nervous and hormonal communication	
Week 24	4	7.2 7.3 8 8.1	Homeostasis and Excretion	Illustrate the effect of adrenaline hormone Explain controlling the blood glucose level, how diabetes is caused Define homeostasis and describe the requirements for the coordinated response.	
Week 25	4	8.2 8.2.1 8.2.2 8.2.3		List the organs of excretion, describe the roles of excretion Understand structure of the urinary system Explain how Structure of a nephron involves in urine production Describe Ultrafiltration and Selective reabsorption	
Week 26	4	8.3 8.4 10 10.1	Plants and Food	Explain the role of ADH in controlling the body's water content Describe body temperature is maintained Illustrate the photosynthesis process Understand the structure of leaves and its adaptations for photosynthesis	
			Assessment 5		
March					
Week 27	4	10.1.2 10.1.3 10.1.4		How the structure of the leaf is adapted for respiration Investigate on the effect of light on net gas exchange List the factors that affect the rate of photosynthesis, describe them	

		10.2 10.3		Explain plant's uses for glucose Describe the role of mineral ions and their deficiency symptoms	
Week 28	4	11 11.1 11.2 11.3 11.4	Transport in plants	Define diffusion, Osmosis, active transport Explain absorption of water by root hair cells, adaptation of a root hair cell Describe Role of xylem and phloem in plants, structure of a stem Define transpiration. Measure the rate of transpiration.	
Week 29	4	11.5		Describe how the different factors affecting the rate of transpiration Explain how mineral ions are taken up by the plants Answering to comprehension questions	
			Revision		
Week 30	Revision , 2nd Term End Exams				
Week 31	2nd Term End Exams				
April					
Week 32	Assesment and Report work				
Week 33	April Vacation				
School Reopens - 3rd Term					
Week 34	2	9 9.1	Discussion of 2nd Term test paper Reproduction in Humans	Describe the structure and explain the function of the male and female reproductive systems. List the differences between sexual and asexual reproduction. Understand that fertilisation involves the fusion of a male and female gamete to produce a zygote that undergoes cell division and develops into an embryo.	
Week 35	4	9.2 9.3 16 16.1	Chromosomes, Genes and DNA	understand the roles of oestrogen and testosterone in the development of secondary sexual characteristics. Explain the roles of oestrogen and progesterone in the menstrual cycle Describe the Structure of DNA.	
May					
Week 36	4	16.1.1 16.2 16.3		Understand that a gene is a section of a molecule of DNA and that a gene codes for a specific protein. Understand that mutation is a rare, random change in genetic material that can be inherited.	
Week 37	4	16.4 16.4.1 17 17.1	Cell Division	Explain how genes exist in alternative forms called alleles which give rise to differences in inherited characteristics. Understand that division of a diploid cell by mitosis produces two cells which contain identical sets of chromosomes. List down the uses of mitosis.	
Week 38	4	17.2 17.3		Explain meiosis produces four cells, each with half the number of chromosomes, and that this results in the formation of genetically different haploid gametes. Describe random fertilisation produces genetic variation of offspring.	
Week 39	5	18 18.1	Genes and Inheritance	Define the terms: dominant, recessive, homozygous, heterozygous, phenotype, genotype and codominance. Describe patterns of monohybrid inheritance using a genetic diagram.	

Week 39		18.2		Predict probabilities of outcomes from monohybrid crosses.	
			Assessment 6		
Week 40	4	18.3 18.4 18.5		Describe the determination of the sex of offspring at fertilisation, using a genetic diagram. Interpret family pedigrees. Illustrate the outcome of codominance.	
June					
Week 41	4		Assessment of Practical skills - Practising comprehensions	Students design investigations	
Week 42	4		Revision		
Week 43			3rd Term end exams		
Week 44			Eid al- Fitr holidays, paper corrections		
July					
Week 45			Assesment and Report work Paper correction		
Week 46			Summer Vacation		