SRI LANKAN SCHOOL - MUSCAT		SCHEME OF WORK		ACADEMIC YEAR 2016 / 2017
CLASS : Year12		SUBJECT: Biology		TEACHER : Thamodini Karunasinghe
Month	**No.of Periods**	**Unit No.**	**Topic**	**ILO**
September				**School Reopens - 1st Term**
Week 1	2	1.1-1.4	Lifestyle, health and risk	Explain the importance of water as a solvent in transport, including its dipole nature Distinguish between mono, di, and polysaccharides and relate their structures to their roles. Describe the condensation reactions that lead to the formation of di and polysaccharides.
week 2	10	1.1-1.5	Lifestyle, health and risk	Explain the importance of water as a solvent in transport, including its dipole nature Distinguish between mono, di, and polysaccharides and relate their structures to their roles. Describe the condensation reactions that lead to the formation of di and polysaccharides.
week 3				Eid Holidays
Week 4	10	1.5	Lifestyle, health and risk	Describe the synthesis of triglycerides by formation of ester bonds between glycerol and three fatty acids Recognize difference between saturated and unsaturated fatty acids and lipids Describe the uses of lipids in plants and animals. Assignment
Week 3	10	2.7/1.6	Lifestyle, health and risk	Describe the basic structure of an amino acid and the formation of polypeptides and proteins Explain why many animals have a heart and circulatory system to overcome limitations by diffusion
Week5	6	1.7/1.8/1.9	Lifestyle, health and risk	Describe the cardiac cycle and relate the structure and operation of the mammalian heart to its functions Explain the structure of blood vessels and relate to their function. Assessment
October				
Week 5	4	1.9	Lifestyle, health and risk	Describe the effect of caffeine on the heart rate in Daphinia practically and discuss the ethical issues in the use of invertebrates.Assignment .
Week 6	10	1.10/1.11	Lifestyle, health and risk	Describe the blood clotting process and its role in cardiovascular disease (CVD) Explain the course of events that leads to atherosclerosis

Week 7	10	1.12-1.16	Lifestyle, health and risk	Describe the factors that increase the risk of CVDDescribe the benefits and risks of treatments for CVD Analyse and interpret data on possible significance for health of blood cholesterol levels and levels of high density lipoproteins (HDLs) and low density lipoproteins (LDLs). Describe the evidence for a causal relationship between blood cholesterol levels and CVD Describe how people use scientific knowledge about the effects of diet, exercise and smoking to reduce their risk of coronary heart disease (CHD)Describe how to investigate the vitamin C content of food and drink. Assignment3.
Week 8	10	1.17-1.20	Lifestyle, health and risk	Analyse data on energy budgets and diet so as to enable to discuss the consequences of energy imbalance, including weight loss, weight gain, and development of obesity. Analyse and interpret quantitative data on illness and mortality rates to determine health risks. Distinguish between correlation and causation and recognize conflicting evidence. Evaluate design of studies used to determine health risk factors(including sample selection and size used to collect data that is both valid and reliable.) Explain why people's perception of risks is often different from the actual risks
Week 9	10	2.0-2.5	Genes and health	Describe the structure of the cell membrane based on the fluid mosaic model.Explain how models are interpretations of data used to develop scientific explanations.Explain osmosis, passive transport (diffusion, facilitated diffusion.)Active transport, endocytosis and involvement of carrier proteins in membrane transportInvestigation of the effect of alcohol concentration and temperature on membrane permeability. Assignment
November				
Week 10	4	2.6/2.8/2.9	Genes and health	Describe properties of gas exchange surfaces in living organisms and explain how mammalian lung is adapted to rapid gas exchange.Structure and properties of enzymes. Investigating the effect of enzyme concentration on the rate of a reaction. Assignment
Week 11	10	2.10-2.17	Genes and health	Describe the structures of DNA and RNADescribe DNA replication, The semiconsevative method supported by Melson and Stahl's experimentExplain the nature of the genetic code and protein synthesisExplain how errors in DNA replication lead to mutations and describe cystic fibrosis as an example of a gene mutation.Explain terms in genetics, monohybrid inheritance, interpretation of pedigree diagrams in the context of traits such as cystic fibrosis, albinism, thalassaemia etc Assessment
Week 12	10	2.18-2.20	Genes and health	Describe the effects of CF on the respiratory, digestive and reproductive systems.Describe the principles of gene therapy and distinguish between somatic and germ line Explain the uses of genetic screening, preimplantation genetic diagnosis and prenatal testing.Identify and discuss the social and ethical issues related to genetic screening from a range of ethical view points
week 13	10			Revision / unit 1 and Unit 3
Week 13	10			Revision
December				
Week 14	4			Revision
Week 15				1st term end exams

Week 16				1st term tests and report work
Week 17				1nd term tests and report work
Week 18				**December Vacation**
January 2014				
Week 19				**December Vacation**
Week 20	10			**School Reopens - 2nd Term**
				Term test paper discussion
		3.2-3.8	The voice of the genome	Distinguish between eukaryotic and prokaryotic cells in terms of their structure and ultrastucture.Describe the ultrastucture of an animal cell and the functions of the organelles.Preparation of root tip squash for observation of mitosis. Explain the role of meiosis in the production of gametes and genetic variation, recombination of alleles, independent assortment and crossing over.
Week 21	10	3.9-3.11	The voice of the genome	Explain the specialization of mammalian gametes for their functionDescribe fertilization in mammals and flowering plantsExplain the terms stem cell, and totipotency and pluripotency and issues of the use of stem cells
Week 22	10	3.12-3.14	The voice of the genome	Describe how totipotency can be demonstrated practically using plant tissue culture techniques.Explain cell specialization by differential gene expressionExplain how phenotype is the result of an interaction between genotype and environment and polygenic inheritance.
Week 23	6	4.2-4.6	Biodiversity and natural resources	Compare the ultra structure of plant cells with that of animal cells..Describe the structure of cellulose and formation of cellulose micro fibrilsExplain how cellulose fibres contribute to the physical properties of plant fibresDescribe structure and function of sclerenchyma, xylem and phloem, and identify these when observed through the microscope.Describe how the uses of plant fibres and plant based products contribute to sustainability. Assesment
Week 23	4	4.7-4.10	Biodiversity and natural resources	Describe how to determine the tensile strength of plant fibres practically.Explain the importance of water and inorganic ions, nitrate, calcium and magnesium ions to plantInvestigate plant mineral deficiencies practically.Describe how to investigate the antimicrobial properties of plants. Compare historic drug testing with contemporary drug testing protocols. Double blind trials; placebo; three phase testing. Assesment
Week 24	10	4.11/4.12	Biodiversity and natural resources	Explain the terms biodiversity and endemism and describe how biodiversity can be measured using species richness and genetic diversityDescribe the concept of niche and discuss examples of adaptation of organisms to their environment(behavioral, anatomical and physiological)
Week 25	10	4.13/4.14	Biodiversity and natural resources	Discuss the process and importance of critical evaluation of new data by the scientific community, which leads to new taxonomic groupings (three domains based on molecular phylogeny) Discuss and evaluate the methods used by zoos and seed banks in the conservation of endangered species and their genetic diversity. End of syllabus

Week 26				Revision
Week 27	10			Open book tests
March				
Week 27	10			Open book tests/Revision
Week 28	10			Open book tests/Revision
Week 29	10			Practice tests/Revision
Week 30	10			Mock Examination
April				
Week 31				Mock Examination
Week 32				2nd term end exams and report work
Week 33				**April vacation**
Week 34				**School Reopens - 3rd Term**
	10			Seminar
Week 35	10			**Issra and Miraj**
May				