Curriculum Plans: Year 10 (Biology SEPARATE)

	Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Michaelmas 1	**4.2.2.2/3/4 human circulation system** **4.4.2 Respiration** **4.4.1 Photosynthesis**	• **Structure and function of human breathing system** • **Structure and function of the Human circulatory system (heart, blood vessels and blood composition).** • **Cause and effect of heart diseases (coronary heart disease, Faulty valves) and their treatments.** • **Processes of aerobic and anaerobic respiration** • **Response of the body to exercise.** • **Metabolic processes and the definition of metabolism.** • **Process of photosynthesis, the factors that affect it's rate and how glucose from photosynthesis is used.**	• Carry out rate calculations for blood flow. • Recognise different types of blood cells in a photograph or diagram and explain how they are adapted to their functions. • Evaluate methods of treatment bearing in mind the benefits and risks associated with the treatment. • Investigate the effect of exercise on the body. • Solve simple algebraic equations. • Use data to relate limiting factors to the cost effectiveness of adding heat, light or carbon dioxide to greenhouses.	• **Arteries** • **Veins** • **Capillaries** • **Valve** • **Statin** • **Stent** • **Oxygenated** • **Coronary** • **Plasma** • **Platelets** • **Ventricles** • **Haemoglobin** • **Pulmonary** • **Bi-concave** • **Aerobic** • **Anaerobic** • **Metabolism** • **Contract**	TEST_Animal Transport
Michaelmas 2	**4.4.1 Photosynthesis** **4.2.3 Plant tissues, organs and systems** **4.3.1**	• **Process of photosynthesis, the factors that affect it's rate and how glucose from photosynthesis is used.**	• Use data to relate limiting factors to the cost effectiveness of adding heat, light or carbon dioxide to greenhouses. • use simple compound measures such as the rate of transpiration.	• **Chloroplast** • **Chlorophyll** • **Epidermal tissues** • **Palisade mesophyll** • **Spongy mesophyll** • **Xylem**	TEST_Respiration and photosynthesis

Curriculum Plans: Year 10 (Biology SEPARATE)

	Communicable diseases	• **Structure and function of plant tissues.** • **Structure and function of plant organs (Xylem, phloem and root hair cells).** • **The effect of changing temperature, humidity, air movement and light intensity on transpiration.** • **Processes of translocation and transpiration.** • **Definition of communicable diseases.** • **Identify pathogens as viruses, bacteria, protists and fungi.** • **State the disease mechanisms for both bacteria and viruses.** • **Identify symptoms and treatments of bacterial, viral, fungal and protist diseases as well as how they are spread.**	• Process data from investigations involving stomata and transpiration rates to find arithmetic means, understand the principles of sampling and calculate surface areas and volumes • Translate information between graphical and numerical form • Plot and draw appropriate graphs, selecting appropriate scales for axes • Extract and interpret information from graphs, charts and tables • Explain how diseases caused by various pathogens are spread in animals and plants. • Describe methods for reducing or preventing the spread of diseases.	• **Phloem** • **Meristem** • **Humidity** • **Transpiration** • **Translocation** • **Osmosis** • **Active transport** • **Pathogen** • **Virus** • **Bacteria** • **Protist** • **Fungi** • **Measles** • **HIV** • **AIDS** • **Salmonella** • **Gonorrhoea** • **Tobacco Mosaic** • **Virus (TMV)** • **Rose Black Spot** • **Malaria**	
Lent 1	**4.3.1 Communicable diseases**	• **Examples of Non-Specific Defence Systems and their function within the body.** • **The role of the white blood cells of the body, how they defence against disease by phagocytosis, antibody**	• Describe non-specific defence systems of the human body. • Explain the immune system's role in disease defence. • Discuss vaccination and its impact on disease prevention. • Explain the use and significance of antibiotics and painkillers.	• **Non-Specific Defence** • **Immune System** • **White Blood Cells** • **Phagocytosis** • **Antibody** • **Antitoxin** • **Vaccination** • **Antibiotics** • **Painkillers**	TEST_Communicable diseases

		and antitoxin production. • **Process of Vaccination and the benefits for vaccination programmes.** • **Function and impact of antibiotics and painkillers.** • **Process of discovering and developing new drugs.** • **Production and uses of monoclonal antibodies in diagnosis, laboratory measurements and treatment.** • **Process of plant disease identification and detection.** • **Function of plant defence responses- Physical, Chemical and Mechanical.**	• Describe drug discovery and testing processes. • Understand and describe the production and uses of monoclonal antibodies. • Identify signs and symptoms of plant diseases and their defence mechanisms	• **Monoclonal Antibodies** • **Preclinical Testing** • **Clinical Trials** • **Plant Disease** • **Physical Defence** • **Chemical Defence** • **Mechanical Adaptations**	
Lent 2	**4.2.2 Animal tissues, organs and organ systems (Non-communicable disease/ health)** **4.5.2 The**	• **Define health, communicable and non-communicable disease.** • **Lifestyle Effects on Non-Communicable Diseases** • **Human and financial costs of non-**	• Describe the relationship between health and disease and how different diseases interact. • Translate disease incidence information between graphical and numerical forms. • Construct and interpret frequency tables, diagrams,	• **Health** • **Communicable Disease** • **Non-Communicable Disease** • **Risk Factors** • **Causal Mechanism**	

	human nervous System	**communicable diseases at various levels (individual, community, national, global).** • **Lifestyle factors (diet, alcohol, smoking) influence disease incidence and risk factors for non-communicable** • **Cancer** • **Cancer definition, tumour types (benign and malignant) and risk factors for cancer** • **The function of the Human Nervous System** • **Process of Response Coordination and a Reflex Arc** • **Importance of Reflex Actions in keeping organisms safe.**	bar charts, histograms, and scatter diagrams. • Discuss the costs of non-communicable diseases and explain lifestyle factors affecting disease incidence. • Interpret data about risk factors for specified diseases. • Understand and apply sampling principles in scientific data, particularly in epidemiology. • Explain the adaptations of the nervous system's structure to its functions. • Describe the function of various structures in a reflex arc. • Extract and interpret data from graphs, charts, and tables related to the nervous system. • Translate information about reaction times between numerical and graphical forms. • Plan and carry out investigations into factors affecting human reaction time.	• **Cardiovascular Disease** • **Obesity** • **Type 2 Diabetes** • **Carcinogens** • **Benign Tumour** • **Malignant Tumour** • **Secondary Tumour** • **Nervous System** • **Central Nervous System (CNS)** • **Neurone** • **Stimulus** • **Receptor** • **Effector** • **Response** • **Reflex Arc** • **Sensory Neurone** • **Relay Neurone** • **Motor Neurone** • **Synapse** • **Reflex Action**	
Trinity 1	**4.5.2 The human nervous System** **4.5.3 Hormonal coordination in humans**	• **The structure and functions of regions of the brain.** • **The process of investigating Brain Function i.e. MRI**	• Identify and describe the functions of different brain regions on a diagram. • Explain challenges in investigating brain function and treating brain disorders.	• **Cerebral Cortex** • **Cerebellum** • **Medulla** • **Neurones** • **Brain Mapping**	TEST_Nervous system TEST_Endocrine system

		electrical stimulation, studying case studies. • **The structure and function of the components of the eye** • **Accommodation of the eye to focus on near and distant objects.** • **State scientific names of common eye defects and the methods in place to correct these.** • Label the pituitary gland and state its function as the master gland. • State glands in the endocrine system. • State the human reproductive hormones and explain their function in the body. • Identify the hormones used in the menstrual cycle and their function. • State and explain both hormonal and non-hormonal methods of contraception. • Use knowledge of fertilisation and human reproductive hormones to explain their use in treatment of infertility.	• Relate eye structures to their functions and demonstrate accommodation processes. • Identify eye structures on diagrams and explain their functions. • Interpret ray diagrams related to common eye defects and their corrections with lenses • Describe the principles of hormonal coordination and control in the human endocrine system. • Identify the position of various endocrine glands on a diagram of the human body. • Describe the roles of hormones in human reproduction and the menstrual cycle. • Evaluate different methods of contraception, considering their benefits and drawbacks. • Explain the use of hormones in reproductive technologies for treating infertility. • Extract and interpret data from graphs showing hormone levels during the menstrual cycle.	• **Accommodation** • **Retina** • **Optic Nerve** • **Sclera** • **Cornea** • **Iris** • **Ciliary Muscles** • **Suspensory Ligaments** • **Myopia** • **Hyperopia** • **Endocrine System** • **Hormones** • **Pituitary Gland** • **Pancreas** • **Thyroid** • **Adrenal Gland** • **Ovary** • **Testes** • **Target Organ** • **Oestrogen** • **Testosterone** • **Follicle Stimulating Hormone (FSH)** • **Luteinising Hormone (LH)** • **Menstrual Cycle** • **Contraception** • **In Vitro Fertilisation (IVF)** • **Fertility Drugs** • **Hormonal Methods**	

Curriculum Plans: Year 10 (Biology SEPARATE)

				• **Non-Hormonal Methods**	
Trinity 2	**4.5.1 Homeostasis**	• The process of body temperature control and the importance of it. • How the pancreas regulated blood glucose levels using hormones insulin and glucagon. • Process of how water and nitrogen is balanced within the body by the kidneys and the function of ADH. • Identify kidney dialysis as a treatment for kidney failure. • The process of negative feedback to regulate metabolism. • Function of hormones in plants and how they can be manipulated by humans to be advantageous.	• Explain mechanisms for regulating body temperature in different contexts • Compare Type 1 and Type 2 diabetes and their treatments. • Extract and interpret data showing insulin's effect on blood glucose levels. • Explain the negative feedback cycle involving insulin and glucagon. • Describe kidney functions and the process of dialysis. • Translate and interpret data regarding substances filtered by kidneys. • Interpret and explain diagrams related to negative feedback mechanisms • Describe the effects of different plant hormones and their practical uses in agriculture and horticulture. • Investigate the effect of light or gravity on newly germinated seedlings. Record results using length measurements and labelled biological drawings.	• **Thermoregulatory Centre** • **Vasodilation** • **Vasoconstriction** • **Insulin** • **Glucagon** • **Type 1 and Type 2 Diabetes** • **ADH** • **Kidney Dialysis** • **Negative Feedback** • **Thyroxine** • **Adrenaline** • **Auxin** • **Gibberellins** • **Ethene** • **Phototropism** • **Gravitropism** • **Tissue Culture**	EXAM_ End of year (GCSE paper 1) TEST_Homeostasis