**Year 10 Exam Biology**

**Topic 1**

Cells and functions of the different parts– animal, plant, bacteria and specialised cells (egg, sperm, ciliated epithelial cells).

Microscopes – light and electron microscopes, magnification calculation, drawing cells, using a microscope and preparing slides.

Enzymes – lock and key hypothesis, effect of temperature, pH and substrate concentration and core practical on effect of pH on amylase digesting starch

Biological molecules – food tests for proteins, lipids, starch and reducing sugars and calorimetry

Movement of substances – osmosis, diffusion, active transport and core practical on osmosis in potatoes.

**Topic 2**

Cell cycle – interphase, mitosis including the stages and outcomes. Cause of cancer.

Growth – Growth in plants and animals, percentile charts, stem cells and their use in medicine.

The brain and eye – structure of the brain, techniques for accessing the brain (CT and PET), the structure of the eye, defects of the eye (long-sighted/short-sighted/cataracts/colour blind) and how they are treated.

Nervous system – structure and function of neurones including myelination. Receptors, effectors and the nerves involved in a reflex arc. Synapses and reactions.

**Topic 3**

Sexual and asexual reproduction, meiosis

DNA – structure, extraction from fruit and key terms associated with genetics

Protein synthesis – transcription, translation, mutations in coding and non-coding regions of genes

Inheritance – Punnett squares for inheritance of dominant and recessive traits, percentage outcomes for crosses, family pedigrees, sex-linked inheritance, blood groups

Variation – genetics and environmental influences, human genome project, effect of mutations on phenotype

**Topic 4**

Evolution – Darwin’s theory of evolution, antibiotic resistance, human evolution, the use of stone tools to date species of human ancestors and the pentadactyl limb

The three domain classification – know prokaryotic, eukaryotic and reasons for the domain system

Selective breeding, tissue culture and genetic engineering including the steps involved and the advantages and disadvantages of them in farming and medicine. The advantages and disadvantages of insect resistance crops.

Agricultural solutions to a growing human population, biological control, fertilisers

**Topic 5**

Definition of health from the WHO, communicable and non-communicable diseases.

Symptoms, causes, mechanism of spread a nd prevention for: cholera, TB, chalara ash dieback, malaria, HIV, stomach ulcers and Ebola.

Physical and chemical barriers to infection