Biology paper 1 revision list

- Cell structure
  - Animal cells
  - Plant cells
  - Eukaryotes and prokaryotes
  - Bacterial cells
- Investigating cells
  - The size of cells
  - Using microscopes to look at cells
  - Calculating magnification
- Cell division
  - Chromosomes
  - Mitosis and the cell cycle
  - Stem cells
  - Uses of stem cells
- Transport in and out of cells
  - Diffusion
  - Factors affecting diffusion
  - Osmosis
  - Active transport
  - Comparing processes
- Levels of organisation
  - Specialised cells
  - Tissues, organs and systems
- Digestion
  - Enzymes
  - Enzymes in digestion
  - Bile in digestion
- Blood and circulation
  - Blood
  - Blood vessels
  - The heart
  - Gaseous exchange
- Non communicable disease
  - Health and disease
  - Risk factors
  - Diseases of the heart
  - cancer
- Transport in plants
  - Plant tissues
  - Water transport/transpiration
  - translocation
- Pathogens and disease
  - Pathogens and disease
  - Viral diseases
  - Bacterial diseases
  - Fungal diseases
  - Protist diseases
- Human defences against disease
  - Preventing entry to pathogens
  - The immune system
  - Vaccines
- Treating disease
  - Antibiotics
  - Developing new drugs
- Photosynthesis
  - Photosynthesis
  - Factors effecting photosynthesis
  - Converting glucose
- Respiration and exercise
  - The importance of respiration

    - Aerobic respiration
    - Anaerobic respiration
    - Exercise and respiration
    - Metabolism

Higher tier

- Inverse square law
- Multiple factors affecting photosynthesis
- Oxygen debt

Single science

- Culturing microorganisms
- Required practical investigating zones of inhibition
- Plant disease and deficiency
- Plant physical, chemical and mechanical defences

Single science higher

- Monoclonal antibodies
- Uses of monoclonal antibodies
- Plant disease detection and identification

Biology paper 2 revision list

- Homeostasis
    - The importance of homeostasis
    - Control systems
    - The nervous system
- Hormones and homeostasis
    - The endocrine system
    - Control of blood glucose
- Hormones and reproduction
    - Sex hormones
    - Controlling the menstrual cycle
    - Reducing fertility
- Sexual and asexual reproduction
    - Asexual reproduction
    - Sexual reproduction and meiosis
    - The genome
- Patterns of inheritance
    - Genetic inheritance
    - Genetic crosses
    - Inherited disorders
    - Sex determination
- Variation and evolution
    - Variation
    - Evolution
    - Evidence for evolution
- Manipulating genes
    - Selective breeding
    - Genetic engineering
- Classification
    - Principles of classification
    - Extinction
    - Evolutionary trees
- Ecosystems
    - Relationships between organisms
    - Adaptations
    - Transect lines
    - Quadrat sampling
- Cycles and feeding relationships
    - Carbon cycle
    - Water cycle
    - Cycling materials

- Disrupting ecosystems
    - Biodiversity
    - Pollution
    - Overexploitation
    - Conserving biodiversity

Higher tier

- Low glucose levels
- Negative feedback cycles
- Interactions of FSH, LH, oestrogen and progesterone
- Hormone levels in the menstrual cycle
- In vitro fertilisation IVF
- Adrenaline negative feedback cycle
- Thyroxine negative feedback cycle
- Process of genetic engineering using enzymes

Single science

- The brain
- The eye
- Eye accommodation
- Controlling body temperature
- Maintaining water levels in the body
- The kidneys and filtration
- Kidney dialysis
- Required practical – investigating light and gravity on germinating seeds
- Phototropism and geotropism
- Advantages and disadvantages of asexual and sexual reproduction
- DNA structure
- Cloning
- Darwin, Wallace and Lamarck's theories of evolution
- Speciation
- Gregor Mendel's experiments and genetics
- Decomposition and decay
- Required practical – the effect of temperature on the rate of decay using pH probes
- Trophic levels
- Pyramids of biomass
- Transfer of biomass
- Factors effecting food security
- Intensive farming
- Sustainable fisheries
- Role of biotechnology

Single science higher

- Investigating brain function and treating brain disease
- Increasing and decreasing body temperature
- Deamination
- Antidiuretic hormone negative feedback cycle
- Plant hormones
- Protein synthesis
- Mutations and enzyme structure
- Impact of environmental change

Chemistry paper 1 revision list

- Atom, elements, compounds and mixtures
    - Atoms, elements and compounds
    - Word equations
    - Balancing equations
    - Separating mixtures
- Atoms and the periodic table
    - Models of the atom
    - Subatomic particles
    - Isotopes and ions
    - Electron configuration
- The periodic table
    - The development of the periodic table
    - Group 0
    - Group 1 alkali metals
    - Group 7 halides
- States of matter
    - Three states of matter
    - Changing states

- Identifying states
- State symbols

- Ionic compounds
  - Chemical bonds
  - Ionic bonding
  - Ionic properties
- Covalent compounds
  - Covalent bonding
  - Small molecules
  - Giant covalent structures
  - Diamond and graphite
- Metals and special materials
  - Graphene
  - Fullerenes
  - Polymers
  - Metallic bonding
  - Properties of metals
  - Alloys

- Conservation of mass
  - The conservation of mass
  - Relative formula mass
  - Percentage abundance
  - Changes in mass
  - Concentration
- Reactivity of metals
  - Oxidation and reduction
  - The reactivity series
  - Displacement reactions
  - Extraction of metals

- The pH scale and salts
  - pH scale
  - neutralisation of acids
  - soluble salts from insoluble bases
- Electrolysis
  - Molten electrolysis
  - Aqueous electrolysis
  - Aluminium electrolysis
- Endothermic and exothermic reactions
  - Energy transfers
  - Reaction profiles

Higher tier

- Limitations of models
- Moles
- Amounts of substances
- Using moles to balance equations
- Using moles to find the limiting reactant
- Using moles to calculate concentration
- Oxidation and reduction in terms of electrons
- Redox equations
- Strong and weak acids
- Half equations
- Bond energies
- Making and breaking bonds

Single science

- Properties of transition metals

- Nanoparticles and coarse particles
- Uses of nanoparticles
- Percentage yield
- Atom economy
- Required practical – Titrations
- Chemical cells and fuel cells

Single science higher

- Calculating theoretical mass
- Explaining why specific reaction pathways are chosen
- Calculating concentration using moles, and volume (titration)
- Calculating mass from concentration (titration)
- Calculating the volume of gas from mass and relative formula mass
- Half equations for hydrogen fuel cells

- Rate of reaction
    - Calculating rate of reaction
    - Collision theory
    - Plotting reaction rates
- Reversible reactions
    - Catalysts
    - Reversible reactions
    - Closed systems
- Alkanes
    - Crude oils and hydrocarbons
    - Fractional distillation
    - Alkanes
    - Burning fuels
- Cracking hydrocarbons
    - Cracking hydrocarbons
    - Bromine water
- Chemical analysis
    - Pure and impure substances
    - Formulations
    - Chromatography
    - Gas tests
- The earths atmosphere
    - The early atmosphere
    - The atmosphere today
    - Increasing oxygen
    - Decreasing carbon dioxide
- Greenhouse gasses
    - Greenhouse gasses
    - The impact of human activities
    - Global climate change
    - Carbon footprints
- Earths resources
    - Sustainable development
    - Potable water
    - Waste water treatment
- Using resources
    - Life cycle assessments
    - Reducing the use of resources

Higher tier

- Calculating rate using a tangent on a graph
- Le Chatelier's principle
- Changing effects on equilibrium
- Changing temperature on equilibrium
- Changing pressure on equilibrium
- Changing concentration on equilibrium
- Alternative methods of metal extraction
- Bioleaching
- Phyto mining

Single science

- Alkenes and alcohols
- Addition polymerisation
- DNA as a monomer
- Flame tests
- Sulfate tests
- Halide tests
- Hydroxide tests
- Carbonate testing
- Required practical – testing for unknown chemicals
- Flame emission spectroscopy

- Corrosion and prevention
- Alloys as useful materials
- Ceramics, polymers, composites
- Thermosetting and thermosetting plastics
- The Haber process
- NPK fertilisers

Single science higher

- Condensation polymerisation
- Amino acid polymerisation
- Dynamic equilibrium and Le Chatelier's principle in the Haver process

Physics paper 1 revision list

- Energy stores and transfers
    - Energy stores and systems
    - Calculating energy changes
    - Specific heat capacity
    - Internal energy
- Energy transfers and resources
    - Energy transfers
    - National and global energy resources
- Electricity
    - Circuit symbols
    - Electric charge and current
    - Resistance and potential difference
- Circuits and resistance
    - Resistors
    - IV characteristics
    - Thermistors and LDRs
- Circuits and power
    - Series and parallel circuits
    - Power in circuits
- Domestic uses of electricity
    - Direct and alternating potential difference
    - Mains energy
    - Plugs
    - Dangers of mains electricity
    - Power and efficiency
- Electrical energy in devices
    - Energy transfers in appliances
    - The national grid
- Particle model of matter
    - States of matter
    - Density
    - Changes of state
    - Specific latent heat
    - Particle motion and pressure in gasses
- Atoms and isotopes
    - The structure of the atom
    - Isotopes
    - The plum pudding model
    - Rutherford, Geiger and Marsden
    - Alpha particle scattering
- Nuclear radiation
    - Alpha, beta and gamma
    - Decay equations

- Nuclear decay
- Contamination and irradiation

- Half life
  - Half life
  - Nuclear equations

Higher tier

- Ways to increase efficiency
- Calculate half life as a ratio
- Forces acting on an isolated system

Single science

- Required practical – investigating thermal properties of insulators
- Static electricity
- Electric fields
- Pressure in gasses
- Hazards and used or radiation and background radiation
- Nuclear fission
- Nuclear fusion

Single science higher

- Work done, temperature, pressure and internal energy of gasses

Physics paper 2 revision list

- Forces introduction
  - Scalar and vector quantities
  - contact and non contact forces
  - gravity
  - resultant forces
- Forces in action
  - Work done and energy transfer
  - Forces and elasticity
- Forces and motion
  - Distance and displacement
  - Speed
  - Velocity
  - Newtons first law
  - Distance time graphs
- Forces and acceleration
  - Acceleration
  - Velocity time graphs
  - Newtons second law
- Terminal velocity, total stopping distance
  - Terminal velocity
  - Newtons 3rd law
  - Stopping distance
  - Reaction time
  - Factors effecting braking distance
- Wave and wave properties
  - Transverse and longitudinal waves
  - Properties of waves
  - Wave speed
- Electromagnetic waves
  - Electromagnetic waves

    - Refraction
    - Ray diagrams
- The electromagnetic spectrum
    - Uses and applications of electromagnetic waves
    - Hazards of electromagnetic waves
- Magnetism and electromagnetism
    - Magnetic poles and fields
    - Electromagnetism and solenoids

Higher tier

- Resolving resultant forces using vector diagrams
- Explain velocity
- Calculate distance using a velocity time graph
- Inertia
- Inertial mass
- Typical road vehicle decelerations
- Momentum
- Refraction and wavelength
- Wave front diagrams
- Radio wave transmission and absorption
- Explaining electromagnetic uses
- Fleming's left hand rule
- Electric motors
- Magnetic flux density

Single science

- Moments, levers and gears
- Pressure in fluids
- Atmospheric pressure and height
- Draw and interpret velocity time graphs
- Estimate distances for emergency stops in vehicles over a range of speeds
- How velocity, frequency and wavelength are affected travelling between mediums
- Required practical - Reflection
- Diffuse and spectral reflection
- Sound waves
- Concave and convex lenses
- Visible light and colour filters
- Black body radiation
- Perfect black bodies
- Absorption and emission at constant temperature
- Absorption and emission of earth

- How electromagnetic devices work
- The solar system and satellites
- Life cycle of a star
- Pressure and gravity equilibrium in stars
- Forming new elements in stars
- Orbit motions
- Redshift and wavelength
- Evidence for space expansion
- Big bang theory
- Dark mass and dark energy
- Uses of the generator effect
- How microphones work
- Step up and step down transformers
- Explaining velocity changes for planets
- Explaining orbit radius with speed changes

Single science higher

- Pressure in a column of water
- Pressure in partially submerged objects
- Calculating momentum following a collision
- Calculating a change in momentum
- Calculating force as the rate of change of momentum
- Seismic waves
- Uses and exploration of sound waves
- How loudspeakers work
- Induced potential