

AQA GCSE Combined Science: Trilogy (Foundation) – Topics by Paper

BIOLOGY

Paper 1

1. Cell Biology

- Cell structure (animal, plant, bacterial)
- Specialised cells
- Microscopy (basic calculations)
- Cell division (mitosis)
- Stem cells (uses and ethics)
- Transport in cells: diffusion, osmosis, active transport



Notes



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2. Organisation

- Digestive system and enzymes
- Heart and blood vessels
- Blood components
- Coronary heart disease
- Plant tissues (xylem and phloem)
- Transpiration



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3. Infection and Response

- Types of pathogens
- Communicable and non-communicable disease
- Human defence systems
- Vaccination
- Antibiotics and painkillers
- Drug development



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4. Bioenergetics

- Photosynthesis
- Factors affecting photosynthesis
- Respiration
- Exercise and metabolism
- Energy transfers



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Paper 2

5. Homeostasis and Response

- Nervous system and reflexes
- Hormones and endocrine system
- Menstrual cycle
- Contraception
- Fertility treatment (IVF)
- Blood glucose control
- Thyroxine and adrenaline



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6. Inheritance, Variation and Evolution

- DNA, genes, chromosomes
- Sexual and asexual reproduction
- Genetic inheritance
- Variation
- Evolution and natural selection
- Selective breeding
- Genetic engineering
- Extinction



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7. Ecology

- Levels of organisation
- Food chains and webs
- Decomposition
- Carbon cycle
- Water cycle
- Biodiversity
- Human impacts



Notes



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CHEMISTRY

Paper 1

1. Atomic Structure and the Periodic Table

- Atoms, elements, compounds
- Subatomic particles
- Periodic table layout
- Groups 1, 7 and 0



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2. Bonding, Structure and Properties of Matter

- Ionic, covalent and metallic bonding
- States of matter
- Particle model



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3. Quantitative Chemistry

- Relative formula mass
- Conservation of mass
- Balancing equations
- Concentration (g/dm^3)



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4. Chemical Changes

- Reactivity series
- Extraction of metals
- Acids, alkalis and salts
- pH scale
- Electrolysis



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5. Energy Changes

- Exothermic and endothermic reactions
- Reaction profiles



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Paper 2

6. Rate and Extent of Chemical Change

- Factors affecting rate
- Collision theory
- Reversible reactions
- Equilibrium



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7. Organic Chemistry

- Crude oil
- Alkanes and alkenes
- Cracking
- Polymers
- Ethanol



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8. Chemical Analysis

- Pure and impure substances
- Chromatography
- Flame tests
- Gas tests



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9. Chemistry of the Atmosphere

- Composition of the atmosphere
- Greenhouse gases
- Climate change
- Air pollution



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10. Using Resources

- Earth's resources
- Potable water
- Waste water treatment
- Life cycle assessments
- Recycling



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PHYSICS

Paper 1

1. Energy

- Energy stores and transfers
- Energy efficiency
- Heating and insulation
- Energy resources



Notes



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2. Electricity

- Circuits
- Current, voltage and resistance
- Series and parallel circuits
- Mains electricity
- Electrical safety



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3. Particle Model of Matter

- States of matter
- Internal energy
- Density
- Gas pressure



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4. Atomic Structure

- Structure of the atom
- Radioactive decay
- Half-life
- Background Radiation



Notes



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Paper 2

5. Forces

- Types of forces
- Resultant force
- Distance-time graphs
- Acceleration and Required Practical
- Speed
- Newton's laws
- Stopping distance



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6. Waves

- Types of waves
- Wave properties
- Sound
- Light
- EM spectrum



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7. Magnetism and Electromagnetism

- Magnetic fields
- Electromagnets
- Electric motors
- Transformers
- National Grid



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