Combined Science Paper 1 FOUNDATION

Biology

These specification points will be the **major focus** of this paper.

Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
4.1.2 Cell Division	-How DNA is arranged as chromosomes -Series of stages in the cell cycles inc. mitosis -Definition and uses of stem cells	25-28	https://www.bbc.co.uk/bitesize/guides/z2kmk2p/revision/2 https://www.bbc.co.uk/bitesize/guides/z2kmk2p/revision/3	https://www.youtube.com/watch?v=RHyZVmbiA78 https://www.youtube.com/watch?v=Kh27eyjxvYM&t=24s
Required practical 1: use of light microscope	-How to prepare slides -How to use the microscope to improve field of view, clarify, change magnification - Microscopy calculations	19-21	https://www.bbc.co.uk/bitesize/guides/zpqpqhv/revision/1	https://www.youtube.com/watch?v=jBVxo5T-ZQM&t=8s
4.2.2 Animal tissues, organs and organ systems	- Functions of tissues and organs in the digestive system -Digestive enzymes -Functions of tissues and organs in the circulatory system -Pathway of blood through the heart -adaptations of components of the blood -risk factors of non-communicable diseases	41-62 (NOT P56)	https://www.bbc.co.uk/bitesize/guides/z89mk2p/revision/1 https://www.bbc.co.uk/bitesize/guides/zsncsrd/revision/1	https://www.youtube.com/watch?v=4ui4oSHHnzA https://www.youtube.com/watch?v=VLK2wANjQm0 https://www.youtube.com/watch?v=bpYaKM2hVFY
Required practical 3: test for carbohydrates, lipids and proteins	-Reagent and positive result for carbohydrates, proteins and lipids	43	https://www.bbc.co.uk/bitesize/guides/z89mk2p/revision/3	https://www.youtube.com/watch?v=SqWTJWOBww4
4.3.1 Communicable Diseases	-definition and examples of pathogen -how viruses and bacteria make us ill -examples of diseases caused by each type of pathogen -human defence mechanisms -what happens in a vaccine -comparing antibody production after active and passive immunity -role of antibiotics -stages in the development of drugs	72-84	https://www.bbc.co.uk/bitesize/topics/z9kww6f	https://www.youtube.com/watch?v=dbd5iydu3EY https://www.youtube.com/watch?v=5X9MklLVhlw https://www.youtube.com/watch?v=HSrrPdJDqxM https://www.youtube.com/watch?v=uPeZBhJYlnU https://www.youtube.com/watch?v=w3ykU52K-Hw
4.4.1 Photosynthesis	-photosynthesis equation -factors affecting rate of photosynthesis	85-88 Not inc. bottom half of 85	https://www.bbc.co.uk/bitesize/guides/zs4mk2p/revision/1	https://www.youtube.com/watch?v=rAJGnS_ktk4
Required Practical 5: effect of light intensity on rate of photosynthesis	-independent, dependent, control variables -How to measure the dependent variable -method -analysing results	88	https://www.bbc.co.uk/bitesize/guides/zs4mk2p/revision/5	https://www.youtube.com/watch?v=cBCKedXdFeE

These specification points will **not be assessed** on this paper.

Exam date: 17th May

Spec point	CGP Revision Guide Pages
4.1.3.2 Osmosis	31
4.1.3.3 Active Transport	33
4.2.2.4 Coronary Heart Diseases	56
4.4.1.3 Uses of Glucose from Photosynthesis	Bottom half P85
4.4.2 Respiration and Metabolism	91-94

These areas **may still be assessed** in multiple choice questions/linked to a previous answer, so cannot be completely ignored in your revision.

Content	CGP Revision Guide Pages
Cells, specialisation, microscopy	17-19
Diffusion	30
Exchanging substances	34-37
Cell organisation	40
Cancer and Plant Organisation	64-70

Chemistry

These specification points will be the **major focus** of this paper.

Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
5.1.2 The Periodic Table	-The Periodic Table is arranged in order of proton number -What atoms of elements in the same group have in common -What atoms of elements in the same period have in common -development in the Periodic Table -ions formed from metals and non-metals -trends in physical and chemical properties of group 1,7 and 0 elements - Reactions of group 1 and 7 elements	179-189	https://www.bbc.co.uk/bitesize/guides/zwt2k2p/revision/1 https://www.bbc.co.uk/bitesize/guides/ztrxdxs/revision/1	https://www.youtube.com/watch?v=IdS9roW7IzM&t=119s https://www.youtube.com/watch?v=uwzXfZoCP_k https://www.youtube.com/watch?v=dZGDUKQa_6g https://www.youtube.com/watch?v=HT1zAPQIBAQ
5.2.2 How bonding and structure are related to the properties of a substance **5.2.3** Structure and bonding of carbon	-interpreting melting and boiling point data to determine state at a certain temp -state symbols -describe and explain properties of ionic compounds -describe and explain properties of simple covalent molecules -describe and explain properties of polymers -describe and explain properties of metals and alloys -describe and explain the properties of diamond, graphite, graphene and fullerenes	200-207	https://www.bbc.co.uk/bitesize/topics/z33rrwx https://www.bbc.co.uk/bitesize/guides/zgq8b82/revision/2	https://www.youtube.com/watch?v=IeVxy7cjZMU https://www.youtube.com/watch?v=DECGNyC-x_s https://www.youtube.com/watch?v=EP0zfm_FVqc https://www.youtube.com/watch?v=A-wTpLPICd0 https://www.youtube.com/watch?v=tGH0mXCcEFU
5.4.1 The Reactivity of Metals	-Metals + oxygen -Reduction and oxidation in terms of oxygen -The Reactivity Series - Displacement reactions - Extraction of metals by reduction	219-222	https://www.bbc.co.uk/bitesize/guides/zy7dgdm/revision/1	https://www.youtube.com/watch?v=Lk1V0buHEFs https://www.youtube.com/watch?v=2i5Lm7BMtpo https://www.youtube.com/watch?v=MXTSels6e2Y
5.4.2 Reactions of Acids	-Naming Salts -products of the reactions of acids and metals -produces of the reactions of acids and alkalis and insoluble bases -products of the reactions of acids and metal carbonates -pH scale and neutralisation	215-218	https://www.bbc.co.uk/bitesize/guides/ztv2dxs/revision/1	https://www.youtube.com/watch?v=ofw6oHSYGFI https://www.youtube.com/watch?v=QlSsle_jSQ8
5.4.2.3 and **Required Practical 8:** preparation of a pure, dry sample of soluble salts	-method of producing solid salt crystals from insoluble oxide or carbonate and acids -identifying errors in methods and reagents	217	https://www.bbc.co.uk/bitesize/guides/ztv2dxs/revision/5	https://www.youtube.com/watch?v=9GH95172Js8&t=16s

Spec point	Concepts	CGP revision guide pages	Bitesize	YouTube
5.4.3 Electrolysis	-The process of electrolysis -Electrolysis of molten ionic compounds -Electrolysis of aluminium oxide -Electrolysis of aqueous solutions	223-227	https://www.bbc.co.uk/bitesize/guides/z9h9v9q/revision/1	https://www.youtube.com/watch?v=AhTRiL6xjBA&t=2s https://www.youtube.com/watch?v=ilNOpROacf0 https://www.youtube.com/watch?v=YcyMElBEzAY https://www.youtube.com/watch?v=6WjC_Vi4roA
Required Practical 9: : investigate what happens when aqueous solutions are electrolysed using inert electrodes.	-Developing a hypothesis -Planning an investigation	225-226 Top of 396	https://www.bbc.co.uk/bitesize/guides/z9h9v9q/revision/3	https://www.youtube.com/watch?v=ukbtTTG1Kew
Required Practical 10: investigate the variables that affect temperature changes in reacting solutions such as, eg acid plus metals, carbonates, neutralisations, displacement of metals	-Identifying independent, dependent, control variables -Analysing results -identifying exo and endothermic reactions from experimental results	229	https://www.bbc.co.uk/bitesize/guides/z2b2k2p/revision/2	https://www.youtube.com/watch?v=Bz0C9mmF2tw

ALL other content from C1 **may still be assessed** in multiple choice questions/linked to a previous answer, so cannot be completely ignored in your revision

Physics

Foundation paper 1		
MAJOR FOCUS		Revision Pages

6.1.1 Energy changes in a system, and the ways energy is stored before and after such changes.	• The 8 energy stores
	• The 4 energy pathways
	• Changes for the following situations
	  ○ An object projected upwards
	  ○ A moving object hitting an obstacle
	  ○ An object accelerated by a constant force
	  ○ A vehicle slowing down
	  ○ Bringing water to a boil in an electric kettle
	• Kinetic energy equation
	• Elastic potential energy equation
	• Gravitational potential energy equation
	• Specific heat capacity
	• Power = $\frac{\text{energy tansferred}}{\text{time}}$
	• Work done
	• Conservation of energy
	• Efficiency
		283-286
		293-295

6.1.3 National and global energy resources	• Fossil fuels • Renewable/non-renewable methods of generating electricity • Reliability of energy sources • Environmental impacts	297-303
6.2.1 Current, potential difference and resistance	• Circuit symbols • Current as rate of flow of charge • Q = It • Ohm's Law (V = IR) • I/V Graphs, LDRs, thermistors • Explain why resistance in parallel decreases total resistance	305-307 312-313
6.3.1 Changes of state and the particle model	• Density ($\rho = \frac{m}{V}$) • Changes of state (melt, freeze, boil, condense, evaporate, sublimate) as physical change with mass conserved	328-330
6.4.2 Atoms and nuclear radiation	• Instability of atomic nuclei • Activity as rate of decay of unstable nuclei • Geiger-Muller tube as measuring device • α, β, γ radiation – properties and make-up (penetrating power, range in air ionising power) • Use of radionucleotides in industry and medicine • Decay equation of α β • Half-life – calculations and graphs • Radioactive contamination and irradiation – compare hazards of each	337-343
Required Practical	• Specific Heat Capacity • I/V Graphs	289-290 309-310
Low Tariff/Linked Topics		
6.1.2 Conservation and dissipation of energy	• Energy can be transferred usefully from store to store, but never created or destroyed. • Energy that dissipates to the surroundings is wasted. • Lubrication/thermal insulation can reduce unwanted energy transfers. • Efficiency = useful energy out/total energy in • Efficiency = useful power out/total power in	287 294-295

6.2.2 Series and parallel circuits	• Components in series
	  ○ Same current through each component
	  ○ Total potential difference is shared between components
	  ○ Total resistance is sum of resistances ($R_{Tot} = R_1 + R_2$)
	  ○ Resistance measured in Ohms (Ω)
	• Components in parallel
	  ○ Total current is sum of current through each branch
	  ○ Potential difference is the same on each branch
	  ○ Total resistance of two resistors is less than resistance of smallest individual resistor
	• Draw and check series and parallel circuits
	• Apply Ohm's law to series circuits
		314-318

6.2.4 Energy Transfers	• Power = potential difference x current (P = I x V) • Power = $\frac{Current^2}{Resistance}$ ($P = \frac{I^2}{R}$) • Electrical devices are designed to usefully transfer energy • Amount of energy transferred depends on power of device and time switched on • Energy transferred = power x time (E = P x t) • Energy transferred = charge x potential difference (E = Q x V) • National Grid – system of cables and transformers linking power stations to customers • Step-up transformer – increases p.d. to reduce current – more efficient energy transfer • Step-down transformer – reduces p.d. to increase current	321-324
6.3.2 Internal energy and energy transfers	• Energy is stored in a system by the particles • Internal energy – total of kinetic energy and potential energy of particles in system • Heating increases kinetic energy, therefore increasing internal energy • Change in thermal energy = mass x specific heat capacity x temperature change ($\Delta E = m \times c \times \Delta \theta$) • The specific heat capacity of a substance is the amount of energy required to raise the temperature of one kilogram of the substance by one degree Celsius. • Energy needed for change of state is called latent heat. • During change of state, internal energy changes but not temperature. • Energy for change of state = mass x specific latent heat (E = m x L)	330
NOT ON EXAM		
6.2.3 Domestic uses and safety	• AC/DC (alternating current/direct current) • Plugs, cables, fuses, live, neutral, earth • UK main domestic supply – 50 Hz and 230 V.	320
6.3.3 Particle model and pressure	• Particle model of materials • Gas pressure	326-327
6.4.1 Atoms and isotopes	• Size and structure of atom, electron energy levels • Mass number, atomic number, isotopes • Development of the atomic model (Dalton, Thompson plum pudding, Rutherford alpha scattering, Bohr electrons orbits, Chadwick discovery of neutrons)	334-336