BIOLOGY

Revision Checklist: GCSE AQA Combined Science: Trilogy (Higher Tier)

1	2	3	4	5

No understanding — Exam-ready

	5. HOMEOSTASIS & RESPONSE	Rate topics 1 to 5
a.	Homeostasis	
b.	The reflex arc	
c.	The endocrine system	
d.	Blood glucose control	
e.	Diabetes	
f.	Hormones in reproduction	
g.	The menstrual cycle	
h.	Contraception	
i.	Treating infertility	
j.	Thyroxine & adrenaline	

	6. INHERITANCE, VARIATION & EVOLUTION	Rate topics 1 to 5
a.	Sexual & asexual reproduction	
b.	Meiosis	
c.	DNA structure	
d.	The genome	
e.	Alleles & inheritance	
f.	Inherited disorders	
g.	Sex determination	
h.	Variation	
i.	Selective breeding	
j.	Genetic engineering	
k.	Cloning	
l.	The theory of evolution	
m.	Speciation	
n.	Fossils	
o.	Extinction	
p.	Antibiotic resistant bacteria	
q.	Classification of organisms	

	7. ECOLOGY	Rate topics 1 to 5
a.	Communities & interdependence	
b.	Abiotic & biotic factors	
c.	Adaptations	
d.	Food chains & webs	
e.	Predator-prey cycles	
f.	Carbon & water cycle	
g.	Biodiversity	
h.	Waste management	
i.	Land use & deforestation	
j.	Global warming	
k.	Maintaining biodiversity	

	10. QUANTITATIVE CHEMISTRY	Rate topics 1 to 5
a.	Balancing chemical equations	
b.	Conservation of mass	
c.	Relative formula mass	
d.	Percentage by mass	
e.	Estimating uncertainty	
f.	Moles	
g.	Using moles to calculate masses	
h.	Using moles to balance equations	
i.	Limiting reactants	
j.	Concentration	

	11. CHEMICAL CHANGES	Rate topics 1 to 5
a.	The reactivity series	
b.	Reduction & oxidation	
c.	Extracting metals by reduction	
d.	Ionic & half equations	
e.	Reacting acids with metals	
f.	Neutralisation of acids & naming salts	
g.	pH	
h.	Strong & weak acids	
i.	Electrolysis of molten ionic compounds	
j.	Electrolysis of aqueous solutions	

	12. ENERGY CHANGES	Rate topics 1 to 5
a.	Exothermic & endothermic reactions	
b.	Reaction profiles	
c.	Calculating energy change of reactions	

	13. THE RATE & EXTENT OF CHEMICAL CHANGE	Rate topics 1 to 5
a.	Calculating rate of reaction	
b.	Factors affecting rate of reaction	
c.	Collision theory & activation energy	
d.	Catalysts	
e.	Reversible reactions	
f.	Le Chatelier's principle	
g.	Factors which affect equilibrium	

	14. ORGANIC CHEMISTRY	Rate topics 1 to 5
a.	Crude oil	
b.	Alkanes	
c.	Fractional distillation	

d.	Properties of hydrocarbons	
e.	Combustion reactions	
f.	Alkenes	
g.	Addition reactions	
h.	Cracking	

	15. CHEMICAL ANALYSIS	Rate topics 1 to 5
a.	Purity	
b.	Formulations	
c.	Paper chromatography	
d.	Tests for common gases	

	16. CHEMISTRY OF THE ATMOSPHERE	Rate topics 1 to 5
a.	Composition of Earth's atmosphere	
b.	Evolution of Earth's atmosphere	
c.	The greenhouse effect	
d.	Human activity & greenhouse gases	
e.	Global climate change	
f.	The carbon footprint	
g.	Atmospheric pollutants	

	17. USING RESOURCES	Rate topics 1 to 5
a.	Using Earth's resources	
b.	Potable water	
c.	Waste water treatment	
d.	Low-grade copper ores	
e.	Life cycle assessment	
f.	Recycling	

	22. FORCES	Rate topics 1 to 5
a.	Scalars & vectors	
b.	Contact & non-contact forces	
c.	Gravity & weight	
d.	Resultant forces	
e.	Vector diagrams	
f.	Work done	
g.	Springs & elasticity	
h.	Distance & displacement	
i.	Speed & velocity	
j.	Distance-time graphs	
k.	Acceleration	
l.	Velocity-time graphs	
m.	Terminal velocity	
n.	Newton's first law	
o.	Newton's second law & inertia	
p.	Newton's third law	
q.	Stopping distance & reaction time	
r.	Factors affecting braking distance	
s.	Momentum	

	23. WAVES	Rate topics 1 to 5
a.	Transverse & longitudinal waves	
b.	Properties of waves	
c.	Refraction	
d.	Ray diagrams (refraction)	
e.	Waves for detection & exploration	
f.	Electromagnetic (EM) spectrum	
g.	Radio waves	
h.	Risks of EM radiation	
i.	Uses of EM waves	

	24. MAGNETISM & ELECTRO-MAGNETISM	Rate topics 1 to 5
a.	Bar magnets	
b.	Magnetic fields	
c.	Electromagnets	
d.	The motor effect & Fleming's left-hand rule	
e.	Electric motors	

EQUATIONS *(not given in exam)*	
Weight = mass x gravitational field strength	$W = m\,g$
Work done = force x distance	$W = F\,s$
Force (applied to a spring) = spring constant x extension	$F = k\,e$
Distance = speed x time	$s = v\,t$
Acceleration = $\frac{\text{change in velocity}}{\text{time}}$	$a = \frac{\Delta v}{t}$
Resultant force = mass x acceleration	$F = m\,a$
Momentum = mass x velocity	$p = m\,v$
Kinetic energy = 0.5 x mass x (speed)^2	$E_K = \frac{1}{2} m\,v^2$
Gravitational potential energy = mass x gravitational field strength x height	$E_P = m\,g\,h$
Power = $\frac{\text{energy transferred}}{\text{time}}$	$P = \frac{E}{t}$
Power = $\frac{\text{work done}}{\text{time}}$	$P = \frac{W}{t}$
Efficiency = $\frac{\text{useful energy out}}{\text{total energy in}}$	
Efficiency = $\frac{\text{useful power out}}{\text{total power in}}$	
Wave speed = frequency x wavelength	$v = f\,\lambda$
Charge = current x time	$Q = I\,t$
Potential difference = current x resistance	$V = I\,R$
Power = potential difference x current	$P = V\,I$
Power = (current)^2 x resistance	$P = I^2\,R$
Energy transferred = charge x potential difference	$E = Q\,V$

PHYSICS

PRACTICALS	Rate topics 1 to 5
RP 6: "Investigate the effect of a specific factor on human reaction time."	
RP 7: "Use sampling techniques to investigate the effect of a specific factor on the distribution of a species in a habitat."	
RP 9: "Investigate the electrolysis of aqueous solutions (a hypothesis must be formed and developed)."	
RP 10: "Investigate factors affecting temperature change when reacting solutions together."	
RP 11a: "Investigate how concentration affects the rate of reaction by measuring the volume of gas produced (a hypothesis must be formed and developed)."	
RP 11b: "Investigate how concentration affects the rate of reaction by observing a colour change (a hypothesis must be formed and developed)."	
RP 12: "Use paper chromatography to separate coloured substances and determine R_f values."	
RP 13: "Identify pH and amount of dissolved solids in water samples from different sources, and use distillation to purify them."	
RP 18: "Investigate the relationship between force and extension of a spring."	
RP 19: "Investigate separately how varying the force and mass of an object affect its acceleration."	
RP 20: "Measure the frequency, wavelength and speed of waves in a ripple tank, and waves in a solid."	
RP 21: "Investigate how the amount of infrared radiation absorbed and radiated depends on the type of surface."	