

Howden School Science Department Exams 2022/3

AQA Combined Science TRILOGY (8464)

-Revision Checklists



Combined Biology Paper 1

Cell Biology

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE BIOL
4.1.1.1	Eukaryotes and prokaryotes		11	11	11
4.1.1.2	Animal and plant cells		11	11	11
4.1.1.5	Microscopy		12	12	12
RP 1	★Required practical – using a light microscope		13	13	13
4.1.1.3	Cell specialisation		14	14	14
4.1.1.4	Cell differentiation		14	14	14
4.1.2.1	Chromosomes		14	14	14
4.1.2.2	Mitosis and the cell cycle		15	15	15
4.1.2.3	Stem cells		16	16	19
4.1.3.1	Diffusion		17	17	20
4.1.3.2	Osmosis		18	18	21
RP 2	★Required practical – osmosis		18	18	21
4.1.3.3	Active transport		19	19	22
4.1.3.1	Exchange surfaces		20-22	20-22	23-25

Organisation

4.2.1	Animal tissues, organs and organ systems		24	24	27
4.2.2.1	The human digestive system		24	28	30-31
4.2.2.1	Enzymes		25-27	25-27	28
RP 3	★Required practical – food tests		28	29	32
RP 4	★Required practical – enzymes		26	26	29
4.2.2.2	The heart and blood vessels (heart)		30-31	31-32	34-35
4.2.2.2	The heart and blood vessels (lungs)		29	30	33
4.2.2.3	Blood		32	33	36
4.2.2.4	Coronary heart disease		33-34	34-35	37-38
4.2.2.5	Health issues		35	36	39
4.2.2.6	The effect of lifestyle on some non-communicable diseases		36	37	40
4.2.2.7	Cancer		37	38	41
4.2.3.1	Plant tissues		38	39	42
4.2.3.2	Plant organ system		39-40	40-41	43-44

Infection and response

4.3.1.1	Communicable infectious disease		42	43	46
4.3.1.2	Viral diseases		44	44	47
4.3.1.3	Bacterial diseases		43	44	48
4.3.1.4	fungal diseases		45	44	47
4.3.1.5	Protist diseases		45	44	47
4.3.1.6	Human defence systems		46	46	49
4.3.1.7	Vaccination		47	47	50
4.3.1.8	Antibiotics and painkillers		48	48	51
4.3.1.9	Discovery and development of drugs		49	49	52

Bioenergetics

4.4.1.1	Photosynthetic reaction		50	50	57
4.4.1.2	Rate of photosynthesis		51- 52	51- 52	58- 60
RP 5	★Required practical – photosynthesis		52	52	59
4.4.1.3	Uses of glucose from photosynthesis		50	50	57
4.4.2.1	Aerobic respiration		54	55	62
4.4.2.1	Anaerobic respiration		54	55	62
4.4.2.2	Response to exercise		55	56	63
4.4.2.3	Metabolism		53	54	61

Combined Chemistry Paper 1

Atomic structure and the periodic table					
	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE BIOL
5.1.1.1	Atoms, elements and compounds		97-99	96-99	12-15
5.1.1.2	Mixtures		100-3	100-2	16-18
5.1.1.3	Scientific models of the atom		104	103	19
5.1.1.4	Relative electrical charges of subatomic particles		96	96	12
5.1.1.5	Size and mass of atoms		96	96	12
5.1.1.7	Electronic structure		105	104	20
5.1.1.6	Relative atomic mass		97	97	13
5.1.2.1	The periodic table		107	106	22-23
5.1.2.2	Development of the periodic table		106	105	21
5.1.2.3	Metals and non-metals		108	107	23
5.1.2.4	Group 0		111	110	26
5.1.2.5	Group 1		109	108	24
5.1.2.6	Group 7		110	109	25
Bonding, structure and the properties of matter					
5.2.1.1	Chemical bonds		113	112	28
5.2.1.2	Ionic bonding		113-4	112-3	29
5.2.1.3	Ionic compounds		115	114	30
5.2.1.4	Covalent bonding		116	115	31
5.2.1.5	Metallic bonding		120	119	35
5.2.2.1	The 3 states of matter		121	120	36-37
5.2.2.2	State symbols		121	121	36
5.2.2.3	Properties of ionic compounds		115	114	30
5.2.2.4	Properties of small molecules		117	116	32
5.2.2.5	Polymers		118	117	33
5.2.2.6	Giant covalent structures		118	117	33
5.2.2.7	Properties of metals and alloys		120	119	35
5.2.2.8	Metals as conductors		120	119	35
5.2.3.1	Diamond		119	118	34
5.2.3.2	Graphite		119	118	34
5.2.3.3	Graphene fullerenes		119	118	34

Quantitative chemistry

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE BIOL
5.3.1.1	Conservation of mass and balanced equations		124	125	43
5.3.1.2	Relative formula mass		123	123	41
5.3.1.3	Mass changes when a reactant or product is a gas		125	125	43
5.3.1.4	Chemical measurements		126	128	47
5.3.2.1	Moles HT			124	42
5.3.2.2	Amounts of substances in equations HT			126	42-44
5.3.2.3	Using moles to balance equations HT			126	44
5.3.2.4	Limiting reactants HT			127	45
5.3.2.5	Concentration of solutions HT			128	47

Chemical changes

5.4.1.1	Metal oxides		129	133	56
5.4.1.2	The reactivity series		130-1	132	55
4.4.1.3	Extraction of metals and reduction		130	133	56
5.4.1.4	Oxidation and reduction in terms of electrons HT			134	57
5.4.2.1	Reaction of acids with metals		131	131	54
5.4.2.2	Neutralisation of acids and salt production		128	129	51/54
5.4.2.3	Soluble salts		133	131	54
RP 8	★Required practical – making salts		129	131	54
5.4.2.4	The pH scale and neutralisation		128	129	52
5.4.2.5	Strong and weak acids HT			130	53
5.4.3.1	The process of electrolysis		132	135	58
5.4.3.2	Electrolysis of molten ionic compounds		132	135	58
5.4.3.3	Using electrolysis to extract metals		132	135	58
5.4.3.4	Electrolysis of aqueous solutions		133	136	59
RP 9	★Required practical – electrolysis		133	135	59
5.4.3.5	Represent reactions at electrodes as half equations HT			135-6	58-59

Energy Changes

5.5.1.1	Energy transfer in exothermic & endothermic reactions		134	138	61
RP 10	★Required practical – temperature changes		135	139	62
5.5.1.2	Reaction profiles		136	139	62
5.5.1.3	The energy change of chemical reactions HT			140	63

Combined Physics Paper 1

Energy					
	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE PHYS
6.1.1.1	Energy stores and systems		167	167	11
6.1.1.2	Changes in energy		168	168	12
6.1.1.3	Energy changes in systems		169	168	12
6.1.1.4	Power		172	170	14
6.1.2.1	Energy transfers in systems		170	169	15
RP 14	★Required practical – specific heat capacity		171	169	13
6.1.2.2	Efficiency		173-4	171-2	17
6.1.3	National and global energy resources		175-9	173-7	18-22
Electricity					
6.2.1.1	Standard circuit diagram symbols		180	179	24
6.2.1.2	Electrical charge and current		180	179	24
6.2.1.3	Current, resistance and potential difference		181	180	25
6.2.1.4	Resistors		183-4	181-2	26-27
RP 15	★Required practical – resistance		182	180	25
RP 16	★Required practical – V-I characteristics		183	181	26
6.2.2	Series and parallel circuits		185-7	183-5	28-30
6.2.3.1	Direct and alternating current		188	186	31
6.2.3.2	Mains electricity		188	186	31
6.2.4.1	Power		190	187-8	33
6.2.4.2	Energy transfers in everyday appliances		189	187	32
6.2.4.3	The national grid		191	189	34

Particle model of matter

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE PHYS
6.3.1.1	Density of materials		194	192	38
RP 17	★Required practical – density		194	192	38
6.3.1.2	Changes of state		195	193	39
6.3.2.1	Internal energy		195	193	39
6.3.2.2	Temperature changes in a system and specific heat capacity		195	193	39
6.3.2.3	Changes of heat and specific latent heat		196	194	40
6.3.3.1	Particle motion in gases		193	191	41

Atomic structure

6.4.1.1	The structure of an atom		197	195	43
6.4.1.2	Mass number, atomic number and isotopes		198	196	44
6.4.1.3	The development of the model of the atom		104	195	43
6.4.2.1	Radioactive decay and nuclear radiation		198	196-7	44
6.4.2.2	Nuclear equations		199	197	45
6.4.2.3	Half-lives and the random nature of radioactive decay		200	198	46
6.4.2.4	Radioactive contamination		201	199	47

Combined Biology Paper 2

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
Homeostasis and response					
4.5.1	Importance of homeostasis		57	58	65
4.5.2	Structure and function of the nervous system		58-9	59-60	66-67
RP 6	★ Required practical – reaction time		60	61	68
4.5.3.1	Human endocrine system		61	62	73
4.5.3.2	Control of blood glucose concentration		62	63	74
4.5.3.3	Hormones in the reproductive system		63	64	77
4.5.3.4	Contraception		64-65	65-66	78
4.5.3.5	The use of hormones to treat fertility HT			66	79
4.5.3.6	Negative feedback HT			67	80
Inheritance, variation and evolution					
4.6.1.1	Sexual and asexual reproduction		67	69	87
4.6.1.2	Meiosis		68	70	88
4.6.1.3	DNA and the genome		66	68	84
4.6.1.4	Genetic inheritance		70	72-3	91-2
4.6.1.5	Inherited disorders		71-2	74	93
4.6.1.6	Sex determination		69	71	90
4.6.2.1	Variation		73	75	94-5
4.6.2.2	Evolution		74-6	76	96
4.6.2.3	Selective breeding		77	77	98
4.6.2.4	Genetic engineering		78	78	99
4.6.3.1	Evidence for evolution		79	79	101
4.6.3.2	Fossils		79	79	101
4.6.3.3	Extinction		74	76	96
4.6.3.4	Resistant bacteria		75-76	80	103
4.6.4	Classification		80-81	81	104

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
Ecology					
4.7.1.1	Communities		83	83	106
RP 7	★Required practical – field investigations		87-88	87-88	110-111
4.7.1.2	Abiotic factors		84	84	107
4.7.1.3	Biotic factors		84	84	107
4.7.1.4	Adaptations		85	85	108
4.7.2.1	Levels of organisation		86	86	109
4.7.2.2	Carbon cycle		90	90	113
4.7.2.2	Water cycle		89	89	112
4.7.2.2	Decomposition		90	90	114
4.7.3.1	Biodiversity		91	91	116
4.7.3.2	Waste management		91	91	116
4.7.3.3	Land use		93	93	118
4.7.3.4	Deforestation		93	93	118
4.7.3.5	Global warming		92	92	117
4.7.3.6	Maintaining biodiversity		94	94	119

Combined Chemistry Paper 2

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
The rate and extent of chemical change					
5.6.1.1	Calculating rates of reaction		142-3	144-6	69-71
5.6.1.2	Factors which affect the rate of chemical reactions		138-9	142-3	68-9
5.6.1.3	Collision theory		138	142	67
RP 11	★ Required practical – rate of reaction		140-1	144-5	69-70
5.6.1.4	Catalysts		139	143	68
5.6.2.1	Reversible reactions		144	147	72
5.6.2.2	Energy changes and reversible reactions		144	147	72
5.6.2.3	Equilibrium		144	147	72
5.6.2.4	The effect of changing conditions on equilibrium HT			148	73
5.6.2.5	The effect of changing concentration HT			148	73
5.6.2.6	The effect of temperature on equilibrium HT			148	73
5.6.2.7	The effect of pressure changes on equilibrium HT			148	73
Organic chemistry					
5.7.1.1	Crude oil, hydrocarbons and alkanes		146-7	150	75
5.7.1.2	Fractional distillation and petrochemicals		148	151	76
5.7.1.3	Properties of hydrocarbons		147-8	151-2	77
5.7.1.4	Cracking and alkenes		149	152	78
Chemical analysis					
5.8.1.1	Pure substances		150	153	86
5.8.1.2	Formulations		150	153	86
5.8.1.3	Chromatography		151	154	87
RP 12	★ Required practical - chromatography		152	154	87
5.8.2.1	Test for hydrogen		153	155	88
5.8.2.2	Test for oxygen		153	155	88
5.8.2.3	Test for carbon dioxide		153	155	88
5.8.2.4	Test for chlorine		153	155	88

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
Chemistry of the atmosphere					
5.9.1.1	The proportions of different gases in the atmosphere		155	157	91
5.9.1.2	The earth’s early atmosphere		155	157	91
5.9.1.3	How oxygen increased		155	157	91
5.9.1.4	How carbon dioxide decreased		155	157	91
5.9.2.1	Greenhouse gases		156	158	92
5.9.2.2	How human activities contribute to an increase in greenhouse gases in the atmosphere		156	158	94
5.9.2.3	Global climate change		156	158	92
5.9.2.4	The carbon footprint and its reduction		157	159	93
5.9.3.1	Atmospheric pollutants from fuels		158	160	94
5.9.3.2	Properties and effects of atmospheric pollutants		158	160	94
Using resources					
5.10.1.1	Using the Earth’s resources and sustainable development		159	161	99
5.10.1.2	Potable water		163-4	164	102
5.10.1.3	Waste water treatment		165	165	103
RP 13	★Required practical – water purification		164	164	102
5.10.1.4	Alternative methods of metal extraction HT			162	100
5.10.2.1	Life cycle assessment		161-2	163	101
5.10.2.2	Ways of reducing the use of resources		160	162	100

Combined Physics Paper 2

	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
Forces					
6.5.1.1	Scalar and vector quantities		203	201	51&54
RP 18	★Required practical – forces and extension		206-7	206	56
6.5.1.2	Contact and non-contact forces		203	201	51
6.5.1.3	Gravity		204	202	52
6.5.1.4	Resultant forces		205	204	53
6.5.2	Work done and energy transfer		205	203	53
6.5.3	Forces and elasticity		206	205	55
6.5.4.1	Describing motion along a line		210	209	62
6.5.4.1.1	Distance and displacement		208	207	60
6.5.4.1.2	Speed		208	207	60
6.5.4.1.3	Velocity		211	210	60&63
6.5.4.1.4	The distance-time relationship		210	209	62
6.5.4.1.5	Acceleration		209	208	61
RP 19	★Required practical – acceleration		214	213	66
6.5.4.2.1	Newton’s 1 st law		212	211	64
6.5.4.2.2	Newton’s 2 nd law		212	211	64
6.5.4.2.3	Newton’s 3 rd law		213	212	65
6.5.4.3.1	Stopping distance		215	214	67
6.5.4.3.2	Reaction time		217	215	68
6.5.4.3.3	Factors affecting braking distance 1		216	214	69
6.5.4.3.4	Factors affecting braking distance 2		216	214	69
6.5.5.1	Momentum is property of moving objects only HT			216	70
6.5.5.2	Conservation of momentum HT			216	70

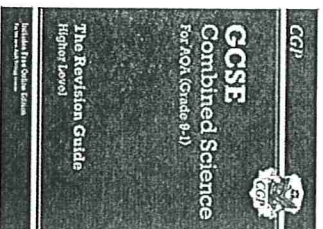
	Content	RAG	Revision guide pages		
			COMB F	COMB H	TRIPLE
Waves					
6.6.1.1	Transverse and longitudinal waves		219	218	73
6.6.1.2	Properties of waves		219-20	218	73
RP 20	★ Required practical – waves		221	219	74
6.6.2.1	Types of electromagnetic waves		223	220	76
6.6.2.2	Properties of electromagnetic waves 1		224-5	221-4	78-80
6.6.2.3	Properties of electromagnetic waves 2		224-5	221-4	78-80
6.6.2.4	Uses and application of electromagnetic waves		224-8	223-6	81
RP 21	★ Required practical – Leslie Cube		226	225	86
Magnetism and electromagnetism					
6.7.1.1	Poles of a magnet		229	227	92
6.7.1.2	Magnetic fields		229	227	92
6.7.2.1	Electromagnetism		230	228	93
6.7.2.2	Fleming's left hand rule HT			230	94
6.7.2.3	Electric motors HT			229	95

Identify useful resources



THE CONSORTIUM
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Revision guides / APPs



AQA specifications-
(this is the Science we have to teach)



Primrose Kitten/ Free science lessons online tutorials



Seneca set tasks/ independent study

Weekly Science homework is set on Seneca, an online learning platform that provides videos, information and quiz questions relevant to the course we follow.

Students create their own account and "join" their class using the class code their teacher provides. If pupils forget their password they can reset it using the password reset link on the log in page



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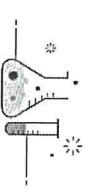
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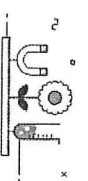
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Chemistry (Single Science)

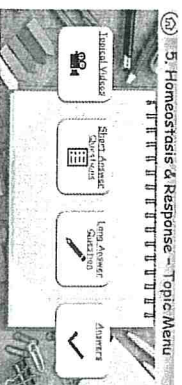


Combined Science

AQA past papers- these can be found on the AQA website in "assessment"



TEAMS – We have uploaded quizzes/ all in one revision PowerPoints- with video links and past paper questions & answers.



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