



<b>Subject</b>		<b>Science (combined science)</b>		
<b>Title/Topic</b>	<b>Format</b>	<b>Length</b>	<b>Date &amp; Time</b>	
Paper 1 – Biology	Written Exam	1 hour 15 minutes	Tue 22 November Morning	
Paper 2 – Biology	Written Exam	45 minutes	Mon 28 November Afternoon	
Paper 1 – Chemistry	Written Exam	1 hour 15 minutes	Wed 23 November Afternoon	
Paper 2 – Chemistry	Written Exam	45 minutes	Tue 29 November Morning	
Paper 1 – Physics	Written Exam	1 hour 15 minutes	Fri 25 November Morning	
Paper 2 – Physics	Written Exam	45 minutes	Wed 30 November Afternoon	

### In this Advent assessment I will be asked to show I can...

#### Biology Paper 1

- Comparison of prokaryotic and eukaryotic cells HT
- Describe types & uses of microscopes
- Calculate magnification
- Describe how substances are transport into and out of cells
- Explain the process of gas exchange
- Describe how villi are adapted to carry out their function
- Describe the osmosis required practical & interpret data
- State examples of the enzymes involved in digestion
- Describe the 3 types of blood vessel
- Describe non-communicable diseases
- Calculate BMI
- Identify pathogens that cause diseases to include viral pathogens (HIV) and bacterial pathogens (salmonella)
- Describe how the body protects itself from infection
- Explain how vaccination works HT
- Explain the stages of a drug trial and interpret data on trials
- Explain the processes of aerobic & anaerobic respiration
- Describe the bodies response to exercise
- Limiting factors of photosynthesis HT
- Explain the process of transpiration

#### Biology Paper 2

- Describe homeostasis & give examples of conditions that are controlled
- Identify glands of the endocrine system and state the hormones that are secreted
- Describe how blood glucose levels are controlled & explain the symptoms and treatments of diabetes



- State the hormones involved in human reproduction and explain their role.
- Describe methods of contraception methods
- Explain how a reflex action works
- Describe how to investigate reaction time (RP)
- Describe the structure of DNA
- Explain the uses and benefits of sequencing the human genome
- Describe the process of sexual reproduction
- Describe asexual reproduction and identify advantages HT
- Explain the inheritance of gender including the use of a Punnett square
- Show the inheritance of cystic fibrosis using a Punnett square HT
- Describe different methods of embryo screening and give advantages & disadvantages HT

### **Chemistry paper 1**

- Identify acids, salts and alkalis and recall their pH values
- Recall the reactions of acids with metals and bases
- Determine the formula of a compound from the charges on ions
- Describe how to make a soluble salt from an acid and a metal oxide
- Outline how to investigate the temperature change of a reaction including control variables
- Predict the relative temperature changes of the reactions of metals from a reactivity series
- Carry out calculations to determine the mass, volume or concentration of a substance
- Explain the results of the alpha scattering experiment
- Recall the trends in reactivity of the group 7 elements
- Calculate the relative formula mass of a compound
- Carry out reacting mass calculations
- Describe the properties of the metallic, ionic, simple molecular and giant covalent substances
- Balance symbol equations
- Explain how ionic substances can be made to conduct electricity
- Describe the creation and structure of the periodic table
- Describe, in terms of electron transfer, how metals and non-metals react to form ionic compounds
- Explain the trend in reactivity of the group 1 metals
- Calculate the numbers of subatomic particles in an atom of an element
- Explain the process used to extract aluminium from its ore
- Identify charge carriers in different substances
- Explain the properties of simple molecules and giant covalent substances
- Suggest a method to investigate the amount of a gas produced during an experiment



### **Chemistry paper 2**

- Describe and explain the changes in the Earth's atmosphere since its formation until the present day
- Outline the greenhouse effect and give the effects of climate change
- Identify errors in experiments and suggest methods to correct them
- Describe state changes
- Carry out calculations mass
- Know what a catalyst is and interpret experimental results investigating catalysts
- Explain the factors that affect the rate of a reaction
- Define formulations and identify mixtures
- Outline the use of chromatography in separating mixtures and calculate  $R_f$  values
- Describe the tests for common gases
- Describe a method to carry out the disappearing cross experiment
- Identify the pollutants in waste water and the treatments used to remove them
- HT describe chemical equilibrium and describe the effects of changing conditions on the equilibrium

### **Physics Paper 1**

- Know where to connect ammeters and voltmeters in circuits
- Identify circuit symbols
- Recall the resistance of a wire required practical
- Use the equations  $V = IR$ ,  $P = IV$ ,  $Q = It$  and  $E = Pt$
- Use the equation for efficiency
- Describe mains electricity (frequency and potential difference)
- Wire a plug
- Calculate a mean
- Know what contamination and irradiation are
- Calculate the half-life of a radioactive element
- Describe precautions needed when handling radioactive material
- Interpret radioactive decay equations and changes to atomic structure
- Explain the properties of alpha, beta and gamma radiation
- Know the advantages and disadvantages of renewable energy resources
- Describe the transfer of energy between stores
- Use the particle model of matter to explain the properties of solids, liquids and gases
- Explain the concept of thermal conductivity
- Calculate specific heat capacity and specific latent heat
- Discuss changes of state with reference to internal energy
- HT only, calculate the spring constant and describe Hooke's law



### Physics Paper 2

- Know the difference between scalar and vector quantities
- Calculate and describe the effects of resultant forces
- Use the equation  $\text{speed} = \text{distance} \div \text{time}$
- Identify a Newton third law pair of forces
- Use the equation  $\text{acceleration} = \text{change in velocity} \div \text{time}$
- Describe Hooke's law and know how to determine the spring constant
- Interpret distance – time graphs
- Describe contact and non-contact forces with examples
- Use the equation  $\text{work done} = \text{force} \times \text{distance}$
- Describe changes in energy stores
- Use the equation  $F = ma$
- Describe X rays and gamma rays
- Describe the use of electromagnetic waves in communication
- Describe the properties of a wave (amplitude/wavelength/frequency)
- Use the equation  $v = f\lambda$
- Use the equation  $f = 1/T$

### What should I do to revise and prepare for this assessment?

To prepare for this assessment:

1. Use the knowledge organisers on the back of your physics booklets (look/cover/write/check) and your revision guide.
2. Make flash cards for key knowledge and definitions.
3. Use Seneca learning and BBC bitesize for revision quizzes.
4. Log onto GCSE pod and search for AQA combined science.

### What useful websites/resources could I use to help me prepare?

AQA combined science revision pages on BBC bitesize

. <https://www.bbc.co.uk/bitesize/examspecs/z8r997h>

Seneca combined science

<https://app.senecalearning.com/dashboard/courses/add?Price=Free&Age+Group=GCSE&Exam+Board=AQA&Subject=Combined+Science>

GCSE pod

<https://www.gcsepod.com/>